Service Sector Employee Insights into the Future of Work and Technological Disruption

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Abstract

Recently there has been significant attention given to the fourth industrial revolution and its impact on employment. The present study aims to provide employee insights into their perceptions of the future of work, specifically around their job and career. These insights are important, as the respondents show how they plan to adapt (or more importantly, not plan or not adapt) to new jobs and careers in a rapidly changing world. Based on insights from 60 employees, which were collected online, the key findings suggest that people in the same line of work have varying degrees of knowledge and opinions about automation and how it may impact on their jobs. In addition, many employees are generally *optimistic* about the future of work and their long-term careers, with them acknowledging potential job changes around automation, but with a strong belief their type of work will remain. These are important findings when we consider how people plan their careers in the face of automation.

Key Words: *Future of Work, Career Planning, Robotics, Artificial-Intelligence, Technology*.

Introduction

> Uber, the world's largest taxi company, owns no vehicles. Facebook, the world's most popular media owner, creates no content. Alibaba, the most valuable retailer, has no inventory. And Airbnb, the world's largest accommodation provider, owns no real estate. Something interesting is happening (Goodwin, 2015, n.p)

The pace of change in business and employment is increasing, the average life expectancy of a Fortune 500 company has fallen from an average of 67 years in the 1920s to 33 years in 1965 and is expected to be less than 15 years in 2026 (Ioannou, 2014; Mochari, 2016). This disruption of *business as usual* will ultimately impact on employees, as traditional businesses are likely to need to make changes to existing processes and cut costs to remain competitive. The automation of human labour can be a cost-effective way of bringing down overheads within an organisation. Automation does not need to do the entire job of one person; it simply needs to do part/s of the job. Examples of automation can be robotics, driverless technology, algorithms, artificial intelligence etc., as well as the use of smart phone applications and a complete redesign of existing labour practices. Brougham and Haar (2018) refer to this as STAARA: smart technology, artificial intelligence, automation, robotics, and algorithms.

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The employment landscape has changed significantly over the decades. Employees can no longer expect lifetime employment, and careers have become more transient (Inkson, Gunz, Ganesh, & Roper, 2012). It has been predicted that 57 per cent of OECD jobs could be affected by technology worldwide over the coming decades (Citigroup, 2016). Within New Zealand, it has been estimated that 46 per cent of jobs could be automated between now and 2035 (Chartered Accountants Australia and New Zealand, 2015). Some experts have suggested that the level of disruption to jobs could be as low as 9 per cent (Arntz, Gregory & Zierahn, 2017). However, even at the lower estimate, 9 per cent of jobs being disrupted within a short amount of time would pose a substantial challenge to many countries. Overall, very little is known about how employees view the future of work in relation to their own job and career. This is important, given the potentially rapid changes to the workplace as a result of technology, automation and general disruption.

While new jobs will always be created (Deloitte, 2015; Scarpetta, 2016), it is clear that the nature of traditional work and career paths is changing dramatically as people move away from linear careers (Baruch, 2004). However, similar dire predictions have been made before. During the 1930s, John Maynard Keynes prophesied that *technological unemployment* would become a familiar part of language. The phrase described "our discovery of means of economising the use of labour outrunning the pace at which we can find new uses for labour" (Keynes, 1930, n.p). A *job for life* is a term that disappeared decades ago, and such a phenomenon of work is even less likely today, given the disruption companies potentially face. For example, the casualisation of labour is more common around the world (De Stefano, 2016), and within New Zealand, we have seen the impacts of zero-hour contracts, and other variations of temporary work (Wilson, 2014) such as the 'gig economy' (i.e., highly casual and project based labour). It is difficult to know what the future will look like, it may be a "difficult transition" rather than a "sharp break with history" (The Economist, 2016, n.p)

The present study will not try to predict the future. Our main objective is to gain an insight into what employees think the future of their job and career will look like as a result of technology (i.e., STAARA). This is an important area to investigate – especially for employees, employers and Government – so we can gain an insight into how employees currently perceive STAARA and its influence on jobs and career planning. The following literature review outlines some technological advancements that are currently in flux – career planning, perceptions of control and predicting the future. We then highlight the study we conducted to answer our research objective, and detail the insights collected.

Literature Review

According to many futurists, we are entering a fourth industrial revolution (e.g., Schwab, 2017). We have already seen major advancements in technology and the way we do business. Future advancements will see the refinements of multipurpose robots, 3D printing in production and construction, driverless vehicles (Bellamy & Pravica, 2011; Solon, 2016), automated ports (Ports of Auckland, 2016), automated food production, and automated commercial pilots (Frey & Osborne, 2013). Other changes include virtual employees powered by AI (EtTec, 2016), automated accounting, legal research and teaching services to name those currently existing. In addition, the makers of smart phones and tablets – Foxconn – are using more robots, while Amazon refines its automated delivery service. In our supermarkets, self-serve checkouts have existed for a number of years already, supplanting the original 'checkout person'. The future suggests that even the mainstream adoption of synthetic meats and milks

could have a significant impact on New Zealand's agribusiness sector. These last examples represent only a handful of exemplars that are currently being refined by tech companies. It is also expected that the cost of each technology will continue to fall (Nolan, 2015) while the performance outcomes will increase.

Technology could be a key driver within some industries to reduce worker control (Cohen, 2015), and it has the ability to polarise the labour market, meaning we have the bulk of the workforce in low skilled/low paid work – or high skill/high pay work, but with fewer middle-class jobs in between (Acemoglu & Autor, 2011). However, we cannot discount the positives that technology has and will provide in the future (Holland & Bardoel, 2017; Deloitte, 2015), and this includes potentially expanding work sectors. Ultimately, it is contested whether fewer or more jobs will be created as a result of technology. For example, a study of futurists reported that:

> Nearly half of the respondents (48%) predicted that robots and AI will displace more jobs than they create over the coming decade…Many experts told Pew they expect the jobs created by the rise of the machines will be lower paying and less secure than the ones displaced, widening the gap between rich and poor, while others said they simply don't think the major effects of robots and AI, for better or worse, will be in evidence yet by 2025 (Bercovici, 2014, p.12).

In summary, the effects of technology on employment are widely debated, and a balanced argument might suggest that:

> AI will not cause mass unemployment, but it will speed up the existing trend of computer-related automation, disrupting labour markets just as technological change has done before, and requiring workers to learn new skills more quickly than in the past" (The Economist, 2016, n.p).

If this is the case, employees still need to plan accordingly. Significant changes to the labour market have been seen over the previous decades due to "a combination of fast developments in multiple areas – economy, technology, and society in general" (Baruch, 2004, p.54). Baruch (2004) discussed the importance for employees of being their own 'free agent', accepting the external changes that are likely to impact on them. This aligns with the work of Orpen (1994), who noted the importance of individual career planning in relation to career success.

Recent research into employee perceptions on technological disruption causing redundancy found that over 91.4 per cent of participants out of a sample of 190 New Zealand employees were not concerned about their job being automated (Brougham & Haar, 2016). This is despite over 40 per cent of New Zealand businesses looking into technology solutions to create efficiency (Smylie, 2016). Thus, while employees feel there is likely little change forthcoming, their employers appear to be considering the potential cost benefits of STAARA more readily. The present study aims to give an insight into how employees view the future of their job, career and work, in general, in relation to technology.

The present study focusses on employees' perceptions of the role of technology on their jobs and careers. However, uncertainty is a very important construct to consider. Hatch (1997) suggested that, within uncertainty, one needs to consider complexity and the expected rate of change. Complexity considers the number of elements in a given environment, whereas the rate of change takes into account how rapidly things change at (Duncan 1972 as cited in Hatch,

1997). However, Hatch (1997) stated that "the problem with the environmental uncertainty perspective was that it assumed that conditions in the environment were experienced in the same way by everyone" (p. 89). Thus, environmental conditions might be seen as certain to occur by one group of people but not by another, possibly leading to radically different perceptions when one industry workforce is threatened by automation while another is not. That said, some employees will be able to identify the role that technology might play in influencing their job and career. Research has found that experts predict the impact of technological unemployment will take much longer compared to non-experts (Walsh, 2017). Thus, while some changes are occurring – such as Foxconn with robot production lines, and the automated shipping ports within New Zealand – the widespread influence of technology on employees may take decades to be fully realised. In addition, the Gartner Hype Cycle also illustrates how "hyped" something is in the media and public perception compared to how far away commercial viability is (Gartner, 2018)

We expect to see a wide range of opinions regarding the future of work and what the future of work may look like from the employee perspective. This might also reflect employees' views regarding how much control they have over their lives. Locus of control is defined as "the extent to which people believe that they have control over their own fate" (Ng, Sorensen, & Eby, 2006, p.1057), whether internally (one's own actions) or externally (by other forces, such as STAARA). These opinions can influence factors including promotions, salary increases and career advancement (Spector, 1988).

Given the media attention given to such potentially radical changes to the workplace, the present study explores the generic research question of *What do employees think their job and career might look like in the future, due to STAARA?* We acknowledge that such perceptions are likely to vary across employees, including those in similar jobs. However, we note that Bercovici (2014), in his research of futurists, found almost an even split between these 'experts' on the future of work. Thus, the opinions and perceptions of workers provides, at least, a voice which is currently limited in the literature. Thus, the present study is exploratory and provides an opportunity for the voice of employees around STAARA to be captured.

Method

Questionnaires were distributed by research assistants in New Zealand's main centres via an online survey, as part of a wider study of STAARA. The present study focusses on open-ended questions (outlined below). The research assistants used purposeful sampling to attract respondents from a wide range of industries and job titles, specifically from the service sector (Coyne, 2008). We targeted many responses to give depth to our sample, to ensure we were not gathering data from a narrow sample of workers in specific occupations. Hence, our sample size target was in excess of 50, which is quite high for qualitative comments, but we wanted to ensure that we gained enough voices across a broad range of occupations. Research assistants initially targeted employees in retail, sales, food preparation and administration roles, as these occupations make up a large pool of employees that could be impacted significantly by automation. We also sought multiple respondents from the same organisation and position to provide better comparisons. Once enough sample was attained in this area, the research assistants were then required to target people in lower risk professions, such as executive management, law and nursing etc. Overall, the list of professions offers a well distributed representation of the jobs that could be automated as per the list offered by Frey and Osborne (2013). The service sector was targeted as a lot of automation has already been used in the

primary and secondary sectors. Many of these workers, over the decades, have transitioned into the service sector. However, now, many of the tertiary sector jobs are set to be affected by these disruptions. The present study focusses on responses from 60 employees. The sample had an average age of 35 years (SD=11) and 71 per cent of the respondents were female. Private sector workers made up 65.9 per cent of the sample, with 26.1 per cent public sector workers and 8.0 per cent worked in the not-for-profit sector. The education level was roughly half with a university degree, with the majority being non-union members (90 per cent).

Study Questions

The present study used two open-ended questions in an online form to give an insight into how employees view the future of their job and career, and we included a definition/explanation of STAARA. Respondents could write as much as they wanted within the fields provided.

Questions were: (1) *Describe what you think your work will look like in 10 years as a result of STAARA.* This question was designed for employees to think about their current job/work; (2) *Describe how STAARA might affect your future career prospects*, and this question focussed on their future career. The 10-year timeframe was used in previous research regarding future perceptions (Bercovici, 2014).

Procedure

The present study used thematic analysis to look for trends amongst responses (Braun & Clarke, 2006). This enables identifying and presenting the perceptions of the respondents in the contextual setting. The goal of this research was to understand how the respondents from a wide range of settings perceived the threat of technology in relation to their employment. Qualitative research enables the researcher in understanding "how people understand concepts" (Barbour, 2008, p.12) and enables researchers in "seeing through the eyes of the people" (p. 402). Aligned with our focus on work and careers, this approach provides meaning as attributed by respondents within their context (Bryman & Bell, 2011), specifically work.

This study does not claim to meet the criteria of generalisability. Indeed, Stebbins (2001) argues against the usage of generalisations in exploratory research. Each author coded responses and then they were triangulated, to help minimise bias in the analysis. Ultimately, we used thematic analysis (Braun & Clarke, 2006), which enabled us to identify and present the perception of STAARA as seen by the respondents in the contextual setting. This allowed us to identify common themes amongst the respondents.

Results

The results from this study offered an insight into how employees view the future of their job and career while considering the role of technological changes. These perspectives were wide ranging. However, general themes have been outlined below.

Theme 1: The importance of soft skills

A clear trend from respondents was that face-to-face interactions or complex interactions (between humans) would become more important, while paper work and administration would be more automated. Two respondents in the banking sector said that STAARA would "take

away all the manual tasks, leaving only the social/relationship side of things which could be done by my manager," and:

> My role will become more reliant on relationship building, supported by automation of the banking industry. This will give me the ability to respond to clients faster. It would affect my prospects if I did not adapt to it. My role uses systems and automation, but is heavily reliant on relationships with customers, so it is not likely to affect my role, or future job prospects (#28-29).

Someone in the IT sector stated:

> The basic help desk job will still exist. A lot of standard tasks are already automated (a/c reset/unlocks, changes to access rights/permissions, software installations, etc.), but human interaction will still be needed when issues are being reported (#38).

Thus, there is strong support that employees see soft skills as something that STAARA cannot replace.

Within this theme, the following quotes provide a useful comparison: both are within the sales and automotive sector but see the potential of STAARA disrupting their job and career. Respondent #54 stated that:

> Online ordering of cars will become part of the future. Traditionally 90 per cent of people had to physically see and drive a vehicle before they could buy it. However, recently Tesla sold 100,000 cars without a single test drive so that is definitely possible.

Another employee in this sector said, "not much change to be fair, new computer software and maybe some newer tech but basically the same" (#55). This individual also noted that "It would make some areas of work better but ultimately you can't do this job with just technology alone; a human presence has to be there". An administrator in retail stated:

> I suppose the customer service aspect of my job could be replaced but I am not confident this would work. I think people today still appreciate great customer service... for me it is often the difference between buying one similar product over another (#56).

Hence, there is this perception (rightly or wrongly) that humans have certain skills and abilities that cannot be replicated by STAARA.

Theme 2: STAARA will enhance my job, the future is bright!

In addition, respondents saw automation as providing new opportunities, perhaps even enhancing their current jobs. For example, a teacher in the education sector said, "I think technology is enhancing education and careers but don't know the specifics" (#5), with another teacher in education noting

> As an educator it is highly important that we keep up-to-date with the latest technology. The students we have need to be taught skills to be able to use the

> current technology available and have the skills to draw on when facing new technology (#5).

Towards specific benefits from STAARA, common thoughts included "I think it could be a really powerful tool for augmenting my skill set in my current role" (#18) The following comment offers a balanced approach towards STAARA:

> For the most part I do not believe my role in construction could be replaced by STAARA. The amount [of] problem solving, and public liaison required in my role makes the idea unrealistic in the next 10 years. I do, however, believe certain parts of my role could be replaced which would allow me to focus on other aspects, reducing potential issues in other areas that may have occurred due to lack of attention. I also believe that some roles within the industry could be replaced by STAARA, just not the management on the projects. Definitely not in the next 10 years anyhow (#33).

This retail manager suggested STAARA would provide "More updates in future to streamline things...already use technology on a daily basis – would just improve in the future" (#43).

Within the accounting sector, this respondent noted that STAARA would make things "More efficient in terms of getting the information presented to you and allowing for more time in decision making" (#60). Many of the respondents could identify specific types of technology that could be used to augment, enhance or replace parts of their job. For example, an architect provided a number of suggestions that would enhance their work:

> Robotic PA for meetings, emails, scheduling. Transport PODs to meetings, or automatic video conference setup. Algorithms are currently used to help us find data required for technical consultants to design a solution to provide to the customer (#28).

Someone in customer service suggested: "A virtual assistant that will help with basic enquiries to ease the workload on the digital customer service" (#37), while another respondent in construction noted

> I think the possibility of STAARA affecting the communications industry is very exciting – it poses huge potential, but it does mean that, as a consultant in this field, I need to be open-minded and constantly adaptable to new technologies. As far as the construction industry is concerned, I think STAARA will have HUGE changes, but due to there being BIG shortages of sub-contractors and good people to manage projects I believe it would be hugely beneficial if we could rely on more Automation and Robotics (#40).

Finally, some suggested that the repetitive and routine parts of their job would be removed, enabling more creativity. Someone in product manufacturing, for example, suggested their job "would become more creative and would push towards more 'thinking outside the box'/disruptive strategies." Many of the respondents see their jobs and careers as being much of the same with respondent #35 (surveyor) stating that it will be "much the same" and "I don't think it can affect my current career as my work involves a lot of people interaction." "Automation and better data collection through algorithms or AI would allow the time to create more experimental, unique, and potentially more advanced marketing campaigns" (#30 – manager in manufacturing). A consultant also noted positives, stating

> It could replace the more routine parts of my role, leaving more space for me to focus on the real 'value add' aspects. It could also create opportunities for us to package and sell new service products which were previously labour intensive (#31).

Theme 3: Unsure… But job and career change is coming…

Jobs and careers have been in a state of flux or change over the decades. This was outlined by respondent #15, a construction sector project manager, who stated "My role is forever changing so haven't considered this but know that it will not be the same as I do now." Many of the respondents were simply not sure about what the future would hold, with respondent #9 stating "I am not sure whether it will affect my particular role at all!?" and a financial analyst stating "I will need to understand in more detail what the impact of STAARA is on my role, but I believe I will need a greater knowledge of what STAARA is and how it affects society and financial institutions" (#25). Another respondent stated, "I think it will impact on my future career prospects, however, am unsure how it would benefit myself or the organisation I work for" (#57). Overall, it appears that part of the issue for some employees is that there is a lack of understanding of just how STAARA might influence their work. One respondent in retail stated, "The technology would improve but the selling aspect would still be the same" and "[I] don't think it will affect my career. Already use technology on a daily basis – would just improve in the future" (#42-43), highlighting how some see the entwined nature of work-job-career-life. On the flip side, one respondent (retail sales) was defiant around the potential threat of STAARA to their job and career, stating "Retail is based on customer interaction…[regarding a potential career change] no mate, not going to happen!" (#51).

Theme 4: Age and Career Stage

We identified a significant theme around age, career stage and STAARA. Several respondents had career stage related comments with respect to automation. For example, a manager (aged 58 years) stated that "My age might hold me back from learning new technology type skills" (#8), while a lawyer (aged 68 years) stated "Not applicable [to me] - near retirement!" (#10). A communications analyst (53 years) similarly noted "Nearing the end of my career. I don't believe it will affect my future career prospects" (#22), while a younger (32 years) manager in manufacturing noted that STAARA might have a major influence on the future of their career. They stated:

> Due to the creative and social engagement required by my role, it is not as 'at risk' as others. However, as you are asking about future career prospects, I am prepared for and do realise that 'retirement' for me will be very different to retirement for the current generation of elderly. Specifically, simple, structured employment, often taken up by retirees wanting to remain active will be mostly replaced by automation – meaning that any type of employment in the later years will be very difficult. For example, bus drivers, will be replaced by self-driving vehicles and/or ride sharing. Check out assistants – automated counters/online ordering (#30).

This highlights that young employees are aware of STAARA but do not necessarily see the future as being 'paved' with opportunities. There appears to be real worry around future careers. Two younger respondents (both 22-years-old) stated that: "When I graduate I will be

seeking employment with business in the marketing/e-business sectors and I'm aware that the latter will be heavily impacted by this" (#48), and similarly "I will have to finish my degree because most of the jobs I could apply for now could be replaced with STAARA" (#58). Related to these concerns, several respondents were worried about unemployment as a result of automation. A 34-year-old in manufacturing noted "It might be more difficult to find a job and upskilling will be critical to keep competitive" (#41), while another respondent (21-years-old) stated STAARA would lead to an "increase in unemployment" (#46). There was clear concern around potential job losses although this was somewhat limited to a smaller group of participants. Another highlighted that, while STAARA was a threat, other factors – like young new entrants to the sector – were likely to be more of a threat, stating

> …given my greatest strengths are human focussed (networks established) and confined to the industry I work in my career prospects are grim – very few jobs. [my] ability to go outside my area of speciality is limited and young people pose more of a threat than technology to myself personally – tech generally (#39).

Theme 5: Low risk jobs still see changes coming

Employees have a wide range of perceptions regarding STAARA replacement of their job, irrespective of their roles. According to Frey and Osborne (2013), lawyers occupy a very low risk position, and thus are unlikely to be widely replaced. Our sample included six lawyers who were generally in agreement with this rating, with one suggesting that things will be "the same" (respondent #9). Some thought that change would occur but is unlikely to change their job in the majority. One stated: "More automated documents but advice still tailored to individuals" (#10) and "similar to now, but more focus on customer relationships and getting the work rather than doing the work" (#12). One suggested the change would be beneficial, stating "I consider we will still have a role in the personal dealings with those clients and representing them, but will be significantly assisted by STAARA in the formulation of our advice to our clients".

Some respondents saw the potential for change from STAARA being dramatic, but positive, for example "I believe our research databases will be expanded to enable them to more effectively trawl through large volumes of legislation and case law precedents to identify patterns and suggest possible outcomes for our clients" (#14). A theme around technology simply enhancing the job, with no real impact on their career, was a key theme, with one respondent stating: "I consider that there will remain a need for lawyers and the Court process, but we will be assisted in part by the tools that will come from STAARA" (#14).

Theme 6: High risk jobs have contrasting views about the impact of automation

Respondents in higher risk professions (e.g., retail sales) gave contrasting views. Some indicated uncertainty "Unsure if my workplace would change but with technology nowadays anything is possible" (#45), while others highlighted modest change "More jobs being done tech wise and robotically rather than face to face communication" and "Maybe quicker systems in point of sale system and EFTPOS advancements, but not any STAARA advancements with customer service/interactions" (#46-47). Some did acknowledge a strong threat, stating "A plethora of simple tasks will become automated and therefore humans will have to concern themselves with the more complicated decision-based aspects of their jobs. In certain sectors, STAARA will likely cause worker redundancies" and "Less staff, less customer service" (#48-49). Despite these acknowledgements, others thought there was little threat, such as: "The

same, apart from till service" and "Retail is based on customer interaction" (#50-51). Overall, retail staff showed the broadest range of variation and appear consistently to differ in the way they perceive changes that STAARA may evoke.

Discussion

Previous research from Brougham and Haar (2017) found that the public was generally not concerned about automation to their job. The present study uncovers a range of themes as to why this might be – while also discussing a range of insights into what employees think the future of work may look like. The insights from our respondents suggest many think they will be working alongside technology to enhance their current job. They saw that technology could also free up time from the monotonous and repetitive tasks that their current work entails. This way of looking at automation aligns with Gale (2017), who suggested that we should not aim to replicate human work with machines, but to see the benefit that humans and technology can provide in combination. We see our respondents' willingness to use technology to change their job and drive productivity to be an important theme from this research. Because of this, many respondents do not see technology as a 'threat', but something that can ultimately benefit their job, career and organisation.

Employees see personal interaction at work and soft skills to be more important moving forward. This aligns with Frey and Osborne (2013) who suggested that social intelligence such as negotiation, persuasion, social perceptiveness and caring for others would be harder to automate than things like automatic data entry. This was also highlighted by the World Economic Forum which stated that "social skills—such as persuasion, emotional intelligence and teaching others—will be in higher demand across industries than narrow technical skills, such as programming or equipment operation and control" (Berlin, 2017, p.8). So, our respondents do seem to understand the potential value in their soft skills. Several other commentators in the area have also discussed the importance of creativity, critical thinking and jobs with more purpose (e.g., Erb, 2017). In addition, many of the respondents within this study felt that parts of their job could be automated, but not the entire job. This is because jobs tend to be made up of a wide range of tasks. For example, one administration job in one organisation firm may have a different set of tasks when compared to another administration job within another organisation. Because of these varying tasks within jobs, the likelihood of an administrator being made redundant because of technology needs to include what kinds of work they do on a day-to-day basis. Because of this, the impacts of automation may be overstated (Arntz, Gregory & Zierahn, 2017).

While many respondents were unsure of what the future may look like, they knew that it would look different to what we experience now. Respondent #15 offers a great insight into this by simply stating that "My role is forever changing so haven't considered this but know that it will not be the same as I do now". Indeed, jobs and careers have been in a state of change for hundreds of years. New and different jobs have been created, and more will be created in the coming decades (Deloitte, 2015). This statement from Kirchner (2017) highlights how we can think about the future of jobs: "Let us not be lulled into the misconception that industrial employment is a zero-sum game; that a finite number of jobs exist in industry and for everyone job replaced by a robot an industrial job disappears" (n.p).

Age and career stage also influenced how people felt about the future of work in relation to technology. This paper found that older workers do not feel threatened by STAARA as they could exit the workplace in the coming decade. On the flipside, it is known that younger people

who are digital natives have a greater awareness of the capability of current technology. As a result, younger people can foresee how competitive STAARA will be. Similar findings were reported by Brougham and Haar (2018) in an empirical study of New Zealand employees; finding that age was a predictor of STAARA awareness around potential job loss through technology. Age also appeared to align with how people felt they could use technology to their advantage, with older participants suggesting that they would struggle to adopt new technology to remain competitive in the workplace. This has serious implications for training, and we see increased demand for rapid training systems for people of all skill levels and age. This will be needed in order to redeploy and repurpose staff where their job, or parts of their job can be automated rather than making them redundant (Gale, 2017).

An interesting finding was that many respondents had varying differences in how they see the future of their job and also the future of their career, regardless of a respondent's job being in a low risk or high-risk category of automation. This sits in line with the expert futurists who have varying views on what the future of work will look like, and how it will impact on human workers (Bercovici, 2014). For example, our sample of lawyers discussed how some parts of the job could be automated or enhanced, but relationships with clients would be more important moving forward. We also noted several respondents with low risk jobs (according to calculations by Frey & Osborne, 2013) who reported that they were concerned about automation. On the flip side, we also noted many cases where respondents in high risk jobs were mixed – with some being highly concerned and others not being concerned at all about automation impacting on their job. For example, our sales and retail respondents largely felt their jobs would be unchanged. This is despite a retail landscape that has been disrupted over the decades by online sales, with many more disruptions expected to come. While New Zealand has faced more online sales, we have not (yet) faced the Amazon effect to the same extent as the USA or Europe. Overall, the results from this study provide useful insights into how employees view the future of work. It shows that New Zealand respondents appear to have a broad understanding of STAARA although the different viewpoints on whether jobs will be replaced is understandably mixed because the future is uncertain. Overall, the themes provided new depth and insights to existing employee studies STAARA and provide greater depth towards understanding employee perceptions. Perhaps the most intriguing perception is that employees do see job changes coming through STAARA, but perhaps more positive change – whereby repetitive parts of roles are automated only.

Limitations and Future Research

Research into the future of work is in its infancy. It is important that we know about how employees perceive the potential threat or benefit of STAARA and how employees plan to adapt (or not) for the future of work. For example, are truck, taxi- and bus-drivers looking for new careers as the likelihood of driver-less vehicles become a reality? What does this do for the supply of truck drivers that are needed while the driverless technology is not on-board yet? Future research should also look at which businesses are looking to use STAARA within their operations and how, and what their intentions are behind this? Is it to replace workers? Or is it to increase efficiency? What are firms planning to do with employees that no longer fit within their old job? Do they simply make them redundant? Do they provide training to them so they can find work in another field? Or do they try and retain these workers for new roles within their organisation? These are important questions that researchers need to explore. Overall, this area of research is limited, and we encourage researchers to undertake more exploration.

A limitation for the present study was that the responses were collected online. They were not in-depth interviews, meaning follow-up questions were not asked to the respondents involved. Furthermore, some respondents provided limited dialogue in their response. It is, however, important to mention that the purpose of this study was to provide a broad insight into what a wide range of employees think about STAARA at that point in time. A benefit of using this method to attract respondents was that a wide range of industries and occupations were able to be included in the research. We also achieved a sizeable sample (60 employees), providing a wider range of insights from our respondents to look at our research questions.

It is also important to note that not all futurists predict STAARA will have detrimental effects on employment. This potential for job loss through technology is not a foregone conclusion, but a prediction about that future that has not happened (yet). While it is likely that *parts* of a job may or will be automated, it might be that the result will be a change a job or role, rather than the strict removal of that job (i.e., redundancy). Some researchers are very critical of any detrimental STAARA future. Miller and Atkinson (2013) stated that "robots, automation, machines, productivity: these are key enablers of human progress and absolutely no threat to overall employment" (p.2). Furthermore, research from Deloitte (2015) suggested that technology has created more jobs in the last 140 years. This could be a limitation because we may not be on the cusp of a new industrial revolution. We must also consider the fact that new jobs will be created in the coming years, ones that we cannot begin to imagine. In addition, Frey and Osborne (2013) suggested that there will be a multitude of external considerations that could play a role in shaping the future of work, such as wages, labour shortages and political pressure. In addition, current issues, such as the temporary and casual labour, are in a state of change. These constant changes mean that the future is difficult to predict. Furthermore, respondents may be looking to transition into new work because they want a career change, more meaningful work, higher wages or more flexibility. So even though we asked about technology, their ideas around their future job and career may be based in a profession they are not currently working in.

Conclusion

Much of the research on the future of work has been presented from the position of 'the experts'. This paper sought to highlight the current employee outlook into the future of work. We suggest that employees offer a different and meaningful insight into the complexity of their own work, and how hard it might be to automate the entire process. This is not to say they have a greater or lesser insight into the future of work, but it is an insight that is missing from the literature. Knowledge of these perceptions is very important for organisations and policy makers. It is a useful part of the puzzle for assessment moving forward. We encourage further research to develop the understanding and influence of STAARA on workforces from a range of different perspectives. This will enable better planning insights for all affected.

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