ALGORITHMIC MANAGEMENT - A TRADE UNION GUIDE

UNI GLOBAL UNION
PROFESSIONALS
& MANAGERS

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EXECUTIVE SUMMARY

This report looks at the growing use of algorithmic management tools in workplaces across the globe. Its aim is to provide guidance for trade unions on how to approach negotiations over the development and application of these tools at work.

The first section provides explanation of what algorithmic management is, how and why it is becoming more prevalent, and what some of the major concerns for unions might be – in particular the risks of increased surveillance, dehumanisation of work and embedding of bias and discrimination.

The report then delves into more detail about the three main uses of algorithmic management tools – recruitment, performance management and everyday workplace decision-making. Each of these are explored in their own section that looks at the different kinds of tools currently on the market, the opportunities as well as risks they present for workers and a series of lessons for unions to consider.

This report concludes with a list of ten key negotiating demands for trade unions to use when approaching employers over the question of algorithmic management, focusing on issues of transparency, accountability, proportionality, fairness, access to data and above all ensuring humans remain in control of and accountable for workplace decisions.

The position of this report is that while these new technologies offer both potential upsides and serious downsides for workers, trade unions can and should negotiate agreements about the introduction, application, and governance of any algorithmic management tools in the workplace.

BACKGROUND

For several years algorithmic management has been growing around the world, as employers invest in digital monitoring, analysis, and decision-making tools to inform, advise and in some cases completely replace decision-making by human managers. Algorithmic management tools range from very simple software that tracks employee working time or scans CVs for keywords, to much more sophisticated tools that use machine learning or other forms of Artificial Intelligence (A.I.) to predict customer footfall in shops, allocate shift patterns, allocate tasks to workers, or even decide who to hire, promote or reassign based on a potentially huge amount of collected data.

These algorithms have for many years been widespread in the disintermediated gig economy where they allowed platforms such as Uber, TaskRabbit or Deliveroo to manage a workforce of purportedly 'self-employed' workers without the need for a traditional line manager relationship. In recent years, however, these practices have been increasingly spreading to the regular economy. Over 40% of international companies' human resources (HR) functions now use A.I. to assist their recruitment,[i] with estimates suggesting over two-thirds of CVs in the USA are no longer seen by humans.[ii] Furthermore, with the coronavirus pandemic having led to an unprecedented rise in remote working across the globe, the desire of managers to find digital tools that can support them in leading their teams will only increase.

There are widespread concerns from defenders of workplace rights that this trend towards workplace analytics and automating the management process heralds a new age of Digital Taylorism. This suggests a return to the command and control 'scientific management' style of early 20th Century Taylorism that emphasises analysis, efficiency, elimination of waste and standardisation, but with new powerful algorithmic tools that can raise these principles to new heights for a digital age. While the prophets of this new digital management creed promise vast potential gains in productivity, critics fear that it will come at a huge cost in terms of increased surveillance, erosion of personal privacy, loss of autonomy, decline of workplace

relationships and a resulting dehumanising of work. There are also concerns that some algorithmic management tools can be prone to serious biases and discrimination.

Furthermore, the promised productivity gains might not even materialise. Many of the algorithmic management tools on the market today have been criticised as untested, and in some cases uninformed corporate executives, with little understanding of the technology they are buying, are investing in over-hyped products that are based on little more than pseudoscience. As one example, which is further developed below, the facial scanning algorithms marketed by HireView to advise companies such as Hilton and Unilever on recruitment decisions have been criticised by tech experts as duping companies into buying a product that has little basis in science. Similarly, technology being marketed by AC Global Risks purports to use voice analysis of a 10-minute interview to determine the level of trustworthiness and 'risk' of potential employees with a 97 percent accuracy – something described as impossible by independent experts.[iii] The founder of the A.I. Now Institute comments that "It's a profoundly disturbing development that we have proprietary technology that claims to differentiate between a productive worker and a worker who isn't fit, based on their facial movements, their tone of voice [or] their mannerisms".[iv]

The first step is to properly understand what these algorithms are, how they are being used, and the key risks and opportunities that unions need to bear in mind.

However, we should not jump to the conclusion that algorithmic management offers only downsides for workers. Amid the hype and the dangers there are real opportunities as well to reduce rather than increase bias and discrimination, to improve worker flexibility and autonomy – for instance in giving workers more control over their shift patterns or annual leave – and to improve the quality and fairness of management decisions by providing managers with independent, data-driven advice rather than simply having them trust their gut instincts. It is vital to remember that algorithmic management tools are just that – tools. Like most tools, they are neither inherently good or bad; from a hammer to a steam engine to a computer, it is the use to which we put these tools that determines their ethical impact, as well as the rules and frameworks put in place to govern them. Unions have an obvious interest in ensuring that these new analytical tools are both of good quality and used well.

The first step is to properly understand what these algorithms are, how they are being used, and the key risks and opportunities that unions need to bear in mind. By the term 'algorithm' here we mean any kind of digital, data-driven system – from simple keyword recognition to very complex machine learning systems – used to carry out tasks such as sorting, filtering, ranking or otherwise converting inputs to outputs in a systematic way according to a set of internal rules. The main three areas of algorithmic use in management – recruitment, performance management and other kinds of workplace decisions such as task or shift allocation – are outlined in more detail below.

RECRUITMENT ALGORITHMS

One of the fastest growing areas of algorithmic management in all countries and across all sectors of the economy is in recruitment. There are several quite different kinds of algorithms currently in use at various stages of the recruitment process, and it is important when looking at automated recruitment to distinguish between them:

- Textual analysis algorithms used in designing the wording of job adverts
- Marketing algorithms used in the targeted placement of job adverts online
- Chatbot algorithms that are used to guide candidates through the application process
- CV screening algorithms that scan job applications for key words and phrases and filter the first stage of candidates for interview

- Testing algorithms that use either competency based or psychometric tests to provide a further screening filter for candidates
- Various kinds of automated interview systems that can ask candidates pre-recorded interview questions without the need for a human interviewer and/or attempt to assess candidates based on an analysis of their facial expressions, voice, or the answers they provide
- Automated background checks on prospective employees that vet candidates or scan their social media histories to look for problematic indicators

“Some companies that have experimented with this technology have found their algorithms to exhibit biases against applications from women, ethnic minorities, or other protected groups.

Of all of these, CV screening is the most widespread practice around the world, with many large companies now automatically rejecting the vast majority of CVs in an automated screening stage before the remaining candidates are reviewed by human recruiters. The growing popularity of these tools is understandable - the sheer volume of applications many large companies receive from an increasingly globalised workforce can often be overwhelming and very difficult to adequately process by hand. Companies need to take care, however, that they are complying with all relevant legal requirements for transparency and appeal against automated decision making in recruitment – in particular Article 22(1) of the General Data Protection Regulation (GDPR) prohibits being ‘subject to a decision based solely on automated processing’ across the European Union.[v]

Perhaps the biggest concern that has been expressed about automated CV screening concerns the question of bias. Some companies that have experimented with this technology have found their algorithms to exhibit biases against applications from women, ethnic minorities, or other protected groups. The most high-profile of these cases was at Amazon in 2014-2017 where the company trained a CV screening algorithm based on success profiles from their existing workforce. Unfortunately the algorithm observed that most of the employees in the current workforce data were men, and taught itself to prefer male job candidates accordingly, picking up on CV phrases such as ‘women’s chess club captain’ or graduates of all-female colleges and downgrading applications accordingly, leading to the project being abandoned.[vi] The incident is reminiscent of Microsoft’s embarrassing Tay chatbot on Twitter which within 24 hours picked up on human racism online and learned to include racist language in its posts.

The key lesson, however, is not that algorithms are racist, sexist, or otherwise biased, but that humans are. The reason these examples went wrong is because the algorithms were fed real world training data that was already tainted by human

biases. Humans are perfectly capable of demonstrating terrible biases (whether conscious or unconscious) in our own recruitment decisions. In one 2004 experiment using human recruitment in the USA, researchers found that test CVs sent out with Anglo-Saxon sounding names on the top received 50 percent more interview offers than identical CVs with black-sounding names on them.[vii] If used responsibly, an algorithmic approach to deciding which candidates to put through to an interview can actually help reduce overall bias and give candidates from disadvantaged backgrounds a better chance of a fair hearing. However, to achieve this companies need to take extraordinary care when developing or purchasing new algorithmic tools; pick the right model for the job, use good training data and avoid giving the algorithm irrelevant or too many variables to work with. Companies that work closely with trade unions in making these decisions will be much more likely to come to the right decisions, both for them and for the workers.

It is also worth considering that there are competing measures of bias in any automated decision making. Considering gender bias in recruitment, for example, there are a whole host of types of fairness you could assess, from the ratio of unqualified men/women being wrongly recruited ('false positive rate'), to the ratio of properly qualified men/women being wrongly rejected ('false negative rate'), to simply the overall gender balance of those ultimately recruited ('demographic parity'). Minimising all of these biases is certainly desirable, but it has been proven mathematically impossible to make decisions, for most real-world characteristics, that are equally 'fair' by all of these definitions. Companies need to have open debates about how they are going to assess the fairness of their algorithms' decisions, including workers and their union representatives in these discussions.

The risk of discrimination is perhaps harder to overcome when it comes to the use of personality testing (sometimes described as psychometric testing) – another recruitment trend that is becoming more popular. Various kinds of personality tests are on offer, claiming to help companies to find a good 'fit' with their corporate culture. Third party vendors like Pure Matching are selling these services that claim to 'map your neuro-personality as to gain an overall picture of your biological identity', taking inherently subjective concepts and dressing them up in scientific language to make them appear like objective measures of candidate quality. In these cases, the discrimination against those with the 'wrong' personality types is baked into the premise behind the technology.

While it may on the face of it seem reasonable for companies to want to prioritise candidates who appear conscientious, organised or calm under pressure, these kinds of assessments can seriously harm the employment prospects of people for example with certain kinds of mental health conditions that struggle to pass the personality tests; a potentially unlawful form of disability discrimination in some countries, having led to lawsuits in the USA.[viii] These kinds of tests are also likely to be culturally insensitive, potentially discriminating against applicants from backgrounds different from those who wrote the software. This is a general problem with many kinds of management algorithms – if they are designed by and tested on a group of homogenous race, culture, age or gender, they might not function as intended when applied to a more diverse population, as seen with technology like automatic bathroom soap dispensers that don't detect non-white skin.[ix]

Some companies are also using what they describe as 'game-based assessments' which supposedly test problem solving skills. While these might correlate to applicant suitability for certain jobs, there are risks of companies rushing to embrace these tools for roles where these kinds of tests aren't really relevant and only serve to discriminate against those who might struggle with the particular format of the test.

Another flaw with this kind of algorithmic approach to CV screening is that as it

becomes more widespread it skews the application process in favour of those applicants who can 'game' the system. Professional coaching and CV writing services offer to help candidates place prominent keywords that algorithms may be searching for. Some people employ even more dubious tricks such as inserting additional skills and key words in white text invisible to human readers but that gets picked up by algorithmic filtering tools that accordingly rate the CV more highly.

The last few years have also seen the beginnings of commercial algorithms for conducting background checks in some industries. As with a lot of algorithmic management, the archetypal gig economy firms are leading the pack in this area – apps such as Checkr are now routinely used to provide basic vetting for Uber and Lyft drivers. Other companies such as Fama are offering automated background checks of job applicants' social media histories for a wide range of companies from finance to retail to tech.

Obviously, this kind of scanning of people's social media histories might seem uncomfortably intrusive to some. While Fama takes care to stress their ethical consent-based approach, allowing

candidates the right to challenge results and limiting their software to highlighting publicly available information that is relevant to the job for human recruitment managers to review, it is worth noting that other companies might have less restrained approaches. In particular companies attempting to do this kind of screening using in-house software without proper training might be at risk of unethical intrusions that prejudice them against candidates for reasons unconnected to their ability to do the job. In some cases, they might even risk breaching legal restrictions such as the Fair Credit Reporting Act (FCRA) in the USA or the GDPR in the EU.

Of all the recruitment algorithms, introducing them at the interview stage is perhaps the most problematic, though still relatively uncommon. While algorithms are still rarely used as final stage decision-makers in recruitment, some large companies are moving towards having an automated first interview and then human-led second interviews for the final shortlisted candidates. This, however, is the area of greatest controversy, where many experts are the most dubious about the science behind the systems and where the risks of bias and discrimination are perhaps most acute. The HireView software used by major companies such as Unilever, Vodafone, PwC and Hilton is used to facilitate automated job interviews and includes facial scanning features that can be used to score candidates based on an algorithm's assessment of their facial expressions. These types of products, or the vocal recognition software by AC Global Risk, have come under considerable criticism from A.I. experts for being founded in pseudoscience and at serious risk of bias or discrimination. The field of facial recognition, for instance, has been confronted by issues of racial discrimination due to the absence of non-white faces in so much of the training data.[x]

On the other hand, the use of algorithms at an early stage of the recruitment process offers considerable opportunities for improving fairness and the recruitment experience for candidates. Textual analysis software from firms like Textio or even the free to use Gender Decoder website by Kat Matfield[xi] can scan job postings for potentially coded words that may be off-putting to applicants of a certain gender, age, or other characteristics. This kind of approach, using algorithms to proactively search for and help eliminate discrimination, is one of the most positive applications of the technology to recruitment.

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SUMMARY OF KEY POINTS FOR UNIONS TO BEAR IN MIND:

- Algorithms used early in the recruitment process, particularly in helping write and advertise jobs and guide candidates through the process, are most likely to improve the experience for job applicants.
- The use of algorithms for CV screening can be necessary when the volume of applications is high. When done well this can reduce bias but careless use can embed and increase bias instead.
- Where machine learning algorithms are used in recruitment, remember that if the training data used to determine who good applicants are is the result of biased real-world human judgements, the algorithm will learn to display the same biases.
- Online tests can be a valuable component of the process for some jobs, but it is important to make sure that they are competency- or skill-based tests relevant to the job at hand. Personality and psychometric tests are inherently subjective and risk discrimination.
- Unions should challenge and reject the use of software that claims that candidates' trustworthiness or quality can be assessed by facial scanning or vocal analysis.
- There should be transparency for both job applicants and unions as to where recruitment algorithms are being used. Unions should also have access to information about the criteria used to assess candidates and the data sources employed.
- Data from job applicants should only be collected so far as it is relevant for the application. It should always be stored and processed securely, and deleted once a final decision is made.
- Human managers should be involved, monitor and be able to intervene at any stage of the application process. Any ultimate decisions on accepting candidates should always be made by a human being. Automatically rejecting candidates via an algorithmic CV screen may be permissible in some jurisdictions but could contravene GDPR in the EU and regardless should still be supervised by human managers.

WORKPLACE DECISION ALGORITHMS

Perhaps the broadest category of algorithmic management is that which covers day-to-day workplace decisions, what might be considered typical line manager activity but where the line manager is now either being supported, advised or entirely replaced by computer algorithms. The full list of what these kinds of algorithms can do is almost endless, but the most common types of activities cover four broad areas:

- Shift allocation, particularly in the retail or hospitality sectors where shift decisions are increasingly advised by complex computer projections of consumer footfall.
- Routine self-service HR activity such as algorithms that approve/deny requests for annual leave, log sick leave or process work expense claims.
- Using algorithms to help redesign workplace structures, such as allocating workers between teams or to different projects based on algorithmic assessment of where individuals would work best.
- Algorithms that allocate everyday workplace tasks to workers, from connecting call-centre workers with phone calls, to production orders on a factory floor to picking orders in a

distribution warehouse to new jobs for delivery or taxi drivers.

One of the great strengths of algorithms is that they can process far more data more quickly than human managers ever could. This allows not just faster analysis but also whole new kinds of analyses to become possible. Shift allocation algorithms can use weather forecasts, economic data, their own observations about past consumer activity, and knowledge about the availability of workers to generate shift patterns far beyond what a human manager could do. Similarly, when it comes to task allocation, apps like Uber and Deliveroo can assign available drivers to the nearest job far more quickly and smoothly than a human call handler. In manufacturing, the use of algorithms like Preactor in use at Siemens manufacturing plants has allowed the factory floor to respond in real time to supply and demand changes by instantly and seamlessly adjusting the production orders – something previously felt to be impossible when the orders were drawn up by humans.[xii]

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The delegation of more and more daily workplace decisions to these kinds of algorithms brings risks as well as opportunities, however. An important concern is that the drive towards efficiency and eliminating downtime can place enormous psychological stress on the human workers. When delivery drivers or manufacturing workers are allocated their next task by an automated system within a second of completing the previous one, they are constantly operating at a very intense level of work without the usual micro-rests most workers have to stop, think or reflect for a few moments outside their officially scheduled breaks during the day. Similarly, most distribution warehouse workers increasingly receive their tasks allocated by a tablet or other device that tells them step by step where to walk and which shelf to reach for, optimising to ensure they are constantly moving at maximum speed and never having to stop and think about where to go. Amazon has also begun trialling the deployment of wearable haptic feedback devices for its warehouse workers, using vibrations to guide their arm movements to the correct shelf as quickly as possible in order to be even more efficient. Not only can this level of hyper-efficiency be extremely stressful for workers, but removing people's autonomy in this way can be dehumanising by making them little more than cogs in a big automated machine, not even trusted to make decisions about their own limb movements or about which box size to use or which length of tape to cut to seal it.

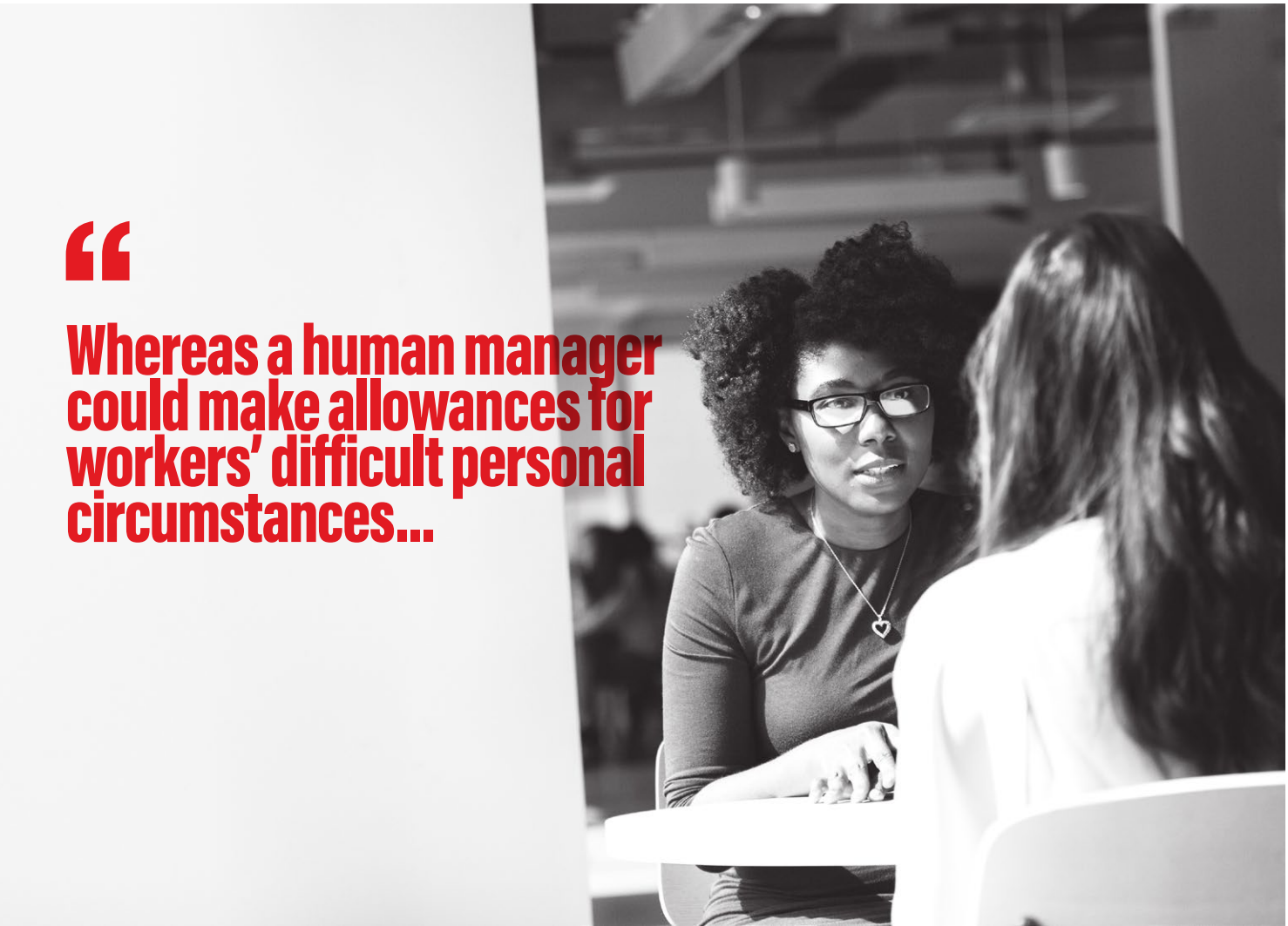
For workers, this can have significant psychological effects on their mental health and their sense of purpose and wellbeing at work. It can also seriously impact workers' physical health, with greater degrees of repetitive strain injury, exhaustion, and other conditions. For employers, this pursuit of efficiency at all costs can have unintended downsides too: increased staff turnover and burnout, high sickness and absence rates, and reduced employee engagement, ultimately leading to a lack of innovation and a higher risk of costly mistakes being made when workers don't feel they have permission to think for themselves and are trained to blindly follow instructions from a computer.

Another concern is that a focus on efficiency comes at the expense of organisational resiliency. This is something organisations have been finding out around the world as a result of the coronavirus pandemic, where years of Lean Management and just-in-time supply chains have eroded the ability of organisations to cope in circumstances of adversity. If algorithms used to make management decisions are programmed to optimise for efficiency and end up

allocating the exact minimum number of workers needed for each shift, or the exact minimum length of time required to do each task, there is a serious risk of problems occurring if unexpected events intervene. Of course, algorithms do not have to be used this way – a responsible approach would be to use algorithmic tools to allocate some slack to all workplace processes as a contingency based on possible levels of risk. There is an important role for trade unions here in negotiating with employers around what level of resiliency versus efficiency is most appropriate.

Many of these algorithms also try to gamify work for the workers, with the award of various kinds of points, badges, or other meaningless awards, or in some cases actual small financial rewards, to incentivise the following of instructions. Gig economy firms in particular have become adept at offering drivers small cash bonuses at the exact moment required to encourage them to keep working. These kinds of targeted micro-incentives can encourage people to work when, where, and how they would normally prefer not to by taking advantage of human psychology to manipulate their behaviour. In this way some management algorithms can exercise far more control over the workforce while maintaining an illusion of human freedom and choice for the workers.

These algorithms also risk people becoming alienated from their work and their employer, as they threaten to cut human line managers out of the process. When a request to change shifts at short notice is decided by an algorithm rather than a human being, there is little room for compassion or discretion in the process. Whereas a human manager could make allowances for workers' difficult personal circumstances, it might be much harder to convince algorithms to make exceptions from their rules unless there is a human manager able to step in and overrule them. On the other hand, some employees might welcome the transfer of some decisions out of the hands of their line managers.



> **“Whereas a human manager could make allowances for workers' difficult personal circumstances...**

Some of the shift allocation software in particular can be quite empowering for frontline workers, as it enables them to do things like swap shifts with one another directly through the software without needing to run such requests by a line manager first.

Of course, workers' experiences with this kind of self-service HR software very much depends on the quality of the software itself. Where the user interface is difficult, the software is prone to bugs or where there is a lack of transparency or explanation in how decisions are reached, employees are more likely to be frustrated than satisfied. If workers' requests for annual leave or changed shifts are repeatedly met with a 'computer says no' response and no further explanation, it is a recipe for disaster in terms of workforce relations.

More advanced uses of workplace decision algorithms to do things like completely restructure organisations on a dynamic basis are still at their early stages but show what the future might look like for many. Publicis, a multinational marketing firm, is an early leader in this area, using algorithms to constantly reorganise and reassign its 80,000 employees to project-specific teams every time a new project is started, recombining them based on its assessment of what skills are needed.[xiii]

In the long run, while algorithms can take over some of the planning and directing functions of line managers, the need for human managers should always remain – a world where every day work for many means following constant instructions from an unchallengeable machine and not interacting with other humans is not a world that most of us would want to inhabit. Even if some tasks, such as shift allocation or other routine activities can be automated safely, the time this frees up should instead be used by managers to spend on more human-centric activities that no machine will be able to do for the foreseeable future. Skills such as coaching, mentoring, and personal development, for example, will need human managers for many years to come, even if algorithms can support these activities in selected ways. Managers may well welcome the opportunity to spend more time on such activities rather than routine tasks such as filling out duty rosters and spreadsheets.

SUMMARY OF KEY POINTS FOR UNIONS TO BEAR IN MIND:

- Self-service software for scheduling shifts, annual leave or similar, providing it functions well, can greatly improve convenience for workers and avoid favouritism.
- Such software, however, needs to be transparent in its workings and allow room for human compassion. It should always be possible to appeal to a human manager with the authority to override the software and make an exception.
- Unions should be wary of gamification techniques that use algorithms to manipulate workers into making choices about when and how they work that might not be in their long-term interests.
- Efficiency can definitely be taken too far. If algorithmic management is pushing workers to be constantly operating at 100% physical or mental capacity it can take an enormous toll on the workers.
- Workers and their union representatives need to be informed about and have access to data being used by employers to make decisions affecting the workforce, and workers should have the opportunity to challenge any inferences that algorithms are making about them and their behaviour.
- Using automation to replace the role of the human manager would be ill-advised; algorithms should be used to advise managers but not to replace them.

PERFORMANCE MANAGEMENT ALGORITHMS

The final kind of management algorithms that are seeing widespread use are those which cover surveillance and evaluation of the workforce; what might broadly be termed as performance management algorithms. These can include:

- Algorithms that track physical or digital worker activity, checking when people log in and log out, whether they are at their desks or what software they have open on their computers.
- Algorithms which read the content of employee emails and other messages, looking for keywords or conducting sentiment analysis.
- Algorithms that measure and assess workers against output or performance targets or other benchmarks.
- Algorithms that use customer ratings to measure employee performance.
- Algorithms that take all of the above and convert it into recommendations over which employees to promote, award bonuses, or fire.

In all these cases, serious concerns exist over the degree of surveillance this can lead to as well as important questions around consent, transparency and how any collected data is being used.

Let us look first at the level of surveillance. There are many suites of workplace surveillance tools available. Some simply monitor whether employees are active and at work, such as desk-sensors or software that checks if remote employees are logged in. Others go much further, monitoring the type of activity that workers are doing, where they are in the workplace by tracking their movements, when they take bathroom breaks, what software they are using, how many words they are typing, how many phone calls they are making and so forth. The most intrusive of all are those which actively watch and analyse what words workers are saying or typing. This includes tools like Humanyze – a wearable device that monitors team dynamics by listening to workplace conversations, or Terramind – one of the leading employee monitoring tools which offers live and recorded stealth tracking of everything an employee types or does at work and allows CEOs to set up keyword triggers to automatically receive alerts if employees start talking about their bosses in internal emails.[xiv]

Attempting to introduce these types of tools without the consent of the workforce can lead to workplace conflict. When

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tested at both Barclays and the Telegraph, even the simple kinds of activity monitors such as the OccupEye software that measures time spent at the desk in an office led to employee revolts, forcing the employers to backtrack.

Unions clearly need to negotiate with employers around what degree of this

surveillance they are prepared to accept and what they consider excessive and unjustified. In order to come to these decisions though, workers and unions first need to make sure they are aware of what surveillance tools are actually in use in their workplace. In some jurisdictions, particularly in the USA, regulations allow employers in many cases to surveil and to monitor employees covertly without their awareness, let alone their consent. In other areas such as the EU, regulations are stricter as a result of both GDPR and Article 8 of the European Convention of Human Rights concerning the right to respect for private life and correspondence. As a result, employees must be informed about data gathering about them, and requirements of proportionality and data minimisation apply in law.[xv] [xvi] Unions should be aware, however, that many off-the shelf employee surveillance tools and other management algorithms are designed with the US market in mind and may come packaged with features that are not lawful for use in other jurisdictions such as the EU – something that employers and the retailers themselves might not be as aware of as they should be.

“Other call centre workers have complained of “Feeling like the only appropriate way to display emotion is the way that the computer says”.

Many performance monitoring algorithms are common in call-centres, which have clear metrics for productivity and success that can be tracked. While older systems would simply track the number of calls each worker made per hour, modern algorithmic tools such as Cogito or Voci use voice analytics A.I. to provide real-time feedback to workers about whether they are speaking too fast, sound too tired or insufficiently empathetic, or to offer other advice of the kind that human managers would traditionally have given.[xvii] These kinds of call-monitoring systems come with serious flaws, however. Complaints have been made about the Call Miner software used to monitor Santander’s US call centres, noting that it fails to recognise the words of employees with certain accents or speech impediments, hurting their ratings or forcing them to adopt unnatural speech patterns.[xviii] Other call centre workers have complained of “Feeling like the only appropriate way to display emotion is the way that the computer says”.[xix]

Worse, these kinds of software are often used in a so-called ‘rank and yank’ strategy of ranking all employees’ performance against one another and then automatically disciplining or firing those in the bottom percentiles every month, with little regard for personal circumstances and without making any effort to invest in training and support to correct shortcomings. This use of relative rather than absolute rankings is particularly pernicious – half of the workforce by definition will always be below average, and someone is always going to be at the bottom no matter how hard they work This kind of constant pressure, of knowing that you are being constantly monitored and risk losing your job if those around you work faster than you, has major risks for both your psychological and physical health.

This practice is particularly notorious in Amazon distribution warehouses, where the ease of replacing workers who burn out from overwork has led to the target rates of items that workers have to process per hour being ratcheted up relentlessly, under the watchful eye of algorithmic monitors on the lookout for those who fall behind. The result: increased stress, repetitive strain injuries, back and knee pain and an overall serious injury rate affecting 10% of the full-time workforce – double the national average in the US for similar kind of work.[xx] The level of injuries is so great that Amazon has installed painkiller vending machines in some warehouses, and in the UK, ambulances were reportedly called to warehouses once

every two days in 2018 due to workers regularly collapsing on the job.[xxi]

These kinds of real-time continuous feedback and performance review tools are spreading to more types of workers in different sectors, beyond the traditional call-centre and warehouse deployment. In some cases, they are now applied to home-based workers and self-employed contractors as well. WorkSmart, Time Doctor, and Microsoft's Workplace Analytics are examples of the kind of productivity software that is increasingly used to monitor remote as well as office-based workers, tracking things such as mouse clicks, keystrokes and other computer activity, and taking regular webcam photos to ensure workers are at their desks. For some workers, the use of such software by their employers has been intolerably oppressive, with the system docking pay automatically every time they are detected to be idle or discouraging workers from listening to music or taking bathroom breaks in their own homes for fear that the algorithm will mark them down for what it considers unproductive activity.[xxii]

This technology can also be used in positive ways if properly deployed and regulated. Where data collected is aggregated and anonymised it can be used to improve systems and processes without individual employees being pressured to meet the algorithm's expectations out of fear for their jobs. Insofar as this continuous data gathering on employee performance supports a shift away from the single annual appraisal towards a model of continuous constructive feedback and development it may be welcomed – but only if the role of algorithms is limited to advising and supporting human line managers in having those conversations. Where the human line manager is taken out of the performance review process altogether there is a serious risk that workers become disengaged, grow to feel that their employer is cold and impersonal, and skew their behaviour towards hitting only the targets measured by the algorithm rather than caring about job performance and personal development in a more holistic way. In the Santander case mentioned above, for example, workers reported that the excessive focus on performance metrics limited customer interaction and put consumers at risk.

What algorithms can do, however, is to collect factual data about workplace performance and present it in an impartial way that might help line managers overcome their own unconscious biases about their team members and deliver their feedback in a fairer and more

“This technology can also be used in positive ways if properly deployed and regulated.

informed way. Algorithms can also have a role in spotting patterns that help to uncover issues line managers might not have noticed – if for example an employee is regularly having difficulties with a particular task because they don't have the right equipment, or if a certain employee's performance and punctuality always suffers on dates that correspond to school holidays, which might point to childcare struggles at home for which an employer could make allowances or suggest more flexible or remote working options.

Another positive use of performance management algorithms can be to identify workers who need extra training or assistance. Using algorithms to identify workers who are struggling is not necessarily a threat to those workers, providing the response of management is to provide extra support rather than attempt to get rid of them. Once again, the ethics question is determined not by the tool, but the purpose for which it is used. IBM's Watson computer system has been used to identify with high accuracy workers likely to quit in the near future, so they can be targeted for extra training, promotions or pay rises to improve staff retention rates.[xxiii] Team Space, an in-house app at Cisco, is used to help managers understand how their direct reports work best and what management style or coaching tips are mostly likely to be welcomed by them.[xxiv] The role for unions is to make sure that this data-collection and analysis is always proportionate, transparent, and leads to constructive human-led feedback from the employer.

Another area that unions should be wary of is the assessment of workers' performance not through analysis of objectively measurable outputs but through the use of customer rating systems. Again, a practice being imported from the gig economy in several countries, this can be a dangerous backdoor to discrimination, transforming customers' own gender or racial biases into consequences for workers' careers while shielding the employer from liability.[xxv]

Similarly, unions should be suspicious of any performance management algorithms where the criteria used to assess workers are not transparent. The claim that algorithms are unfathomable black boxes should not be permitted for important decisions about workers' lives. All too often this can lead to employers adopting an 'information alibi' where they claim that it is not the employer criticising an employee, firing them, or denying them an opportunity, but simply the algorithm saying so. Attempts to pass the buck of responsibility for decisions in this way should be strenuously resisted – algorithms are not responsible agents and there should always be a human manager able to both explain and take responsibility for any ultimate decisions. 'Because the algorithm said so' should never be an acceptable explanation for why an employee has been fired, denied a promotion or pay rise, or faced any other significant consequences.

SUMMARY OF KEY POINTS FOR UNIONS TO BEAR IN MIND:

- Unions need to make sure they are aware of what surveillance and performance monitoring tools are in use at their workplaces, bearing in mind that some might be covert. Check the legality of data collection without awareness or consent in your jurisdiction.
- Where performance monitoring is going on, it is more likely to be beneficial to workers when workers themselves have access to the data and outputs about their own performance.
- Consider how algorithmic assessments of performance and behaviour at work could be used to better target training, support, or reward to employees, rather than just impose sanctions on poor performers.
- Be very careful about the use of customer ratings feeding directly into employee performance metrics - this can be a backdoor to bias and discrimination.
- Make sure that algorithms are never used by employers to avoid responsibility for their decisions. Decisions affecting employees should always be for an explainable reason, according to transparent criteria and open to appeal.

KEY DEMANDS FOR UNIONS

Below is a final summary of key demands that unions should make when negotiating about algorithmic management with employers. Ideally unions should aim to secure an 'algorithmic use agreement' with employers that covers all of these points.

1 Workers should have a right to be made aware of any algorithmic management tools being used that affect them and to challenge the use of any tools they consider harmful.

2 'Human in command' should be the overriding principle. It is never acceptable to pass off responsibility for key decisions to non-human agents. Algorithms should advise, humans should decide. Workers should always have the right to appeal to a human authorised to override the algorithm.

3 Algorithms should be used to support human managers, but never to replace them. The lesson from the world of chess is that 'centaur' teams combining humans and computers outperform either humans or computers alone. Likewise, in the workplace, a human manager supported by algorithmic tools is likely to be a more effective manager than when being replaced altogether by an algorithm.

4 Transparency in how decisions are made is essential; algorithms should use publicly known criteria and their decisions should be explainable in clear understandable language, not technical jargon. Clear records should be kept of what decisions have been made and why, so that they can be checked in case of future challenges.

5 Anyone programming or purchasing management algorithms needs to be properly aware of the risks of bias and discrimination and take all possible steps to mitigate them. Algorithms should also be regularly audited by independent third parties, chosen jointly by both employers and unions, to check them for biases or discriminatory outcomes. The results of such audits should be available to anyone affected by algorithmic decisions, including union representatives.

6 Any data collection or surveillance of the workforce should be for a clearly justifiable purpose. Personal or other sensitive data such as the content of emails, conversations or location tracking should not be collected without explicit consent.

7 Workers should have access to any data collected about them at work and any algorithmic assessments of their performance. When they leave employment, they should have a right to request that any personally identifiable data still held about them by the employer be deleted.

8 Any benefits that accrue from algorithmic management, in terms of greater productivity, greater flexibility or more information and insight, should be shared with the workforce on equitable terms.

9 Companies investing in algorithmic tools should also draw up a 'people plan' to invest in parallel in their workforce, mapping skill profiles and upskilling workers in areas that will become more important after algorithms are introduced, while helping workers reallocate their time or move on to new roles where their work is being automated.

10 Before adopting any algorithmic management tools, employers should first carefully reflect on why and whether they are actually needed at all. If the answer is simply 'because we can', the project should not go ahead. Algorithmic management tools should never be adopted simply because they are trendy or because competitors are doing so. Even where there is a genuine workplace problem to solve, in some cases the problem could be addressed through genuine human discussions with the workforce instead.

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