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A SPECIAL REPORT ON THE

Relationship between AI and Humans

AiTH, NUS Business School

ARTIFICIAL INTELLIGENCE:

Just who is in charge around here?

AN EXCLUSIVE INTERVIEW WITH DAVID DE CREMER,
Founder and Director of AI Technology for Humankind (AiTH)

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COVER STORY:
AI FOR HUMANKIND

ARTIFICIAL INTELLIGENCE

Just who is in charge around here?

AN EXCLUSIVE INTERVIEW WITH **PROFESSOR DAVID DE CREMER**,
FOUNDER AND DIRECTOR, CENTRE ON AI TECHNOLOGY FOR HUMANKIND, NUS

The employment of artificial intelligence is proceeding ever faster all around us – not least in business and commerce. Will its use be driven by purely commercial forces or can we control it to the overall benefit of society? Professor David De Cremer of the National University of Singapore believes we need to aim for AI tempered with humanity.

Q Hello, Professor De Cremer. Thank you for taking the time to talk to us. Just to orient ourselves a little, I wonder if we could start off with rather an obvious question. "Artificial intelligence" is one of those terms that we hear and use quite a lot but, when challenged, we may have differing ideas about what exactly they mean. What, for you, is artificial intelligence? And what is the relationship between AI and algorithms?

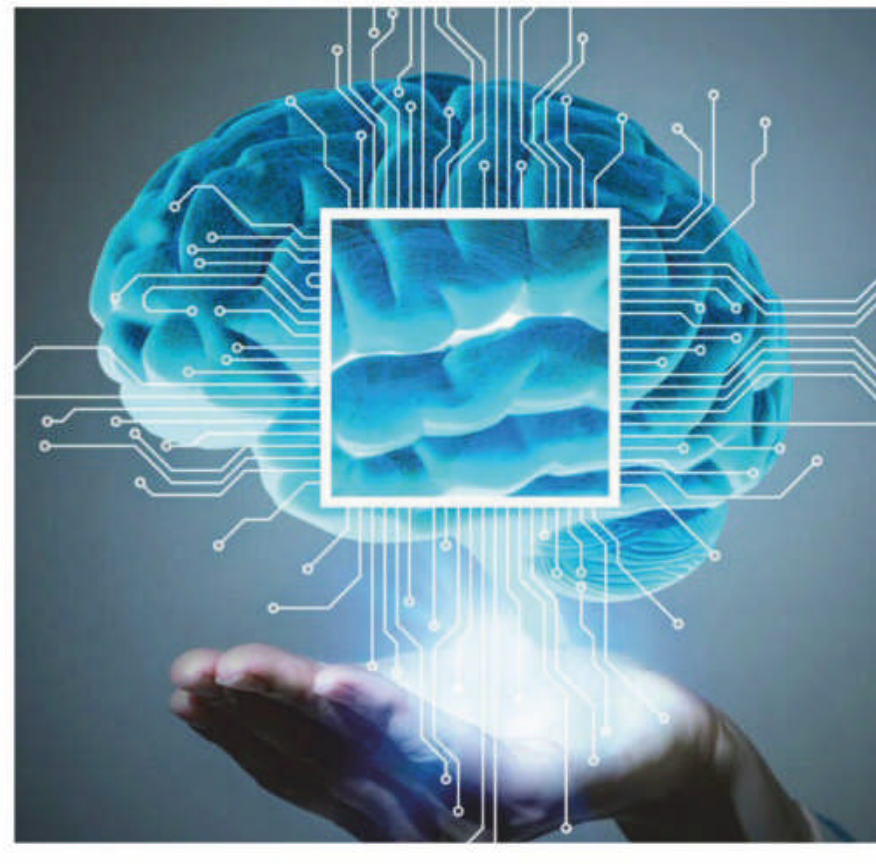
A It's good to always start with a clear definition, because I've noticed over the years when studying the results of the surveys that big consultancy companies set out, many executives in their response to questions such as whether their company has adopted AI or not, refer to many examples that technically speaking cannot be defined as AI. So, there is still a lot of ambiguity about what AI actually means and how it can be used.

In my view, the simplest definition of AI is computers showing actions and decisions that seem intelligent. As it is a machine that displays these decisions and actions, we call it "artificial intelligence". It's not human intelligence, but it imitates or models it. Computer scientists design algorithms that represent a model in line with specific calculative rules to make predictions. Usually, in the case of supervised learning, this prediction model is based on training data and then used to make predictions with respect to new situations (i.e. new data). In its essence, AI is an elegantly framed version (albeit in somewhat mysterious ways to lay people) of statistics.

The simplest definition of AI is computers showing actions and decisions that seem intelligent. As it is a machine that displays these decisions and actions, we call it "artificial intelligence". It's not human intelligence, but it imitates or models it.

Q Could you give us some background on your work at the National University of Singapore Business School Centre on AI Technology for Humankind? What were the drivers to the setting up of the Centre?

A At AiTH, we believe that the development of AI technologies must be understood and examined in the context of collaboration and co-creation with humans. Our aim is to study, explore and develop deep insights into how AI technologies should be advanced with human-centred choices, promoting creativity and happiness whilst serving and enhancing human identity. This may sound a bit abstract, but the main gist is that given the way AI is developing and the amazing, and even wishful, prospects regarding the use of AI, it is necessary to reflect and study that we use AI in ways that benefit humanity. In other words, deciding to adopt AI in your organisations and societies has to be motivated by human-centred concerns. In our centre, we are not obsessing too much about the potential threat to the existence of humanity as a whole, as these horror stories are not a reality right now or in the next few decades, but primarily focus on the question of whether the choice of AI and automation will



facilitate the well-being, effectiveness and performance of the human end user. So, we need to find the perfect balance to enjoy the benefits and opportunities of AI, whilst ensuring these advances serve our human identity and values. A fear we do have is that if AI is adopted in rather mindless ways – without a reflective attitude – we can easily start a slippery slope where the way we work, interact and manage our societies will adapt to the way the machine works. And, if this happens, then society will over time become more suitable for machines to live in, rather than for humans. It would entail a shift from humans as being the ones to serve towards serving the employment of the machine itself.

An important driver was that in the West I saw that a focus on the humane and ethical implications of AI employment was increasing. From tech entrepreneurs in Silicon Valley to academics in risk centres, more and more questions were being asked about the relationship between the increasing use of machines and the possible deterioration of humanity. In Asia, however, it was relatively silent when it came down to these rather existential questions. China, as the dominant nation in Asia, of course, has a strong focus on advancing AI technologies, but the way they look at its governance, ethics and the use of technology for human welfare is quite different from what we have seen in the West so far. As a result, the rest of Asia has so far also not devoted much attention to the issue (although this is changing very rapidly). Singapore is often applauded as the place where East and West meet, so, in my view, it's the perfect place to have a centre like ours, where we ask existential questions that will, and should, occupy the whole world. We also notice that many companies in Asia have questions about these issues, so I like to think that with the establishment of our centre we can accelerate the demand for more human-centred development and the adoption of AI technologies in this region.

Much debate exists about whether AI will replace humans in their jobs. From a cost-cutting perspective - which most companies adopt - loss of jobs will definitely happen.

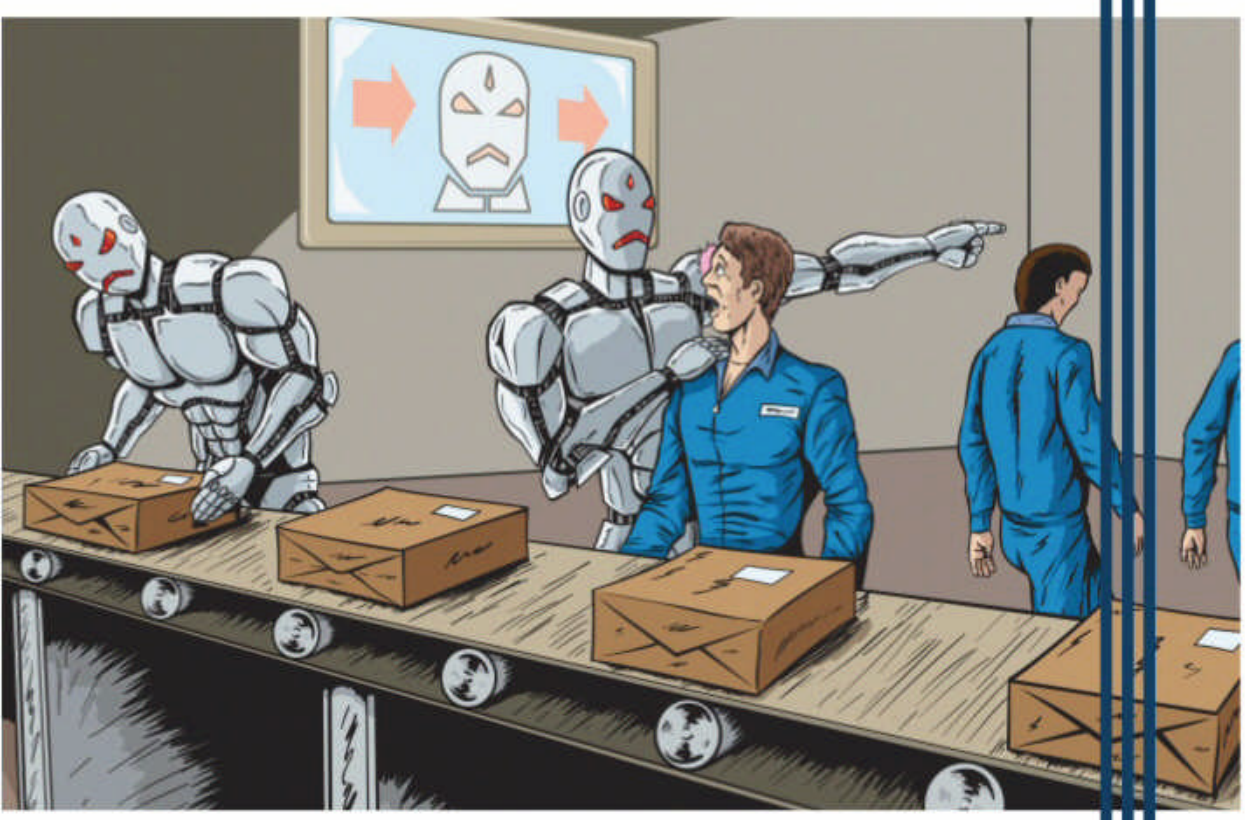
Q You've recently written a book, "Leadership by Algorithm", in which you discuss the range of issues connected with the ever-increasing presence of artificial intelligence systems in society, including the notion of fairness. Could you enlarge on the theme implied by the tag line of the book: "Who leads and who follows in the AI era?"

A AI is the new hero in the corporate world and, by extension, society. And, to some extent, this is not a surprise. Almost daily, we can see examples in the news, social media and research on how AI can

perform the most amazing tasks and solve challenges. It creates the hope and belief that AI will improve our lives significantly and, as such, it is almost a requirement that it needs to be implemented at different levels of decision-making in our organisations. The more AI becomes involved in the decisions we make, the more aware we are also becoming that, because it's fast, consistent and more accurate than humans, AI in itself may become a threat – a threat to our jobs. Much debate exists about whether AI will replace humans in their jobs. From a cost-cutting perspective - which most companies adopt - loss of jobs will definitely happen. At the same time, however, voices are also out there saying that the loss of these jobs will be compensated for by the fact that the employment of AI and automation will actually help people to deal with the more complex and creative aspects of their jobs. The reason for this is that AI will take over the routine aspects of the job. As a result, many new jobs could also be created. This may work if companies actively invest not only in AI adoption, but also in job enrichment, when AI becomes a co-worker; but I do not see that happening much yet.

Another, and less spoken about, threat is that algorithms today are guiding us in the decisions we take, the information we receive and read, and ultimately frame our understanding of the world around us. For example, in the Netflix documentary "The Social Dilemma", it is reported that the way we can have algorithms scan people's habits and preferences – which requires collecting their personal data - will determine the kind of information those people will be shown via search engines, AI platforms and so forth. So, in a way, AI is already guiding us. Just look at the fact that we stop for a red light and move on when the light jumps to green. Taking all of this together, I see in my classes that many executives and senior leaders have formed a belief that AI is everywhere and that everything will change. They are truly afraid of this. In fact, I regularly have senior leaders asking me whether they should not become a coder in order to stay in charge of their own destination and career.

After being able to replace physical labour by machine, we are now in an era where **we may be able to replace the human mind.**



Q Many of today's systems, arrived among us as a result of evolution. We may think of the road transport system, in which people in metal boxes hurtle towards each other on the same track at very high combined speeds. The system was never discussed or planned, but we accept it because it evolved into existence. The Internet and smartphones, too, came by evolution. It seems that we went flat-out in the name of progress, but omitted to plan and educate on the best ways for people to absorb these systems into their lives. The result is that it often appears that the systems control us, rather than us controlling them. As you said in a recent webinar on your book on AI, "We should reflect a little bit more." In the context of AI, is now the time to pause and think through all the issues? And should we all receive appropriate education about its adoption?

A I consider the time that we are living in today as a crucial one. After being able to replace physical labour by machine, we are now in an era where we may be able to replace the human mind. So, if both the human body and mind can be replaced, we are witnessing a crucial moment in our existence, where we could become obsolete. Such a moment in time requires some serious reflection on what it is that we want to achieve with these new technologies and how we can ensure that the end goal will still be the promotion of a humane society. First, such an

attitude implies that we will have to start looking differently at how we will design and manage our work floor in the future. Second, it also suggests that we may need to revise the way we educate our children.

With respect to the future of work, one big movement that has been started, and is accelerated due to COVID-19, is the push for employees to reskill themselves. On one hand, this is quite a normal response, because especially the pandemic has pushed organisations and society to adopt AI platforms more quickly in their operation. As such, employees need to be at least somewhat tech savvy, so they understand the developments that are taking place ("Why is it taking place and what does it mean for my job?"). However, we run the danger that these reskilling programs are pushing the hard, rational side of the job too much. That is, people may come to think that, in the world of machine, we all need to become coders and understand the new technologies as well as any data scientist. I know many people who are afraid of the future because of these concerns. And this is a problem, because if this were the case, then we would indeed be building a world that will fit machines best. In line with this trend, universities and societies seem to think it's almost a necessity that we want everyone to think like an engineer or a computer scientist. And this brings me to my second point.

The problem with this trend that I see is that humanities, social sciences and humanistic perspectives are increasingly being seen as a luxury thing to study, because it does not add to the "machine" skills we want people to pursue. If this trend were actually to materialise, then we would not only be reskilling, but also deskilling our people in their ability to be human and possess the unique qualities that define us as humans, such as perspective-taking, seeing and reflecting on the big picture, emotional intelligence, interpersonal skills and creativity. And, in my view, this is very much reflected in the education of our children. At a young age, we are monitoring and evaluating our children on cognitive dimensions judged to be important for future (business and tech) careers and trained in ways that emphasise rationality, consistency and avoiding failures. My daughter was evaluated at age 2 by her teachers, who showed concern if she did not score well on any of those dimensions. The whole culture was breeding a concern that kids would lag behind if they were slower in their development, as if they already had to meet certain (kid's) KPIs. When I mentioned that she is exposed to three languages at home and, as such, her brain at that moment was probably a chaos of which she would make sense over the years, meaning that I was not worried yet about her development, I was met with a certain disbelief. Under such a regime, children are kept away as much as possible from experiencing any failures, while excessive emphasis is placed on the need to be as perfect as possible and as soon as possible. It brings with it a pretty mechanistic approach to creativity, everyone doing more or less the same in a structured environment, as the teachers were using fixed metrics. In an ironic way, I felt that we were training our kids to become an algorithm, rather than having them run around freely, explore, and experience failures they could learn from without any measurements being around.

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And some of my fears are reflected in the numbers of countries that are using a competitive and rational model of education. For example, while their students achieve the highest scores in the mathematical skills, they are also at

the same time number one in being most anxious in life (to the extent that in Singapore, for example, students have reached such levels of fear of failure that they are afraid to pick up their test results). So, for the future, education will have to make sure that the interpersonal and emotional development of our children continues to be taken care of. In addition, if we push everyone to think too much like a machine, we run the risk of not developing their general sense of intuition and reflection abilities. It's my opinion that, at this moment, we do not need to develop more experts (that focus is already very much present in our educational systems), but we need more generalists who can see the "big picture" and identify challenges and come up with questions that we need to pay more attention to.

Q You have commented that there is a distinction between management and leadership. Could you enlarge on that idea? What is its significance for the employment of AI in business organisations?

A There is the famous saying that everyone can be a manager, but not everyone become a leader. In the scientific literature, a clear distinction is made between a manager and a leader and this distinction is recognised by many in the corporate world. For example, for decades we have heard the same quote in the business world that companies have too many managers and not enough leaders. What does this mean? Well, in a world where things change quickly, companies want people who can adapt to those changes and, hence, come up with creative and effective solutions. Such an attitude, of course, implies that people think out of the box and do not get stuck in the habit of continuing to do what they've always done. In fact, many organisations suffer from this problem, in which change projects are usually met with an attitude of "we've always done it this way, so, why change?" And this situation is mainly created because of how we look at and execute management.

Management has become a very metric-driven business, so to speak. Management is needed to keep the organisation relatively stable and well-structured and we use many metrics to assess whether this is indeed happening. But, of course, the world is volatile, and being competitive requires agility. Hence, companies today are not served well by managers focusing on the status quo. So, if a company has too much of a management mindset, then it's difficult to adjust, because the primary focus is on the short term, meeting KPIs and, as a result, being slow to see new opportunities and develop approaches to gain from those new opportunities. It is for that reason that the business world, in their aim of achieving a more agile mindset, is asking for more leaders and fewer managers. Leadership is the ability to give direction in times of change in order to create the value that the collective wants to see. Leadership does not deal with the status quo, but more with chaos. And, in this chaos, leaders have the responsibility to create a culture, and thus mindset, where people feel motivated and empowered to create value in more complex and uncertain settings. To do so, leaders need to facilitate and create conditions that allow others to do a better job.

This distinction between management and leadership is very relevant to how AI will play a role in helping to run an organisation. We adopt AI to make us more effective. Our focus is on innovation, and technology plays an important role in that. But, if we look at how we run our organisations, I see

In a world where things change quickly, companies want people who can adapt to those changes and, hence, come up with creative and effective solutions.

no innovation at all. In fact, our management philosophy is more than 100 years old and has not changed at all. In 1911, Taylor wrote a book on the scientific principles of management and, thus, management by system was born. Today, we are champions – by means of our metrics – in managing, to the extent that we are actually box-tickers but not innovators. From this perspective, we focus on routine and status quo, and this will lead to a situation where AI can replace us very easily, because, after all, routine tasks are the primary tasks AI is superior in. So, in my book, I say that management by algorithm (MBA) is definitely happening and, if we're not careful and don't train more in the soft skills that make us uniquely human, we run the risk of losing our leadership capabilities and ending up running organisations in automated ways. In that case, the work culture will feel robotic and even more metric-driven.

Q Given the increasing use of artificial intelligence in business and industry, will business of the future be a question of competition for who has the best algorithms? Or, rather, might it be more a question of who is most successful at integrating the human- and machine-based processes into the running of the business?

A Well, in my view, both will be needed. Competition will definitely be there, but there is a high risk that such competition will translate into monopolies. AI runs and learns based on data. Because we talk of the digital age, we therefore also assume that every company should have data in abundance, but this is not entirely true. If we adopt AI for relatively simple routine tasks which can be done by means of supervised learning, quite a number of companies will be able to provide the needed data. However, when tasks become more complex, and especially if unsupervised learning and reinforcement learning enter the equation, then most companies simply do not have the data. So companies who have access to more data to train machines will have an advantage, and those companies are the big names everyone knows – Amazon, Facebook, Google and so forth. Also, if we look at the biggest companies in the world, most of them are tech companies, which signals a kind of winner-takes-all trend; those companies have most of the data in the world and, because of their position, they will also take all the business. Such monopolies may therefore create other challenges whereby technology does not eliminate, but rather promotes, inequalities. We have to be careful here.

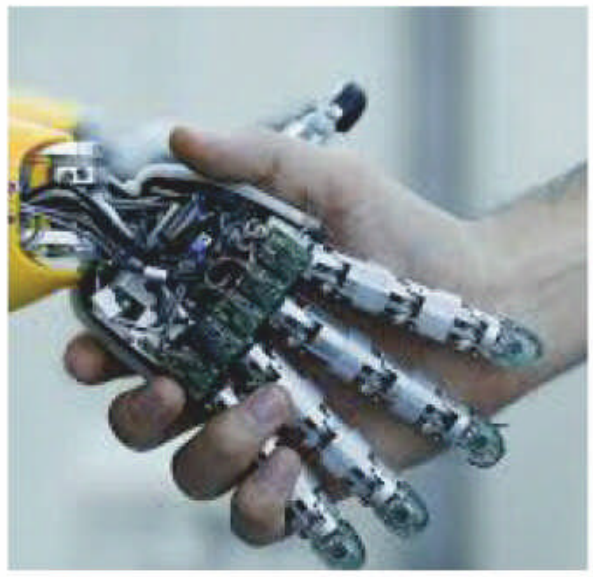
Organisational leadership needs to think in inclusive ways, so that diversity of thought is encouraged with the aim of creating a climate of digital inquisitiveness.

With respect to integrating the human- and machine-based processes into the business, if you decide to adopt AI platforms within your organisation then, yes, it will be important that machines can be integrated in ways that enhance

the performance of the workforce and thus promote the business processes at play. This implies, as I also elaborate on in my book, that organisational leadership needs to think in inclusive ways, so that diversity of thought is encouraged with the aim of creating a climate of digital inquisitiveness. Such a climate can help to integrate AI where the most value can be created and to encourage employees to provide continuous feedback, with the aim of improving the efficiency of AI use in collaboration with humans in a business setting. An inclusive mindset will also help to ensure that data scientists do not work in silos and are connected to business experts who can make clear what kind of business value needs to be created, why this is the case, and what the business processes are that algorithm programmers need to be aware of (as this may help prevent biases creeping in).

Q In your book, you discuss the concept of fairness in relation to machine-led decision-making, and suggest that perhaps human intervention could be the instrument of mitigating an AI system's shortcomings with regard to fairness. This would seem to place great responsibility on those charged with such intervention. Who would be appropriate arbiters in the evaluation of AI-based solutions in terms of utility versus fairness?

A AI fairness is an important topic right now, because the more we start involving AI in our decision-making, the more we are becoming aware that the outcomes that our algorithms produce can also be biased. For many believers, this is quite an inconvenience. Because AI is rational and knows no emotion or hesitation (in contrast to humans), it should logically reveal unbiased outcomes, but apparently this is not the case. And it's not such a surprise, because AI learns from historical data,



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so, if the data reveals trends that are recognised as biases today (e.g. in the past more men than women were hired for a specific job), then the outcomes that the algorithm calculates will be equally biased. What this example illustrates is that, first of all, AI does not have a sense of awareness of what kind of moral norms society endorses today, whether those norms have changed over time, how people feel about certain outcomes, and whether they are willing to accept them. This is, of course, not a surprise, because AI has no intentions, no moral compass and cannot be called either good or bad for these reasons. It has no way of feeling, knowing and explaining what it means to be fair, ethical and trustworthy and what that means to humans. Therefore, I recently outlined in a Harvard Business Review piece (here is the link: https://hbr.org/2020/09/what-does-building-a-fair-ai-really-entail) that AI fairness will have to be a collaborative process where the human ability to be less biased when judging other entities (in this case AI) compared to judging oneself can help to evaluate the outcomes calculated by algorithms. So, yes, responsibility for the fairness of AI will ultimately still rest with humans.

Q As you have pointed out, leadership supposes ability in soft issues, such as compassion, tolerance, empathy – in short, humanity. Moreover, for humans, a leader is required to have vision and be capable of inspiring and motivating. These are characteristics that are currently lacking in AI systems. When discussing AI systems, we tend to talk of "the machine", and it seems unlikely that humans could feel empathy with, or warmth towards a "machine"; hence they would be unlikely to submit to leadership by it. Can you see a day when, whether through neural imprints or some other mechanism, an AI system might garner enough "humanity" to gain the confidence and, perhaps, the allegiance of human employees?

A I'm not sure whether an AI system will understand humanity and act in "authentic" humane ways. But, they sure can imitate it and create certain affiliations with humans. For example, in the field of robotics, we see that we like to construe machines in ways that they look more or less like humans. Why is this? Well, psychologists call this the process of anthropomorphism, where non-human agents are made to look like a human, so we attribute to them humanlike characteristics, motivations, intentions and emotions. And this has positive effects. We tend to be more accepting of robots that look like a human, have a human voice, display human emotions and so forth. Our

brain recognises these humanlike attributes and almost immediately our biological system responds. Of course, these are not "authentic" emotions or humanlike intentions, but imitated ones, but they do influence us humans at an unconscious level. But, there is also an interesting phenomenon related to this effect, which is called "the uncanny valley". This effect refers to the fact that, if a robot looks too much like a human, then the positive effects that I have just outlined will be eliminated and people will show aversion to the robot. A possible explanation is that a robot that is almost indistinguishable from a human does pose some existential threat and activates "us versus them" thinking.

Q You refer in your book to Alan Turing's test of intelligence, in which a system's intelligence is evaluated by its behaviour, regardless of the internal processes that may be going on invisibly inside that system. In simple terms, if the system's behaviour is indistinguishable from that of a human, it may be said to be "intelligent". But, as you have observed, although such behaviour may look "real", in fact it's only an imitation which we know is not backed up by understanding. Is it enough for a decision-making system to imitate understanding? At what point would such a system be found lacking?

A Turing's ideas are still important today and were developed in a time where no attention was paid to how people were thinking, but rather how they were acting. In other words, the mind was considered a black box and only behaviour was considered to be a good indicator of what people were doing and why (i.e. the behaviourism paradigm). So, in the Turing test, the idea was that a human was communicating with a computer in another room. If the human communicator could not distinguish whether a computer or a human was in the other room, then it meant that machine was able – in line with behaviourism – to act as humans do and was thus considered intelligent. As we know now, imitation can do a good job and manage tasks as well – or even better – than humans do. However, there are, of course, limits to this.

First of all, people may be accepting advice from a computer and work with those guidelines, but as soon as they find out that the source of the advice is a computer, it only takes one bad piece of advice

from the computer to discount the machine entirely. On the other hand, if a human provides advice, he or she is not evaluated as negatively as a computer after a first failure. This example makes it clear that humans do prefer the "real thing" to deliver advice and help in decision-making. Second, in situations where people feel more personally involved or feel they are under scrutiny to be evaluated for something that matters to them, then they do not so easily accept technology that can imitate a human very well. For example, if you are evaluated for a bonus, promotion or a new job all together, then people most often prefer another human to make the decision and not a machine. Our own research shows that when algorithms are used to evaluate people in terms of who they are, which is the case when being considered for a job, these people show dislike towards an automated decision-maker (algorithm aversion). One reason for this is that AI is a machine and people believe that machines do not have the ability and empathy to know what it means to be a human. And, for that reason, people consider it

A robot that is almost indistinguishable from a human does pose some existential threat and activates **"us versus them" thinking**.

inappropriate for a machine to evaluate humans in their core. Only other humans should be allowed to evaluate humans in such a way and the reason for this is that humans have their own AI, which I call "authentic intelligence".

Q There are numerous ways in which many of us have become dependent on what we have come to think of as "technology", such that we would have great difficulty in functioning without it. As an example, many of us are so lazy in our use of satellite navigation systems that we consign all responsibility for choosing a route to "the machine". Unfortunately, when the system fails, we are likely to be even more lost than if we had not used the system in the first place, simply because we haven't even bothered to think about the matter. Moreover, even our ability to navigate for ourselves might have become compromised through lack of use. Might we see a similar dependence growing as a result of the increasing presence of AI systems in our lives, as we cede our perceived responsibility for our own destiny to "the machine", and simply lose the habit of analysing and responding to situations for ourselves?

A Many of the current examples of humans "following" AI systems take place in settings where a choice can be made. When Amazon, Netflix or YouTube say "You may also be interested in these …", their suggestions are driven by complex algorithms; but (for the moment, at least) we have a choice about whether to follow their "lead". (Whether we choose to exercise that choice is another matter.) But that's different from a situation where the algorithm tells us what to do – and offers us no choice. When we reach that stage, we've made a fundamental transition, where we have ceded authority to a non-human system, perhaps without even realising we've done it. When we arrive at this point, an important question to address will indeed be whether there should be some kind of "government health warning" to advise that all or part of some given instruction originates from a machine. And I do believe that should be the case.

Our own research shows that people definitely do not want to cede authority to an algorithm. Across a variety of work situations, we arrived at the conclusion that people have no problem with delegating some part of the job to AI, but they always want to have control over the final outcome. We found that humans wanted on average 70% of control over the job, and the machine was allowed up to 30%, which indicates that the majority vote will have to stay in human hands. But, if we look at platforms like Netflix or YouTube, then we see that at a more unconscious level we do follow more easily than we consciously want. And the fact that we may not always be aware of our tendency to follow the easiest path, often delivered by algorithms, will likely make it a necessity that some warnings or labels will have to be used in time to increase awareness of who is making the decisions, especially if it comes down to the kind of values and ethics we are following.

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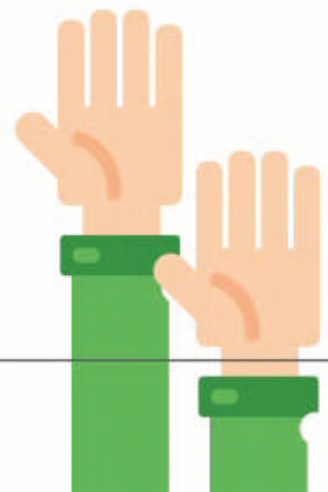


Q In your book, you put forward the idea that "AI may become our new boss." This would seem to be quite a highly charged statement, and one that has a range of implications. Do you think we are going to need some mechanism for assigning a level of authority or "power" to AI systems? Shouldn't "the machine", too, have some obligation to demonstrate its suitability to command.

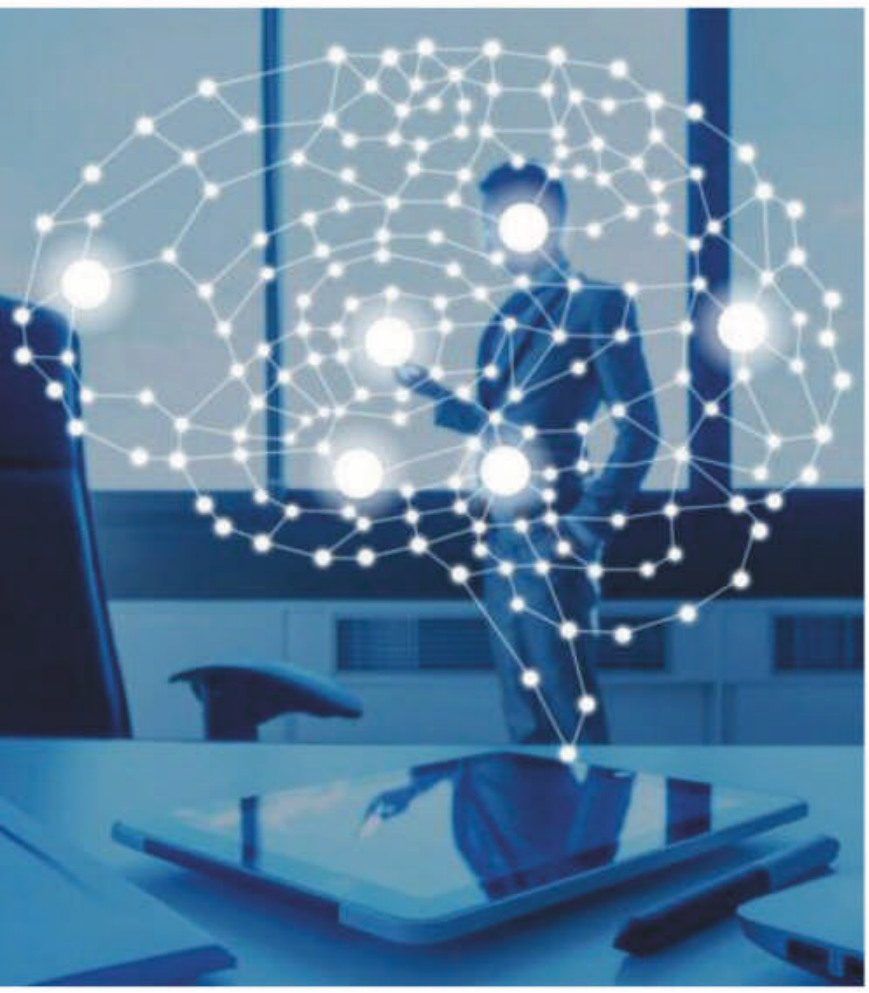
A job is, of course, more than simply doing one task, just like running a company is also more than simply calculating a strategy. **So, AI becoming your boss will not quickly happen and, if it does, then the lower-paid jobs will be hit first.**

A I start with this idea, yes, but I do not conclude the book with it. This idea has become popular among thinkers who focus on AI as a serious existential threat – as can be seen in Hollywood movies like "Terminator". In that perspective, AI will develop into a supernatural force that will have the power to eliminate humans. But, as I make clear in my book, we need to be more realistic about what it is that AI can do and what it cannot do. And, if we engage in that thinking exercise, then it becomes clear that the AI we know today will outperform us when it comes down to routine tasks, which will lead to the earlier-mentioned management by algorithm (MBA) effect. But, a job is, of course, more than simply doing one task, just like running a company is also more than simply calculating a strategy. So, AI becoming your boss will not quickly happen and, if it does, then the lower-paid jobs will be hit first. As a case in point, assembly line workers at Amazon are facing such a situation, as some of them were fired by an algorithm, without necessarily having a human supervisor being involved. So, here you see the real MBA already happening, because these jobs are easy to bring back to executing one task that can easily be monitored and measured. The end result, of course, will then also be that humans are reduced to numbers that are evaluated by machine. In that case, we will be on a path to creating a world that is more suitable for machines than humans. After all, humans will be required to start acting like a machine and that is not really the reason why we want and should apply AI technologies.

Q **For humans to feel any kind of allegiance to an organisation, it's important that they feel appreciated. Even if an AI system were able to give a perfect imitation of appreciative behaviour, it would be obvious that, in fact, the system had no understanding of the concept of appreciation. Of course, it may be argued that many human managers also synthesise their feelings of appreciation of their subordinates. Nevertheless, even such feigned appreciation might have more credibility than that apparently shown by a machine. Will it ever be possible for an AI system to replicate appreciation in any meaningful way?**

A As I mentioned earlier, when information is provided that is relevant to how people look at and define themselves then they are very sensitive to the credibility of the source. In those situations, having a machine communicate this information, no matter how nice the voice may be and how respectful the text is construed by the computer (based on, for example, natural language processing abilities), the information will always be seen as not that relevant, because it comes from an entity that does not know what it means to be human. Will AI ever reach that stage? Well, in a way it depends on whether people will ever construe a belief that they will think that the computer has achieved a stage where it has some consciousness to understand humans' concerns, needs and emotions.

But, to give you a more precise answer, let's take a look at the synthetic life form with AI, called Data, in the Star Trek franchise. In several episodes, Data shows remarkable intelligence and does things no human can do, but, at the end of the day, Data does not



No matter how sophisticated the adopted AI platform will be, we still need business leaders who are able to demonstrate good leadership.

succeed in understanding human emotions. How emotions feel, how they make man act in sometimes unpredictable ways – it all remains a mystery to the machine. This anecdote shows me that it will take a very long time before we ever may develop or help develop a machine with self-awareness, if ever. And, as long as this does not happen, we will not equate machine's appreciation in a meaningful way.

Q Finally, you are very much involved in the debate on AI and the future. The issues are clearly very significant and are certainly going to have a huge impact on society. Are you optimistic about the future, or worried?

A Optimistic, because I choose to look at life like that, but also because we have developed something that can bring amazing value to our society and our efforts to bring more welfare and happiness. But, I'm also a bit worried that, in our pursuit of expanding our horizons, we may not stay humble enough to assess continuously whether our technological developments are helping humanity or simply showing how capable we are as species of designing "the unimaginable". If we do not show that humbleness and stay aware of human-centredness as a core value in any technological development, then we may think we are in control, whereas the reality may be that we have ceded authority already - without being aware of it. Another point of concern is that we are overselling the power of algorithmic authority today to our businesses. As a result, too many organisational leaders believe that AI can solve many of their problems and, at the same time, cut costs significantly. A kind of "blind belief" has come to the surface, and it's deceiving us. An important reason is that most of our business leaders are not tech savvy enough to understand the potential of AI, while at the same time also being realistic enough about the limitations of AI. At the end of the day, no matter how sophisticated the adopted AI platform will be, we still need business leaders who are able to demonstrate good leadership every day and succeed in using AI in ways that facilitate – and not overtake - the effectiveness of their workforce. EBR

Executive Profile

David De Cremer is the Provost chair and professor in management and organizations at NUS Business School, National University of Singapore. He is the founder and director of the Center on AI Technology for Humankind at NUS Business school; which is a platform developing research and education promoting a human-centered approach to AI development. Before moving to NUS, he was the KPMG endowed chaired professor in management studies at Cambridge Judge Business School (CJBS) and is currently an honorary fellow at CJBS and St. Edmunds College, Cambridge University. He is named one of the World's top 30 management gurus and speakers in 2020 by the organization GlobalGurus, named as being among the top 2% scientists in the world in 2020, and has published over more than 300 articles and book chapters. He is also a best-selling author with his book *"Huawei: Leadership, culture and connectivity"* having sold more than one million copies. His most recent book is *"Leadership by algorithm: Who leads and who follows in the AI era?"* (2020) and has received critical acclaim by, among others, The Financial Times and the World Economic Forum.

BLUE OCEAN ROBOTICS
- for humans

Saving Lives
every day

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- part of Blue Ocean Robotics

By AiTH, NUS Business School

A Focus on the Relationship between AI and Humans

The development of artificial intelligence (AI) promises amazing opportunities for transforming our lives and the way we work. It will help elevate our human potential in ways we cannot yet see or even imagine. But what are the challenges that lie ahead? Amid the hype and excitement, there is a risk that allowing technology alone to dictate the course of development may bring with it as yet unknown threats to our human condition. Indeed, in 1965, the British mathematician I.J. Good already wrote, "An ultra-intelligent machine could design even better machines; there would then unquestionably be an 'intelligence explosion', and the intelligence of man would be left far behind."

Of course, what does human intelligence mean and is it the same as the intelligence of a machine, which basically depends on recognising ones and zeroes? Despite this difference, it is nevertheless the case that, in line with the idea that we were able to replace our human body by steam engines, cars and so forth, with AI in the works we will be able to replace our minds. Hence, with the arrival of AI in our societies and organisations, it seems as if we have arrived in a phase of our human development where, for the first time, we face an existential threat that both our bodies and minds can be replaced and, by definition, man in his totality. And, if we are able to replace man by machine, what kind of world are we building?

We have arrived in a phase of our human development where, for the first time, we face an existential threat that both our bodies and minds can be replaced and, by definition, man in his totality.

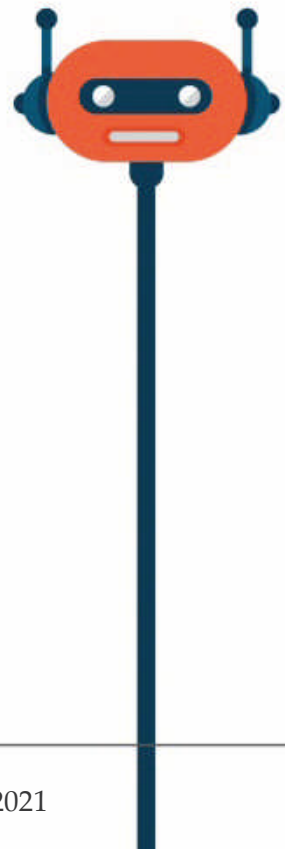
Some critics have argued that by the rapid development of AI and the notion that we can now replicate our thinking, the expectations of the world of tomorrow may be based more than ever on a mechanistic, rational perspective that will fit the employment of AI more than it will fit the use of humans. At our Centre on AI Technologies for Humankind (AiTH), located at NUS Business School (Singapore), we believe that the initial idea behind our efforts to let algorithmic presence grow in our organisations is, and should always be, to optimise the workings of a humane society. The idea is not, and should never be, to upgrade and implement AI at such a level that we ultimately forget to serve the human aspect of our quickly developing society. The end user is human – not technology. We do not innovate AI applications to

create a society where the end user becomes the algorithm itself. If we were to do so, then we would have to conclude that the goal driving today's AI revolution is to develop the most perfect technology possible – without regard for the kind of society we will be creating. Moreover, if this is really the case, then we are developing technology solely for the sake of making technology perfect, and nothing else.

At AiTH we believe that the development of AI technologies must be understood and examined in the context of collaboration and co-creation with humans.

But are we really going to see, in spite of our present fears, this kind of transformation in which the machine will be put in the dominant position and thus colour the existence of the world of tomorrow? We believe that this will not be the case. The aim should always be to use technology for good and, in this case, that means employing AI in ways that benefit the human identity and the values that provide content to what it means to be human. This way, we can become even more efficient in being human and achieving better outcomes in line with our values.

Today, more than ever, organisations need to be very much aware of the kind of social value they want to create by means of their decisions. In fact, in the summer of 2019, the Business Roundtable, led by JPMorgan Chase CEO Jamie Dimon and including leaders from some of America's biggest companies, announced that decisions made by organisations should reflect the interests of not only shareholders, but all stakeholders. Determining this kind of social value remains a human task. Indeed, although today the topic of AI ethics is a popular one in many debates, it remains reality that AI is about statistics and, therefore, does not have the sense of meaning and empathy to decide and reason about what is meant by moral intuitions, ethical implications and doing good for others. It is as Melanie Mitchell noted in her book *Artificial Intelligence: A Guide for Thinking Humans*: "even today's most capable AI systems have crucial limitations. They are good only at narrowly defined tasks and utterly clueless about the world beyond." If AI does not understand what the world means to humans and what it means to be a human in a social world, then it is not entitled to make ethical decisions on behalf of humans.



For all these reasons, at AiTH we believe that the development of AI technologies must be understood and examined in the context of collaboration and co-creation with humans. Our aim is to study, explore and develop deep insights into how AI technologies should be advanced with human-centred choices, promoting creativity and happiness whilst serving and enhancing human identity. To promote our human-centred view on technology development and what the future of work will look like in terms of human-machine collaboration, in this issue we present some of the thought leadership that has been developed at AiTH. Specifically, in this issue you'll find a collection of six pieces representing research that is taking place at the intersection between technology, social sciences and humanities. We hope that you enjoy our insights and will consider it useful to your own thinking when it comes down to what role AI can and should be playing in the organisations you are leading and the business value that you wish to create.

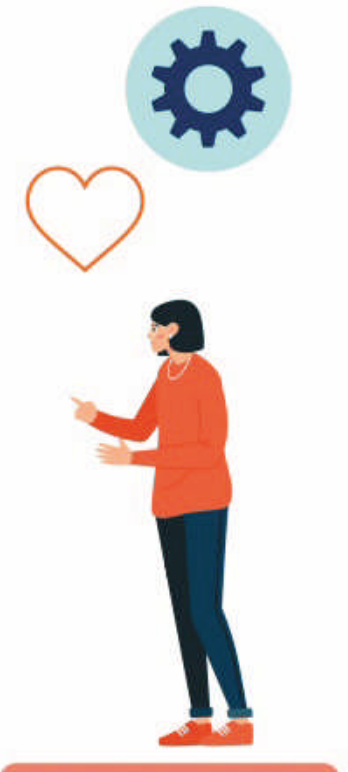
Sincerely,

Dr David De Cremer
Director and Founder of the Centre on AI Technology for Humankind (AiTH)
Website AiTH: https://bschool.nus.edu.sg/aith/
Website David De Cremer: www.daviddecremer.com'

ABOUT THE CENTRE ON AI TECHNOLOGY FOR HUMANKIND

Artificial intelligence (AI) is touted as the new hero of our future society. With AI applications on course to match or even surpass the capabilities of human intelligence, this may be no exaggeration. The evolution of AI promises to fundamentally transform how our future society will look and function. It promises many exciting opportunities, yet this development needs to serve a purpose and that purpose must be defined by the goals of humanity. In building our future society, we have an obligation to safeguard the capabilities and values that define humanity – compassion, forgiveness, empathy and proactive thinking.

We therefore believe that technology cannot and should not be looked to for guidance. Rather, it is our responsibility as designers, developers and collaborators to guide the development and employment of AI by means of our core set of human values. This responsibility implies that we need to research, explore and educate on ways of ensuring that we, as the ultimate end user, are able to adopt a human-centred mindset when bringing AI into our daily activities. At AiTH, we aim to unite talented researchers, thought leaders, business people and entrepreneurs in a scholarly environment to ensure that the AI we develop today will bring a bright and humane society tomorrow. I invite you all to join us in this exciting adventure.



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VISION

To be Asia's leading centre for thought leadership, ensuring that advances in AI technology improve the human condition through innovative research, education and policy-making.

MISSION

To develop and promote a human-centred mindset in the engineering of AI technology.

OUR VALUES

- **Tolerance**
  Whilst the objective of AI development is to optimise, it raises the risk of promoting a mindset focused solely on an end goal of perfection. We believe a human-centred society should be accepting and forgiving of failure and demonstrate tolerance. Tolerance allows failures to happen, driving our curiosity to explore solutions that would not otherwise be thought of in a blinkered quest for perfection alone.

- **Humanity**
  Any exploration of technology should serve the well-being of humans and promote the values of compassion, forgiveness and empathy that make us who we are. We believe this humanity should be at the core of developments in AI, so that any change in the design of our environment is fitting to our purpose.

- **Integrity**
  As a collective seeking knowledge to help us achieve a technology-empowered world built around human-centric choices, we value diversity in our perspectives and approaches. We consider values of fairness and ethics when assessing the disruptions technology may bring, and advocate for treating everyone with dignity and respect.

- **Mindful automation**
  We strive to be attentive to the consequences of automation at all levels in our society and organisations. We believe in a reflective and mindful attitude towards studying AI and automation efforts without challenging the notion of what it means to be human.

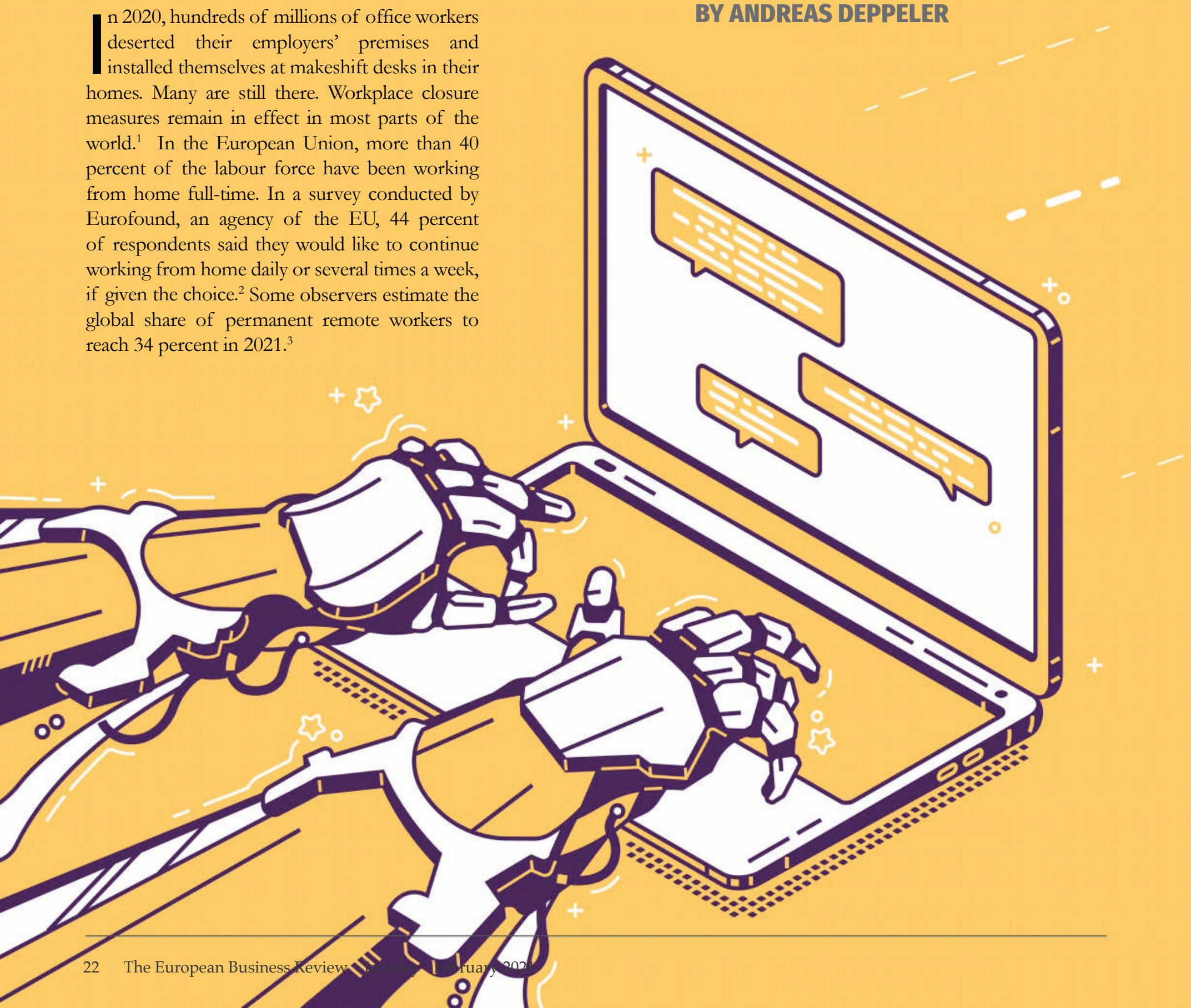
- **Broad-minded innovation**
  By embracing diversity of thought, we aim to create an environment focused on delivering the most creative and human-centred solutions for the advancement of AI technologies. We actively avoid a mindset where technology innovation is primarily seen as an end in itself, and emphasise the broader purpose of innovation for society and all its stakeholders.

The recent transitions towards having company personnel working at home while remaining digitally connected have sometimes been portrayed as furthering the ideal of empowering employees. But is one person's empowerment another's control? Andreas Deppeler considers whether this transformation has merely served as a channel for the increased application of people analytics.

WATCHED OVER BY MACHINES: AI AND SURVEILLANCE AT WORK

BY ANDREAS DEPPELER

In 2020, hundreds of millions of office workers deserted their employers' premises and installed themselves at makeshift desks in their homes. Many are still there. Workplace closure measures remain in effect in most parts of the world.[1] In the European Union, more than 40 percent of the labour force have been working from home full-time. In a survey conducted by Eurofound, an agency of the EU, 44 percent of respondents said they would like to continue working from home daily or several times a week, if given the choice.[2] Some observers estimate the global share of permanent remote workers to reach 34 percent in 2021.[3]



Remote working is not a new idea. Firms in the financial and professional services sectors have been consolidating, compressing and reducing office space for almost twenty years in an attempt to lower costs. In 2020, technology firms, which provide the information and communication tools that make flexible workplace models possible, were among the first to advocate a continuation of the practice. In May, the CEO of Twitter told staff that they would be allowed to work from home "forever". More recently, Microsoft's guidance to employees stated that "we view working from home part of the time (less than 50%) as now standard."[4]

How Management Remains in Charge

How does management remain in control of a workforce that is increasingly dispersed across geographies, locations and time zones? Most reports and proposals drawn up in 2020 by corporate marketing departments and consultancies convey a view that flexibility and agility must prevail over the rigidity and hierarchy of yore as businesses transition to the "next normal" or the "new now" of a post-COVID-19 world. McKinsey, for example, recommends that organisations "develop a culture that empowers people… rather than returning to central control and rigid processes."[5] By creating "networks of teams with clear, flat structures", the authors argue, "agile organisations" become more resilient against recurrent crises.

This uplifting narrative of "empowering people" stands in stark contrast to another phenomenon that has been making headlines in recent years: monitoring employees through technology, also known as "people analytics". A recent Harvard Business Review article describes people analytics as "the pursuit of data-driven insights about an organisation's workforce". Digital records about employee behaviour, collected from devices and sensors, are translated into "actionable insights", with the ultimate aim of making organisations "more evidence-based, talent-centric and meritocratic" and thus "more effective". [6]

According to a recent report, most large organisations have built up people-analytics capabilities in the last decade, with 70 percent of executives viewing it as a top priority.[7] 2020 has undoubtedly been a good year for selling employee-monitoring software. Some vendors have seen their sales triple.[8] In addition, as organisations prepare to send staff back to offices, shops and factories, a new and potentially lucrative market for workplace re-entry and monitoring tools is emerging. IBM's "Maximo Worker Insights" solution, for example, uses artificial intelligence (AI) to process real-time data from "cameras, Bluetooth beacons, mobile phones, IoT wearable devices and environmental sensors" and turn them into predictions that allow supervisors to "address issues and violations before they become problems".[9] AI thus promises to fulfil a long-held dream of authoritarians: to predict and prevent transgressions of the established order before they happen.

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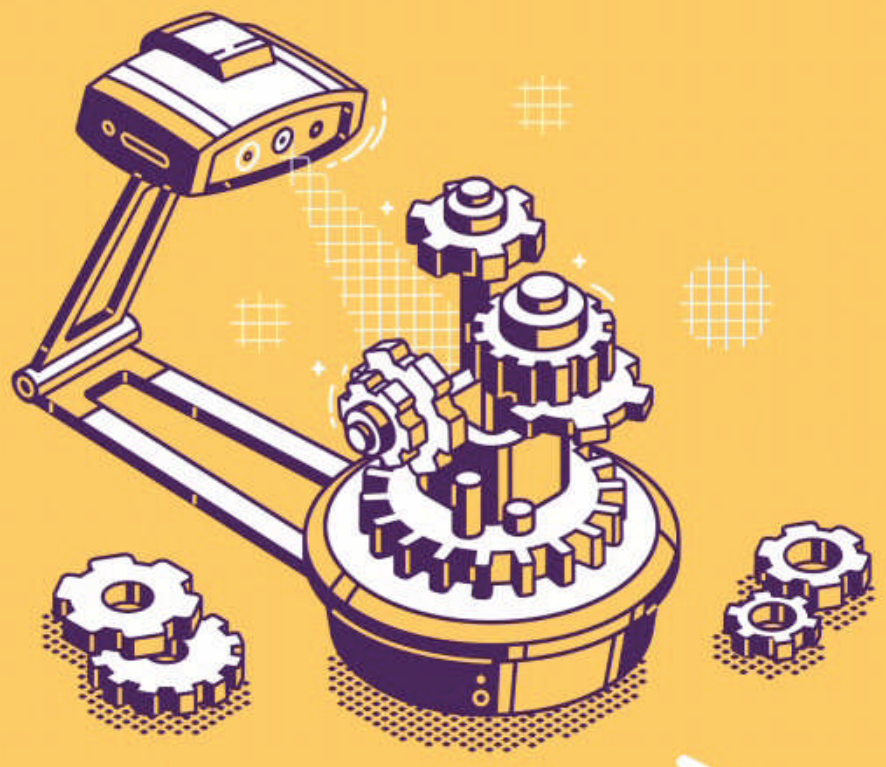
A Long History of Surveillance and Control

We are thus faced with a paradox. Companies publicly promote agility and empowerment while covertly building a sophisticated surveillance apparatus. How do we explain and resolve this contradiction?

In a paper published in 1992, Stephen Barley and Gideon Kunda identified five consecutive waves of managerial ideology in the United States since 1870 (see Table 1).[10]

Managerial ideology	Period	Form of control
Industrial betterment	1870-1900	Normative
Scientific management	1900-1923	Rational
Human relations	1923-1955	Normative
Systems rationalism	1955-1980	Rational
Organisational culture	1980-	Normative



In these waves, managerial discourse alternates between ideologies of normative and rational control. Normative control rests on "shaping workers' identities, emotions, attitudes and beliefs" through moral authority, welfare, employee relations, cultural change and the collective. It is generally associated with research areas like organisational behaviour and applied psychology. Rational control ideologies, in contrast, are influenced by engineering, operations research, statistics and accounting. They emphasise structure, technology, quantification and computation. The archetype of an ideology of rational control is, of course, Frederick Taylor's "scientific management" philosophy (1911). More recent examples include Peter Drucker's "Management by Objectives" (1954) and Robert Kaplan and David Norton's "Balanced Scorecard" (1992).

Extending Barley and Kunda's analysis to our present time, Phoebe Moore has postulated that in around 2001 we entered an era of "agile management systems", characterised by constant change, technological fetishism, algorithmic management, intensifying workloads and stagnating incomes. The associated managerial discourse combines normative elements (for example, exhorting workers to upgrade their skills to stay relevant in a world of technological "disruption") with persistent rational control through data extraction and analytics. Workers are told that "they have agency and that they can and should take full control of their work, personal lives and wellbeing", while at the same time being "surveilled, measured and quantified at increasingly intimate levels".[11]

The contradiction between empowerment and control that we identified is thus perfectly compatible with historical managerial ideologies and practices. There is nothing unusual or new about firms professing to empower their employees while subjecting them to surveillance and quantification. Starting with Taylor and continuing throughout the 20th century, this meant separating conception (thinking) from execution (doing) and putting the former into the hands of a growing cadre of professional managers. In the last thirty years, advances in information and communication technology have allowed organisations to standardise and codify knowledge work, thereby strengthening management's control over an increasingly globalised labour process.[12]

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Logic and Limits of Contemporary Employee Surveillance

21st century people analytics goes beyond traditional procedures to measure and quantify the performance of individual workers in two ways: by collecting large, unstructured, real-time data ("big data") and by converting aggregated data sets into statistical predictions through AI. There are obvious similarities between the business models of people analytics and social media platforms. Both intend to shape behaviour towards maximum compliance and profitability. This is because, in the words of Shoshana Zuboff, "it is no longer enough to automate information flows about us; the goal now is to automate us." [13]

To be clear, this extraction and behavioural modification logic of people analytics applies not just to rank-and-file staff but to management as well, all the way to the executive board. In an era of unquestioning belief in the objectivity of data and the superiority of AI, nobody is exempt from being quantified and commodified. Harold Wilensky was quite correct when he predicted, in a 1960 paper, that "[t]he men who once applied Taylor to the proletariat would themselves be Taylorized."[14]

All of this is not to say, however, that there are no limits to workplace surveillance. Increased adoption of people analytics by firms is bound to raise questions of effectiveness and legality. It will also likely be resisted by workers.

1 EFFECTIVENESS

After attracting considerable interest and press coverage in the early 20th century, Taylor's scientific management went out of fashion when doubts were being raised about its effectiveness and legitimacy. What about the current fashion of workforce analytics? Despite much optimism among human resources professionals, software vendors and consultants, no research has been conducted yet to prove that people analytics has any effect on productivity, engagement, retention and other measures.[15] To the contrary, there is evidence that remote monitoring depresses workers and makes them less productive.[16]

2 LEGALITY

Regulations like the GDPR in Europe and the CCPA in California impose clear limitations on employee data collection, processing and storage. Enacted in 2018 and 2020, respectively, they are now starting to be enforced. As a case in point, the German subsidiary of retailing giant H&M was recently fined €35m by the data protection agency in Hamburg. From 2014 until 2019, when the case was discovered, H&M management had kept files about the private lives (including holidays, illnesses, family conflicts and religious beliefs) of several hundred employees at a service centre in Nuremberg. The files were stored electronically, accessible by up to 50 managers and used for HR decisions.[17]

3 RESISTANCE

If history is any indication, workers will resist monitoring by employers. As early as 1911, trade unions in the United States and Europe organised walk-out protests against the

intensification and deskilling of work through "time and motion studies".[18] In 2020, British bank Barclays installed a monitoring tool on staff computers. The software, Sapience Vue, promises "visibility into employee… productivity [and] engagement" and uses "machine learning to predict future operational outcomes and address problems".[19] After criticism by employees and privacy activists, bank management decided to remove the software.

For these reasons, managers are well advised to take a cautious approach towards people analytics – and AI in general. As algorithms are given increased responsibility and autonomy in the workplace, we have a vital interest in keeping humans in control.

Conclusion

Who controls the labour process? Over time, the baton was passed from feudal lords, master craftsmen and industrial capitalists to professional managers and administrators. Now we see AI emerging as a new type of actor in the workplace. This article has shown how AI (through its incarnation of "people analytics") is used to assert management's dominance over labour in an increasingly fragmented, decentralised and digitally mediated workplace, thereby both continuing and transcending historical traditions of measurement, quantification and optimisation.

Now we see AI emerging as a new type of actor in the workplace.

This effort to maximise human productivity and efficiency in the workplace (and throughout our lives) is, as Brett Frischmann and Evan Selinger have pointed out, contrary to our natural human inefficiency. "We are often unproductive and costly to sustain." Optimising humans for maximum efficiency, whether through people analytics or other contemporary means of what the authors call "techno-social engineering", is therefore tantamount to minimising "various costs associated with humans being human".[20]

A humanist counter-project instead starts by recognising that AI is not truly intelligent. It cannot understand, for instance, the historical, social and emotional context of work. It is perfectly conceivable – and indeed desirable – that AI will take over some of the repetitive drudgery of everyday work. But the accountability for algorithmic decision-making needs to remain with humans.

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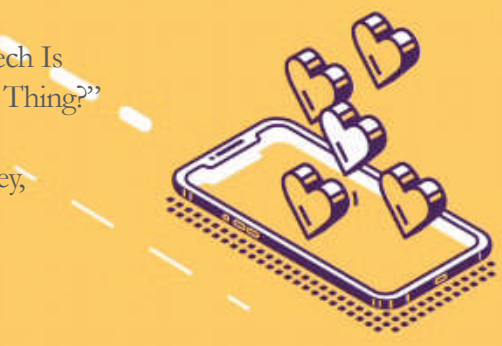

REFERENCES

[1] "COVID-19 and the world of work. 6th edition," International Labour Organization (ILO), 23 September 2020
[2] "Working during COVID-19," European Foundation for the Improvement of Living and Working Conditions (Eurofound), 13 October 2020, https://www.eurofound.europa.eu/data/covid-19/working-teleworking
[3] Gertrude Chavez-Dreyfuss, "The number of permanent remote workers is set to double in 2021," World Economic Forum, 23 October 2020, https://www.weforum.org/agenda/2020/10/permanent-remote-workers-pandemic-coronavirus-covid-19-work-home/
[4] Kathleen Hogan, "Embracing a flexible workplace," Official Microsoft Blog, 9 October 2020, https://blogs.microsoft.com/blog/2020/10/09/embracing-a-flexible-workplace/
[5] "Agile resilience in the UK: Lessons from COVID-19 for the 'next normal'," McKinsey, 13 October 2020, https://www.mckinsey.com/business-functions/organization/our-insights/agile-resilience-in-the-uk-lessons-from-covid-19-for-the-next-normal
[6] Tomas Chamorro-Premuzic and Ian Bailie, "Tech Is Transforming People Analytics. Is That a Good Thing?" Harvard Business Review, 21 October 2020
[7] "How to be great at people analytics," McKinsey, 2 October 2020, https://www.mckinsey.com/business-functions/organization/our-insights/how-to-be-great-at-people-analytics
[8] Bobby Allyn, "Your Boss Is Watching You: Work-From-Home Boom Leads to More Surveillance," NPR, 13 May 2020, https://www.npr.org/2020/05/13/854014403/your-boss-is-watching-you-work-from-home-boom-leads-to-more-surveillance
[9] "IBM Maximo Worker Insights," IBM, https://www.ibm.com/products/iot-safer-workplace
[10] Stephen R. Barley and Gideon Kunda, "Design and Devotion: Surges of Rational and Normative Ideologies of Control in Managerial Discourse," Administrative Science Quarterly 37, no. 3 (1992): 363-99, https://doi.org/10.2307/2393449
[11] Phoebe V. Moore, The Quantified Self in Precarity: Work, Technology and What Counts (New York: Routledge, 2017), 58-65
[12] Phillip Brown, Hugh Lauder, and David Ashton, The Global Auction (New York: Oxford University Press, 2012)
[13] Shoshana Zuboff, The Age of Surveillance Capitalism (New York: PublicAffairs, 2019)
[14] Harold Wilensky, "Work, Careers, and Social Integration," International Social Science Journal 12 (1960): 557
[15] Aizhan Tursunbayeva, Claudia Pagliari, Stefano Di Lauro, and Gilda Antonelli, "Opportunities and Benefits of People Analytics for HR Managers and Employees: Signals in the Grey Literature," MCIS 2019 Proceedings 31 (2019), https://aisel.aisnet.org/mcis2019/31
[16] Alex Hern, "Shirking from home? Staff feel the heat as bosses ramp up remote surveillance," The Guardian, 27 September 2020, https://www.theguardian.com/world/2020/sep/27/shirking-from-home-staff-feel-the-heat-as-bosses-ramp-up-remote-surveillance
[17] "Bußgeld wegen Datenschutzverstößen bei H&M [H&M fined for violating data protection rules]," 1 October 2020, https://datenschutz-hamburg.de/pressemitteilungen/2020/10/2020-10-01-h-m-verfahren
[18] Moore, The Quantified Self, 52-53
[19] Sapience Vue, https://sapienceanalytics.com/products/
[20] Brett Frischmann and Evan Selinger, Re-Engineering Humanity (Cambridge: Cambridge University Press, 2018)

About the Author

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The ability to make effective use of AI technology has hitherto remained in the province of large enterprises, with their access to huge amounts of data. Isn't there some way that small and medium-sized businesses could also realise the potential of AI? Yan Pang believes there is, and here he explains how.

EMPOWERING SMALL AND MEDIUM ENTERPRISES
THROUGH THE SYNERGY OF AI AND BLOCKCHAIN

BY YAN PANG

Across industries, artificial intelligence (AI) is changing the way large enterprises do business. However, small and medium enterprises (SMEs) have not been able to enjoy the dividends of the rapid development of AI technologies, due to the lack of data and talent. This paper discusses the challenges that SMEs are facing in the AI era and proposes a collaborative framework for an open AI market. The framework ensures the ethical use of data in an open AI market and empowers SMEs through the synergy of AI and blockchain. With this framework, SMEs can potentially overcome the challenges of data and talent, and benefit greatly from the rapid development of AI and blockchain technologies.

1 INTRODUCTION

In the past decade, we have witnessed the remarkable rise of artificial intelligence (AI). The technology has made a profound impact in many areas of our daily lives - from

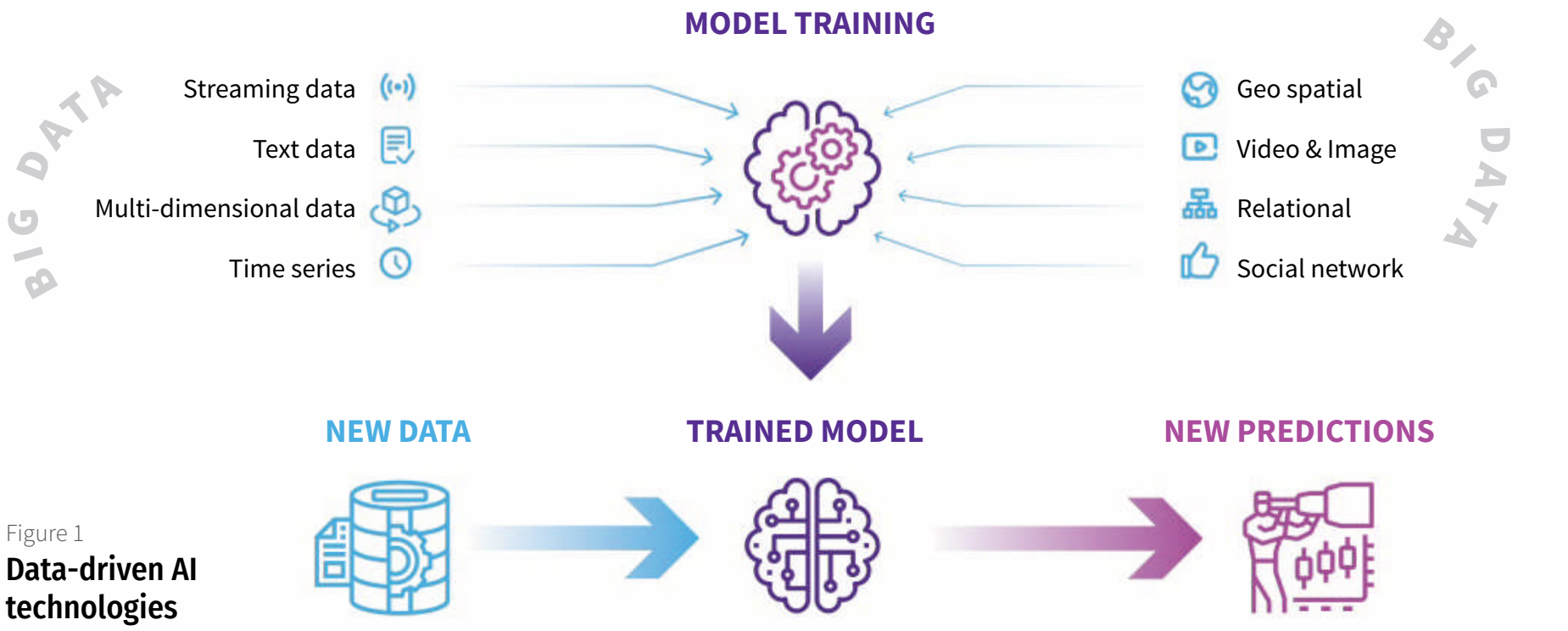


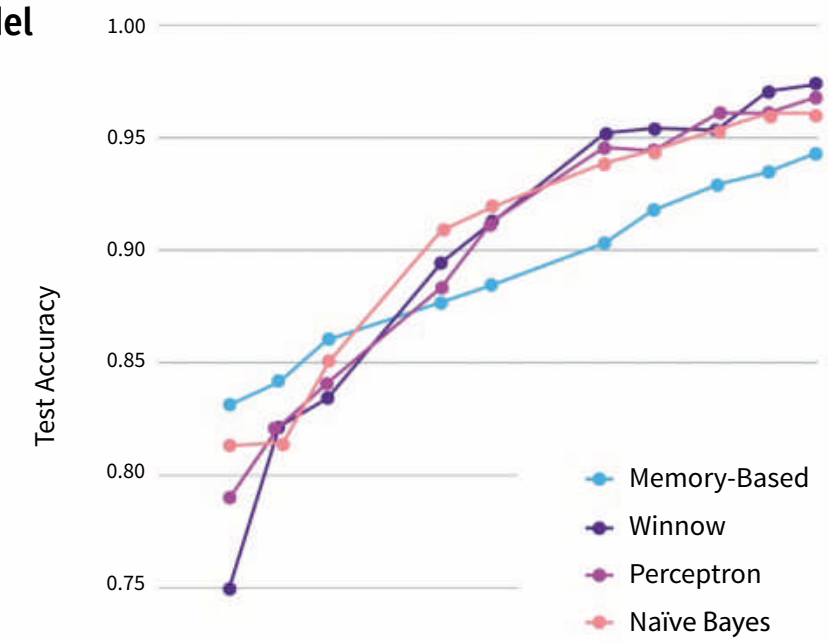
Figure 1
Data-driven AI technologies

recommending products to customers in e-commerce platforms, to detecting fraud and risk in credit card transactions, to optimising traffic flows in transportation systems, to providing decision support to doctors in hospitals. AI has already become the top priority for many large enterprises as a catalyst in the digital transformation of industries. Across industries, AI is changing the way large enterprises do business and creating tremendous business value for them. According to Alibaba, their AI-powered chatbot can understand more than 90 percent of customers' queries and serves more than 3.5 million users a day [1]. Google reports that an AI recommendation system has already delivered consistent energy savings of around 30 percent on average for Google's highly optimised data centres [2]. In order to incorporate AI into enterprise operations and make a real business impact, there are two fundamental components, i.e., model and data. Modelling techniques are used to transform real-world business requirements into suitable mathematical AI models for scientific analysis. Data are used to train these AI models, so that they can make accurate predictions based on new data (Figure 1). While modelling techniques are still vital in building AI solutions [3], data becomes more and more critical in modern data-driven AI solution performance. Michele and Eric [4] presented a study of the effects of data size on machine learning models' performance for natural language disambiguation. It showed that the performance of different machine learning techniques could benefit significantly from large training data sets. With small data (e.g., data size of 10^5), the best model is about x percent better than the worst model, whereas the performance improvement yielded by big data (e.g., data size of 10^9) is y%>>x% (Figure 2). Similarly, Gabriel and Michael [5] demonstrated that more data trumped smarter algorithms by comparing pointwise mutual information with latent semantic analysis.

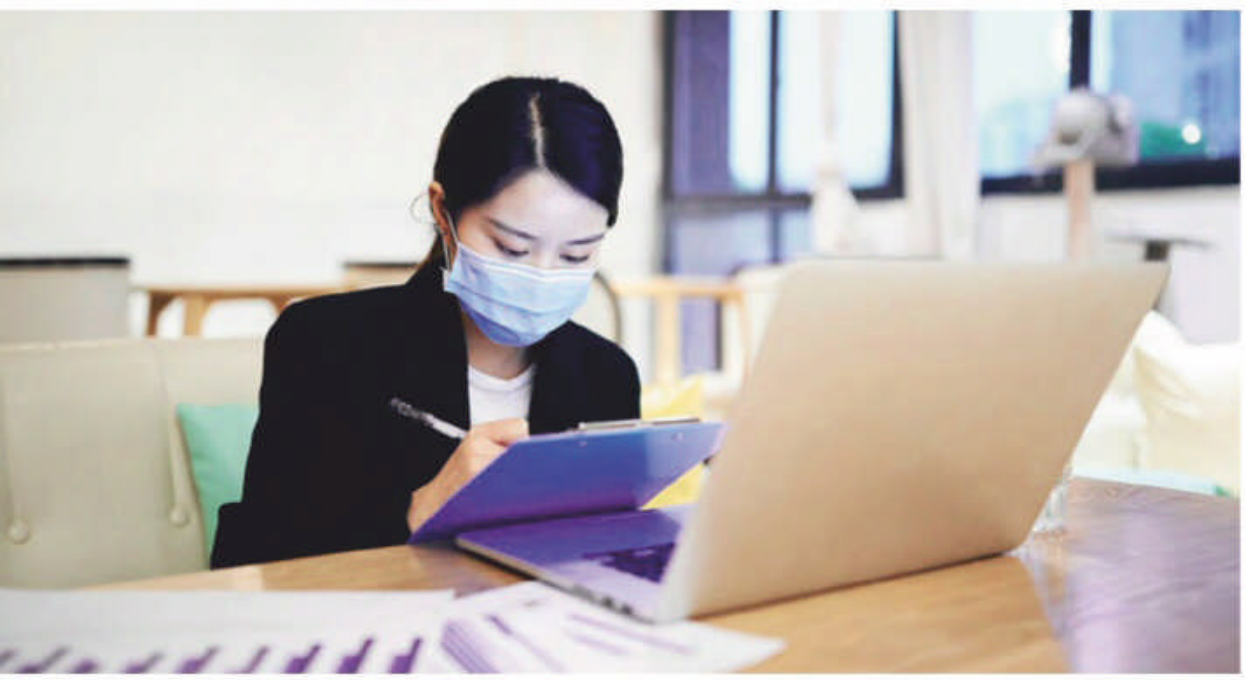
This paper discusses the challenges that SMEs are facing in the AI era and proposes a collaborative framework for an open AI market.

From these studies, it is clear that data is critical for enterprises in order to implement AI solutions to improve their businesses. However, most valuable data are currently controlled by large enterprises, e.g., Google, Facebook, Alibaba, Tencent, etc. This is why most of the well-known AI success stories have come from these large enterprises in the past ten years. Although these

Figure 2
Illustration: model performance vs data size [4]



large enterprises make substantial contributions to bringing AI solutions into our daily lives, more and more people ask an important question: how can small and medium enterprises (SMEs) also benefit from the rapid development of AI technologies? We all know that SMEs play a crucial role in most economies, particularly in developing countries. According to a recent World Bank report [6], SMEs account for the majority of businesses worldwide and are essential contributors to job creation and global economic development. They represent about 90 percent of businesses and more than 50 percent of employment worldwide. Currently, SMEs have not been able to enjoy the dividends of AI, due to the lack of data and talent. SMEs do not usually have a large volume of data compared to large enterprises. Besides, it is hard for them to attract AI experts, due to intense competition for AI talent. With all these constraints, do SMEs still stand a good chance of competing with large enterprises in the AI era, as they did in the Internet era? Twenty years ago, many innovative SMEs, e.g., Alibaba, Google and Facebook, quickly stood out from the competition with large enterprises and grew up to be tech giants in the Internet era. Can SMEs replicate the same success stories in the AI era? It is a big question mark. For SMEs to emerge in the AI era, the challenges of data and talent must be addressed. Recently, blockchain, a peer-to-peer, decentralised network technology, has come to be considered as a promising solution to overcome these challenges.



2 BLOCKCHAIN TECHNOLOGY EMPOWERS SMEs IN THE AI ERA

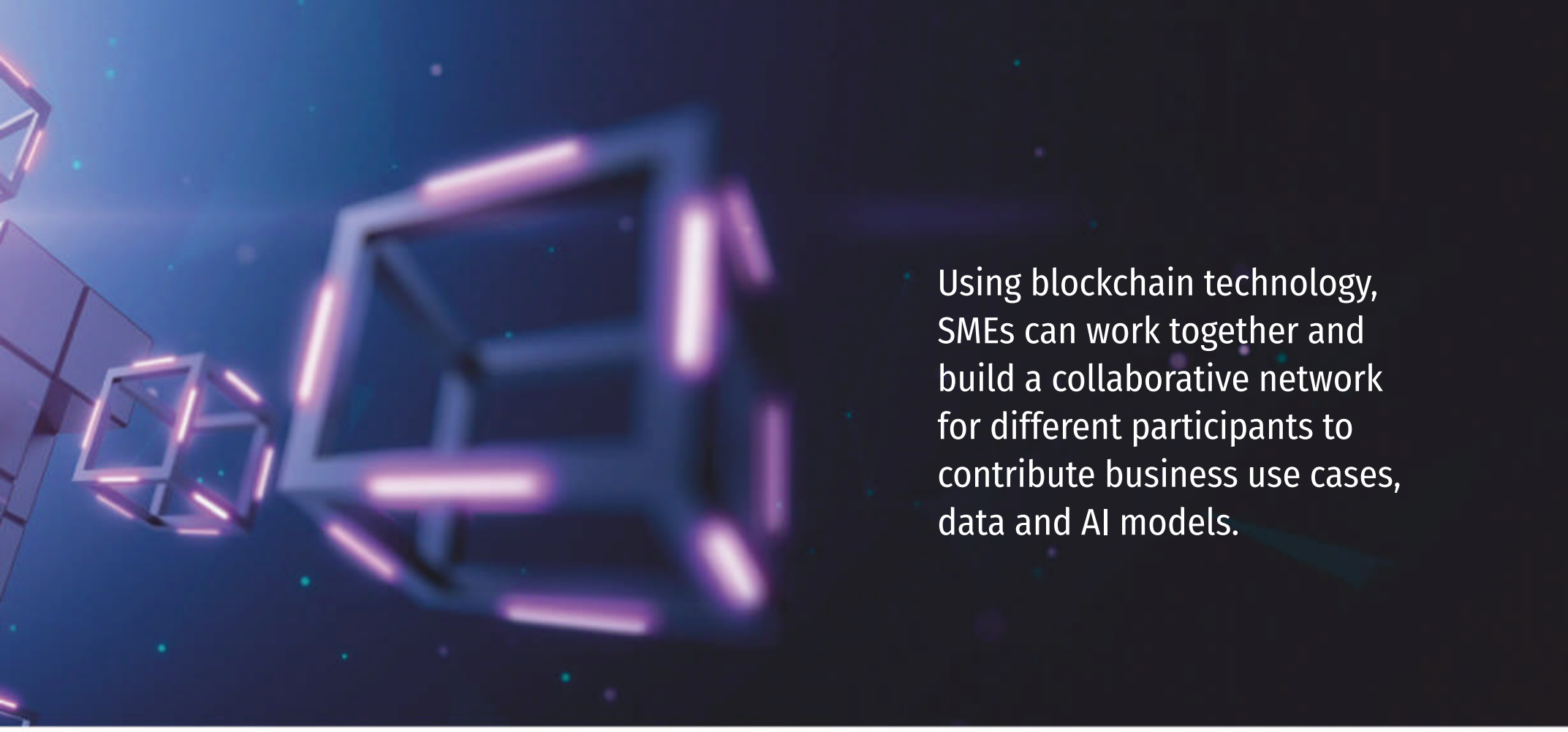
Blockchain technology can potentially be used to build a collaborative, open AI market [7] for SMEs. By this means, SMEs can collaborate effectively to overcome the challenges in data and talent, and develop successful AI solutions.

2.1 Key blockchain concepts and an open AI market

The fundamental building blocks of blockchain include a decentralised network, a consensus algorithm, cryptography and a smart contract. All these play essential roles in building an open AI market for SMEs.

DECENTRALISED NETWORK

A blockchain is an open ledger of information collected through a decentralised peer-to-peer network that sits on top of the Internet. Peer-to-peer networks are participatory systems that resist control by a single, centralised superpower. The participants establish agreed-on rules that evolve as the need or complexity arises. By distributing power and value across a global, decentralised network, the exchange of information and value can become more efficient, equitable and open. Blockchains are not controlled by any central authorities but by the entire network of participants, who establish the rules for participation and elect to evolve the system according to consensus. This makes them censorship-resistant



Using blockchain technology, SMEs can work together and build a collaborative network for different participants to contribute business use cases, data and AI models.

and inherently more elastic than most other decision-making mechanisms for large groups of participants. Using blockchain technology, SMEs can work together and build a collaborative network for different participants to contribute business use cases, data and AI models. This collaborative network is not controlled by any centralised organisations, but benefits the whole SME ecosystem.

CONSENSUS ALGORITHM

A consensus protocol is a procedure through which all the peers on the blockchain decentralised network reach a common agreement about the present state of the open ledger. In this way, consensus protocols achieve reliability in the blockchain network and establish trust between unknown peers in a distributed computing environment. Essentially, the consensus protocol makes sure that every new block that is added to the blockchain is the only version of the truth that is agreed upon by all the active nodes in the network. From the data perspective, consensus protocols will decide: 1) who has the authority to add a new block of data on the blockchain; and 2) what data are included in the new block [8]. The consensus protocols ensure that the blockchain data are consistent in different nodes and reduce the risk of counterfeit data transactions. This improves data quality significantly, which is essential in building successful AI solutions.

The consensus protocols ensure that the blockchain data are consistent in different nodes and reduce the risk of counterfeit data transactions.

CRYPTOGRAPHY

Blockchains make use of two types of cryptographic algorithms, i.e., asymmetric-key algorithms and hash functions. The main application areas of asymmetric-key algorithms in blockchain are in public-private key management and digital signatures. Digital signatures provide integrity to the transaction process on blockchains. They are easily verifiable and cannot be corrupted, which ensures that the blockchain is valid and the data is verified and correct. Hash functions are used to provide the functionality of a single view of the blockchain to every participant and make the data block tamper-proof. Once a new data block is added to the blockchain, the hash value, i.e., a unique string of characters, of this block record is generated using hash functions, e.g., SHA (Secure Hash Algorithm)-256. Due to the collision-resistance property of hash functions, if anything inside a block changes, even just a single-digit change, the block will get a completely different hash value [9]. Cryptography technologies are the core of blockchain, making the blockchain data immutable and reliable. Also, data privacy and confidentiality can be well protected on blockchains using cryptography technologies. All these are crucial to building a collaborative and open AI platform for SMEs.

SMART CONTRACT

Smart contracts are lines of computer code that are stored on a blockchain and automatically execute when predetermined terms and

conditions are met. They are programs that run as they have been set up to run by the developers at the most basic level. The benefits of smart contracts are most apparent in business collaborations, in which they are typically used to enforce some agreements, so that all participants can be certain of the outcome without the involvement of an intermediary [10]. Through smart contracts, blockchain technologies can potentially facilitate decentralised coordination and alignment of incentives on a scale that only centralised, top-down structures previously could. Coordinating groups of trustless participants on the decentralised blockchain network and getting them to behave in productive and peaceable ways can be achieved using smart contracts. In an open AI market, we can create a fair incentive mechanism on smart contracts. It ensures that all the participants in the blockchain, e.g., data contributor, model contributor and validator, can receive fair rewards if their contributions lead to real-world business value.

Coordinating groups of trustless participants on the decentralised blockchain network and getting them to behave in productive and peaceable ways can be achieved using smart contracts.

2.2 Data ethics in the open AI market

Although large enterprises control most of the data, SMEs and consumers are the creators of these data. In an open AI market, data ethics, which is about how data are collected and used, is crucial. A thriving open AI market should be held to a higher ethical standard that creates business values alongside the requirements of laws and regulations. Data ethics can, therefore, bridge the gap between legal requirements and business value creation. In fact, the ethical use of data makes good business sense for SMEs to collaborate in the open AI market. Respectful and fair use of data can improve business reputation and enhance market confidence. When the open AI market ensures that personal data is used ethically through blockchain technologies, individuals will have greater confidence in their data being protected. In turn, customers' trust will grow and become a competitive edge for the open AI market.

Blockchain technology, by design, offers a trustworthy solution to data collection, exchange and analysis. In a blockchain decentralised network, the peers share access to an open ledger, which serves as the trusted, append-only database and the single source of transactional data. The consensus algorithms ensure that only the data which are trusted by the majority of the peer nodes will be added to the blockchain. The data exchanges on the blockchain are well protected by cryptographic technologies and smart contracts. Ethics policies can also be implemented as smart contracts in the blockchain. Whether data are biased or whether AI models meet ethics requirements can be added to the blockchain open ledger. Therefore, the blockchain peer nodes will know if the data and models meet ethics requirements, and decide whether to build AI solutions on top of that.

3 A PROPOSED FRAMEWORK FOR AN OPEN AI MARKET

Section 2 describes how blockchain can help to build a collaborative open AI market for SMEs. A detailed framework is proposed in this section through the synergy of AI and blockchain technologies (Figure 3). In the current Internet framework, although SMEs and consumers are the creators of the majority of the valuable Internet data, large enterprises gain most of the business value generated by these data. There is no effective mechanism to return the business value to the true data creators. With blockchain technologies, SMEs and consumers can potentially become the true owners of their data and enjoy the business value created using their own data. An autonomous, open data platform can be built using blockchain technologies. Proper

incentive models can be designed using smart contracts to encourage data owners to share data on this framework. Therefore, the power of AI is no longer controlled only by large enterprises, but benefits the SMEs.

In the proposed collaborative, open AI framework, there are five different types of participants: 1) AI task initiators, 2) model translators, 3) data contributors, 4) model contributors and 5) model validators. Each participant is completely autonomous and responsible for its own individual behaviour. The AI task initiators are usually SMEs. Although SMEs do not have the expertise and data to build and train the AI models, they usually have a deep understanding of business. They can identify valuable AI use cases that potentially generate tremendous business values. The AI task initiators will describe the AI tasks using business language, e.g., business context and objectives, and define financial compensation commitments. Some AI business task templates can be provided in the collaborative framework to help the SME task initiators to explain the AI business tasks more accurately. These AI tasks will be automatically packaged into smart contracts and published on the decentralised blockchain network.

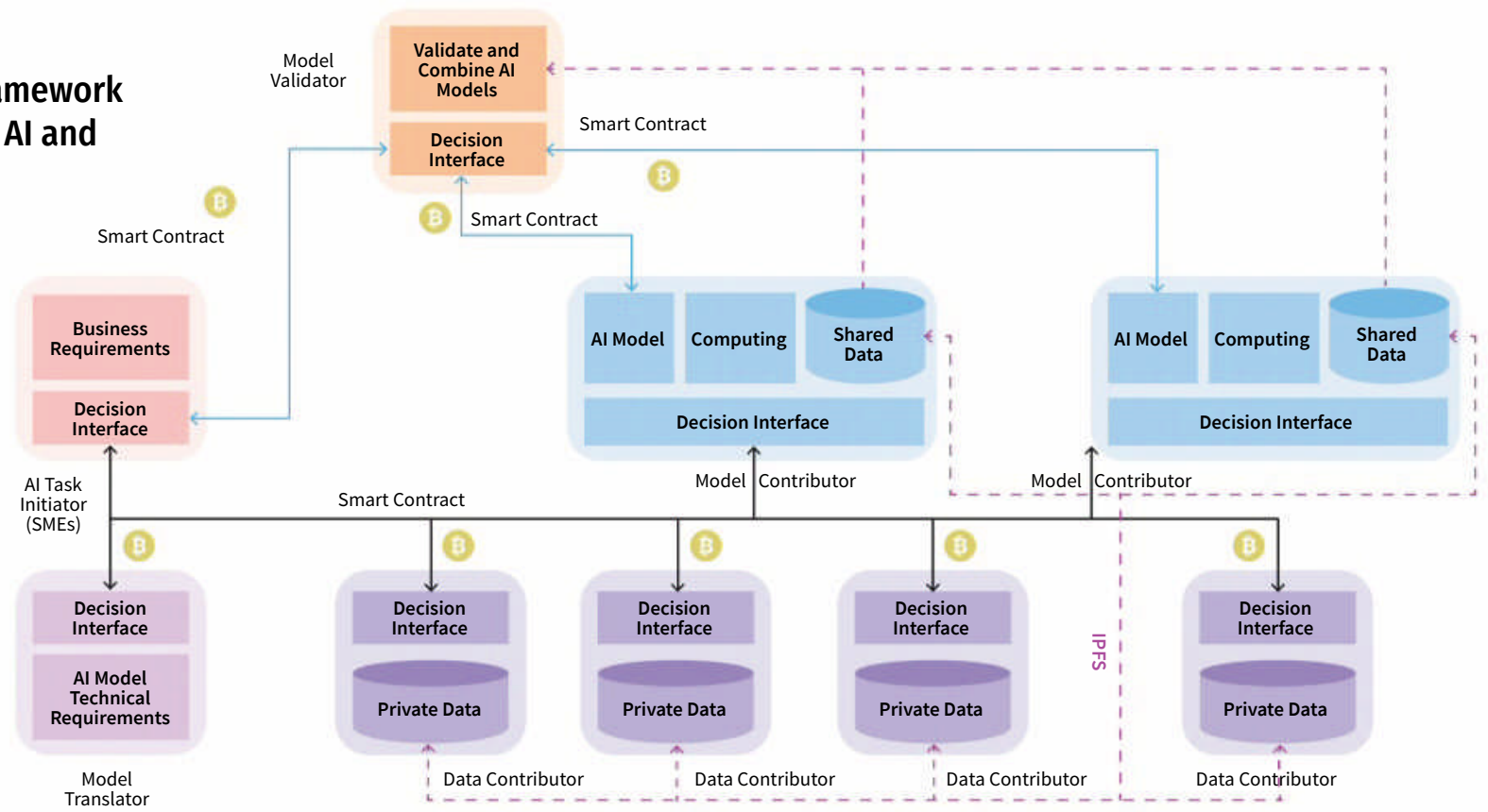
Because of the immutable property of the blockchain smart contract, the contributors are highly motivated to work together and make contributions.

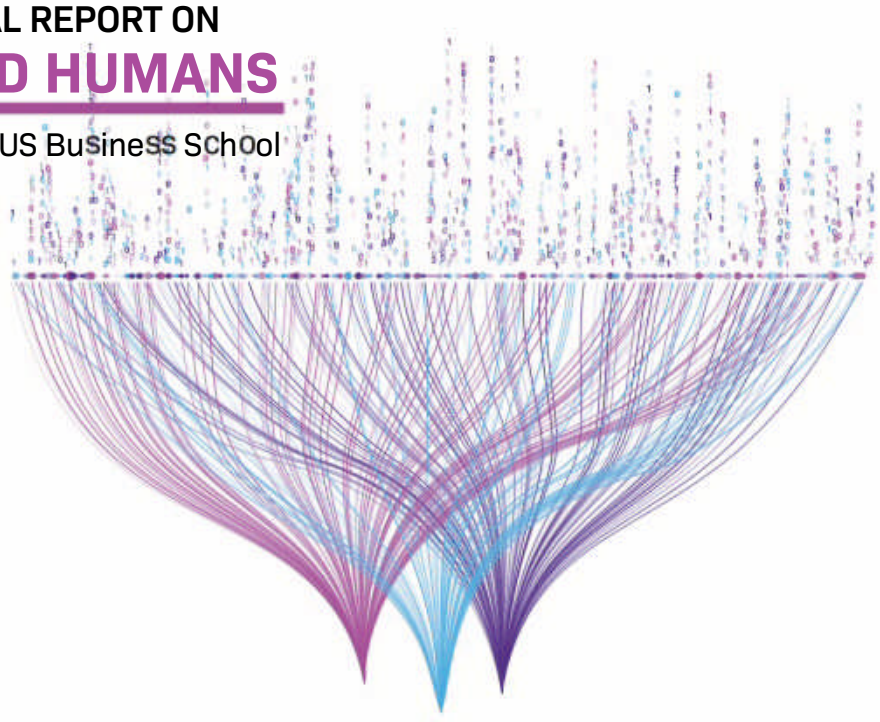
Once the AI tasks are published, the model translator nodes on the blockchain network will receive the business requirements. They will then transform these business requirements into AI model technical requirements, e.g., input data, model evaluation criteria, output data, etc. These AI model technical requirements will then be broadcast on the blockchain network using smart contracts. The corresponding relationship between original AI business tasks and model technical requirements will be defined in the smart contracts.

After the AI model's technical requirements are defined, the decentralised nodes in the blockchain network will know what kinds of data are required by the AI task. Some of the nodes might have relevant data for AI model training. These potential data contributors can evaluate financial compensation commitments defined in the smart contract and decide whether they participate in this AI task. If they choose to contribute to the AI task, they can share their dataset via decentralised storage (DS), such as the Interplanetary File System (IPFS) [11]. These shared data will be well protected using DS and cryptography techniques. Therefore, the rights and interests of data contributors can be

Figure 3

A collaborative framework for the synergy of AI and blockchain





The majority voting amongst the model validators is used to determine the contribution of the corresponding model contributors.

well protected.With clear business requirements, technical requirements and shared datasets, model contributors can build and train suitable AI models. The model contributors train the AI models locally for a given task by using either a local data asset or the data shared by the associated data contributors. After training the local AI model successfully according to the criteria defined by the model translator via smart contracts, such as an accuracy score above 90%, the model contributors announce the completeness of the training and share the AI model to the blockchain network via the DS. Federated learning (FL) technologies [12] can be used at this stage to create high-performance AI models for the tasks, while protecting data privacy.

The available model validators are selected by the blockchain network using proper consensus protocols [13] to verify the contributions of the locally trained learning models. The verification is conducted according to the criteria defined by the model translators via smart contracts, such as whether the accuracy can be improved after fusing the claimed model. The majority voting amongst the model validators is used to determine the contribution of the corresponding model contributors. The AI task initiator is informed about the majority voting conclusion. If this conclusion is positive, the transaction of the verified locally trained AI model, also called the private model, is established between the AI task initiator and the associated contributors, i.e., model translator, data contributor, model contributor and model validator. Therefore, these contributors receive financial compensation and the AI task initiator obtains access to the AI model in IPFS. Additionally, the model validators involved in the task also get compensated by the initiators for their effort. After the time window assigned to the AI task ends, the application initiator fuses all the received verified private models to achieve the metamodel that will be applied to address the AI task.

In this framework, a node in the blockchain network can participate in the role of model translator, data contributor, model contributor and model validator at the same time. However, these different roles will usually be performed by different nodes. Smart contracts play a critical role in the whole framework to create a fair incentive model for all the participants. It will define the rewards which different contributors can get if the AI applications really create business values. Because of the immutable property of the blockchain smart contract, the contributors are highly motivated to work together and make contributions.

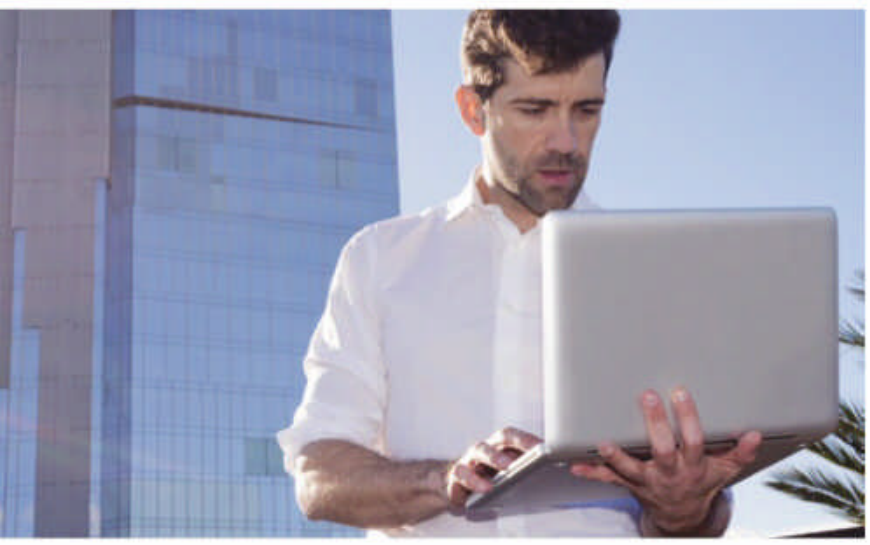
About the Author

Yan Pang received his PhD degree in System Engineering from National University of Singapore (NUS) joint with Massachusetts Institute of Technology (MIT) in 2006, and his Master Degree and Bachelor Degree in Mechanical Engineering from Zhejiang University, China in 2002 and 1999. Dr. Pang is an Associate Professor at the Department of Analytics and Operations at the National University of Singapore (NUS), and the Co-Director of NUS Business Analytics Centre. Prior to the current role, he was the Client Technical Advisor (Chief Architect) in Analytics and Optimization at IBM, and led the IBM technical solution design in ASEAN Public Sector. Previously, he was also a Lead Architect and Senior Manager at IBM R&D Labs in charge of analytics and optimization product development. Dr. Pang is the author of more than 30 articles, and 8 patents and invention disclosures. His research interests include big data analytics, optimization, AI, cloud computing and blockchain. Dr. Pang is the recipient of a number of industry and academic awards, including IBM Outstanding Technical Achievement Award (OTAA), IBM Invention Plateau Award, finalist of the Andrew Fraser Prize 2007 of IMechE (Institute of Mechanical Engineers), etc.

4 CONCLUSION AND FUTURE WORK

Although AI has changed the way large enterprises operate today and has had deep and wide-ranging impacts on their businesses, most SMEs still cannot benefit from the rapid development of AI technologies. This paper discusses the main challenges that SMEs are facing in the AI era, i.e., the lack of data and talent. In order to overcome these challenges, this paper proposes leveraging blockchain technologies to build a collaborative, open AI market. A detailed collaborative framework of open AI markets is proposed to empower SMEs in the AI era. This framework ensures the ethical use of data in AI solution development. Different participants in the open AI market, i.e., AI task initiator, model translator, data contributor, model contributor and model validator, can collaborate effectively to build successful AI solutions for SMEs. All participants can receive fair financial compensation for their contributions by defining the incentive mechanism using smart contracts on the blockchain. Through this framework, the power of AI is not controlled by large enterprises but benefits a large number of SMEs.

Both AI and blockchain still have a long road ahead of them, and more research needs to be done to fully unlock the potential of the synergy of AI and blockchain [14]. In the future, we can further explore how to design and implement a similar framework in the areas of AI ethics [15] and explainable AI [16]. In addition, the integration of edge computing in a similar framework is also an emerging and important research area to provide inclusive AI solutions to SMEs [17].



References

1. Bernard Marr, "The Amazing Ways Chinese Tech Giant Alibaba Uses Artificial Intelligence And Machine Learning", Forbes, last access on 21 Nov 2020, available at:https://www.forbes.com/sites/bernardmarr/2018/07/23/the-amazing-ways-chinese-tech-giant-alibaba-uses-artificial-intelligence-and-machine-learning/?sh=5e31d581117a

2. Chris Gamble and Jim Gao, "Safety-first AI for autonomous data centre cooling and industrial control", Google Research Blog, last access on 21 Nov 2020, available at: https://deepmind.com/blog/article/safety-first-ai-autonomous-data-centre-cooling-and-industrial-control

3. Z. Zhou, N. V. Chawla, Y. Jin and G. J. Williams, "Big Data Opportunities and Challenges: Discussions from Data Analytics Perspectives [Discussion Forum]," in IEEE Computational Intelligence Magazine, vol. 9, no. 4, pp. 62-74, Nov. 2014, doi: 10.1109/MCI.2014.2350953.

4. Michele Banko, Eric Brill, "Scaling to Very Very Large Corpora for Natural Language Disambiguation", Proceedings of the 39th Annual Meeting of the Association for Computational Linguistics, 2001, pp. 26-33

5. Recchia, G., Jones, M.N. More data trumps smarter algorithms: Comparing pointwise mutual information with latent semantic analysis. Behavior Research Methods 41, 647–656 (2009). https://doi.org/10.3758/BRM.41.3.647

6. Small and Medium Enterprises (SMES) Finance, World Bank Report, https://www.worldbank.org/en/topic/smefinance

7. Gihan J. Mendis, Yifu Wu, Jin Wei, Moein Sabounchi, Rigoberto Roche, "Blockchain as a Service: A Decentralized and Secure Computing Paradigm", arXiv:1807.02515

8. Y. Pang, "A New Consensus Protocol for Blockchain Interoperability Architecture," in IEEE Access, vol. 8, pp. 153719-153730, 2020, doi: 10.1109/ACCESS.2020.3017549.

9. David De Cremer and Y. Pang, "Can Blockchain Manage Trust in Organizations?", Management Business Review, forthcoming

10. Nigel Gopie, "What are smart contracts on blockchain?", IBM blockchain blog, last access on 21 Nov 2020, available at: https://www.ibm.com/blogs/blockchain/2018/07/what-are-smart-contracts-on-blockchain/

11. Juan Benet, "IPFS - Content Addressed, Versioned, P2P File System", industry white paper, last access on 21 Nov 2020, available at: https://ipfs.io/ipfs/QmR7GSQM93Cx5eAg6a6yRzNde1FQv7uL6X1o4k7zrJa3LX/ipfs.draft3.pdf

12. Kairouz P, McMahan HB, Avent B, Bellet A, Bennis M, Bhagoji AN, Bonawitz K, Charles Z, Cormode G, Cummings R, et al. (2019) Advances and open problems in federated learning. arXiv:1912.04977

13. S. J. Alsunaidi and F. A. Alhaidari, "A Survey of Consensus Algorithms for Blockchain Technology," 2019 International Conference on Computer and Information Sciences (ICCIS), Sakaka, Saudi Arabia, 2019, pp. 1-6, doi: 10.1109/ICCISci.2019.8716424.

14. T. N. Dinh and M. T. Thai, "AI and Blockchain: A Disruptive Integration," in Computer, vol. 51, no. 9, pp. 48-53, September 2018, doi: 10.1109/MC.2018.3620971.

15. Elisa Bertino, Ahish Kundu, and Zehra Sura, "Data Transparency with Blockchain and AI Ethics", Journal of Data and Information Quality, August 2019, Article No.: 16 https://doi.org/10.1145/3312750

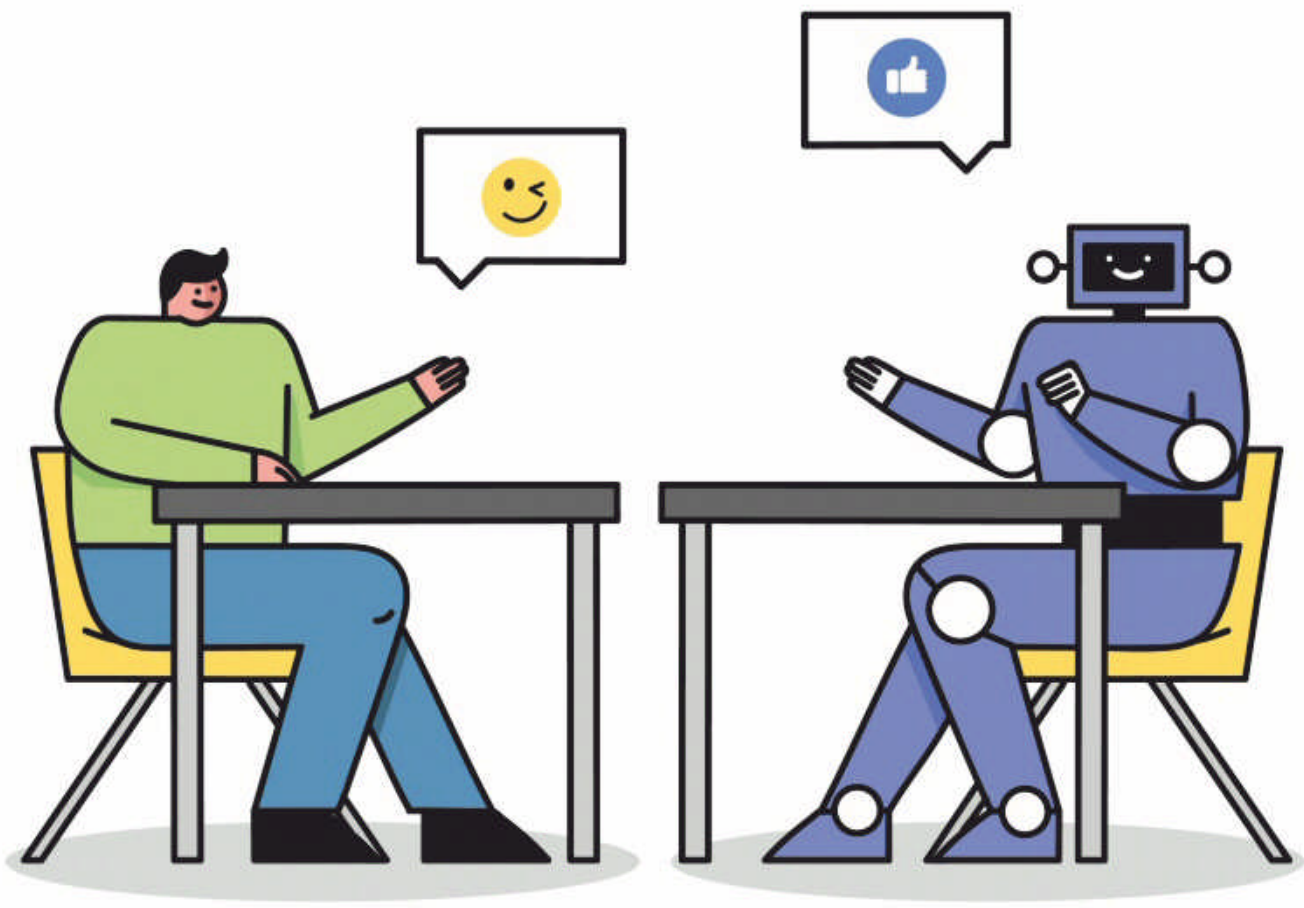
16. Leopoldo Bertossi and Floris Geerts, "Data Quality and Explainable AI", Journal of Data and Information Quality, April 2020, Article No: 11, https://doi.org/10.1145/3386687

17. A. Nawaz, T. N. Gia, J. P. Queralta and T. Westerlund, "Edge AI and Blockchain for Privacy-Critical and Data-Sensitive Applications," 2019 Twelfth International Conference on Mobile Computing and Ubiquitous Network (ICMU), Kathmandu, Nepal, 2019, pp. 1-2, doi: 10.23919/ICMU48249.2019.9006635.

Most would accept that there is a role for both humans and AI in managerial decision-making today. But where is the optimal balance between human input and that of machines in the process of arriving at decisions? And to what extent are humans prepared to accept the inclusion of machines in managerial processes?

HUMAN-ALGORITHM COLLABORATION IN MANAGERIAL DECISION MAKING

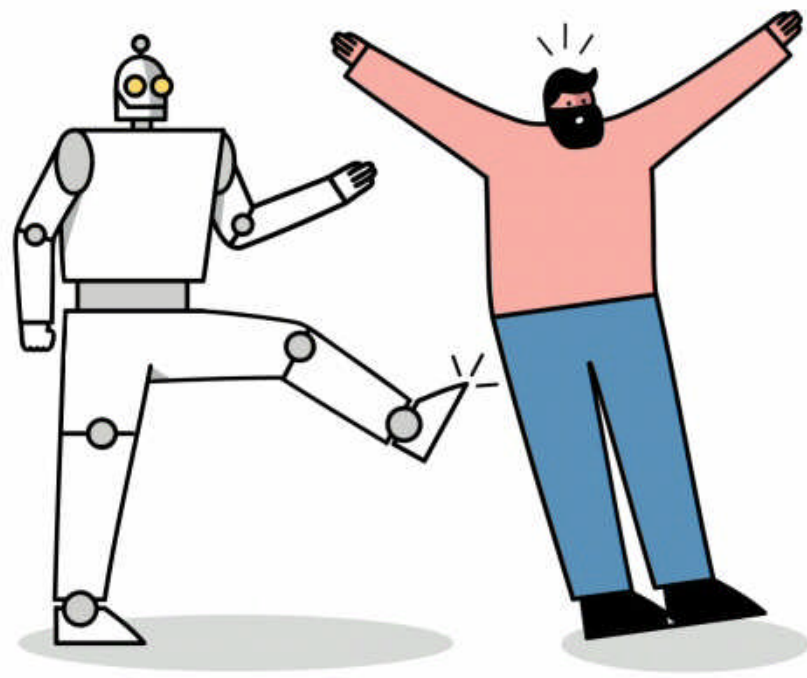
BY TESSA HAESEVOETS, DAVID DE CREMER, KIM DIERCKX AND ALAIN VAN HIEL



Artificial intelligence (AI) refers to machines performing cognitive functions usually associated with human minds, such as learning, interacting and problem solving. Recent advances in computational power, the exponential increase in the availability of data, and new machine-learning techniques have resulted in the development of AI-based solutions for various managerial tasks. As a result, consensus has emerged that the future of work entails humans and algorithms working together in making managerial decisions (De Cremer, 2020).

However, to date, no attention has been paid to what this cooperative partnership should look like. So, an important question that arises is how much input from humans and how

much input from algorithms is warranted in order for humans to be willing to accept algorithmic involvement in managerial decisions. If humans do not accept the proposed cooperative work model, it is possible that they will discount the input from machines. The objective of the present research, therefore, was to provide a better understanding of the desired relative weight of human and algorithmic input in managerial decision-making processes.



HUMAN-ALGORITHM COOPERATION

The academic literature has consistently shown that algorithms are generally better at making optimal decisions than human beings. For instance, studies have found that algorithms prove better at recruiting new staff (Hoffman et al., 2017), predicting employee performance (Highhouse, 2008) and providing medical diagnoses (Beck et al., 2011). A meta-analysis of these effects revealed that algorithms outperform human judgement by 10 percent on average (Grove et al., 2000). These findings illustrate that, across a vast majority of tasks, it is far more common for algorithms to outperform humans than vice versa.

However, in a recent study involving 1,500 companies in 12 industries, Wilson and Daugherty (2018) found that organisations can achieve the most significant performance improvements when humans and machines work together. An example of such a successful collaboration between man and machine concerns the case of cancer detection in images of lymph node cells. Wang et al. (2016) found that a combined human-AI approach outperformed both human-only and AI-only decisions. Specifically, the authors reported a 0.5 percent error rate in the combined condition, which represented a reduction in error rate of least at 85 percent compared to the human-only and the AI-only approaches.

ARE HUMANS WILLING TO ACCEPT ALGORITHMS?

Organisations have long used AI-based solutions as tools and as specific types of advisors that can facilitate decision-making for human managers but, more recently, organisations are also employing algorithms that have managerial discretion. For example, the Hong Kong-based venture-capital firm Deep Knowledge recently appointed a decision-making algorithm – known as VITAL – to its board of directors (Nelson, 2019). In a similar vein, Amazon recently employed a warehouse-worker tracking system that can automatically fire employees, without a human supervisor's involvement (Bort, 2019). These examples illustrate that algorithmic management, where algorithms have a certain level of autonomy when making decisions, is on the rise in today's organisations.

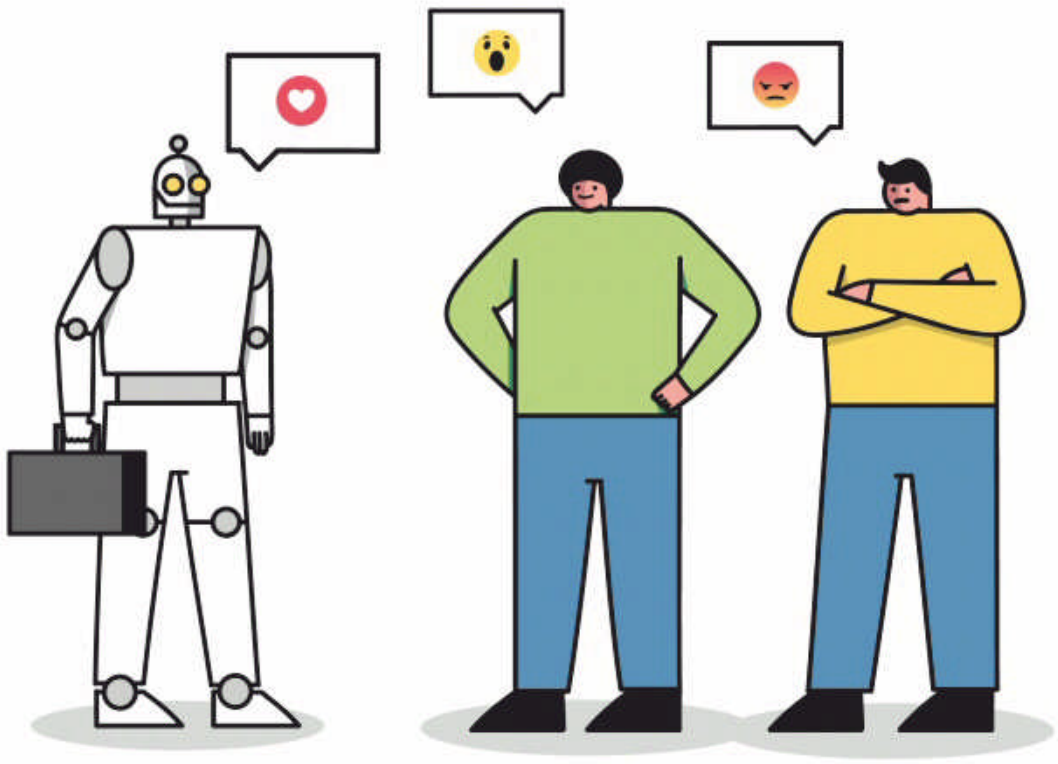
Most managers strongly oppose a partnership in which algorithms provide the most input into the decision-making process

However, it is vital to note that, although algorithms may help humans perform in more accurate and thus more efficient ways, at the same time humans also display some aversion towards algorithms. The tendency for humans to be reluctant to employ algorithms in decision-making – a phenomenon that has been referred to as algorithm aversion (Dietvorst et al., 2015) – raises the question of whether joint human-algorithm managerial decision-making can become fact or will remain only fiction. Indeed, a partnership between humans and algorithms can succeed only if humans are willing to accept algorithms as decision-making agents.

OVERVIEW OF THE STUDY RESULTS

We conducted a series of five empirical studies (total N = 1,025 managers). The results consistently show that most managers strongly oppose a partnership in which algorithms provide the most input into the decision-making process.

By AiTH, NUS Business School



Yet, our findings also clarify that human managers do not want to exclude algorithms entirely from providing input. Instead, it is illustrated that, generally speaking, human managers are willing to accept algorithm involvement in managerial decisions, as long as algorithms have less input than humans. These findings mirror those of Bigman and Gray (2018), who demonstrated that people are less aversive to algorithms when these are limited to having an advisory role. Dietvost and colleagues (2018) similarly reported that people accept algorithmic input when they have control over the outcome. However, our research goes beyond those observations by identifying exactly what the "optimal" human-algorithm work relationship should look like. In this light, the present research extends these prior studies by clarifying that human managers' acceptance of human-algorithm partnerships steadily rises when the involvement of humans increases, up to the point that human agents have a weight of about 70 percent in managerial decisions. Once this particular point has been reached, higher amounts of human input did not result in higher acceptance rates.

It is important to stress, however, that our studies also demonstrate that this overall pattern actually represents an average tendency, rather than a genuine psychological reaction that is shared by all managers. More specifically, our results consistently show that some managers (about 5 percent) prefer a partnership in which algorithms have the upper hand in managerial decisions, whereas others (about 15 percent) seem to prefer a partnership in which humans and algorithms both have an equal input (i.e., 50 percent weight) in managerial decisions. But, it must be stressed that these two classes remained a minority. Indeed, the third and largest subgroup of managers (about 50 percent) prefers a partnership in which humans have more weight than algorithms, although they do not necessarily want to exclude algorithms entirely. In addition to these three subgroups, there is also a fourth subgroup of managers (about 30 percent) who do want human agents to have complete control in managerial decisions. The present research is the first, at least to our knowledge, to illustrate that managers do not react all alike to different levels of human-algorithm involvement.

The majority of human managers are willing to accept a partnership in which humans have 70 percent weight and algorithms 30 percent weight in managerial decisions.

PRACTICAL IMPLICATIONS

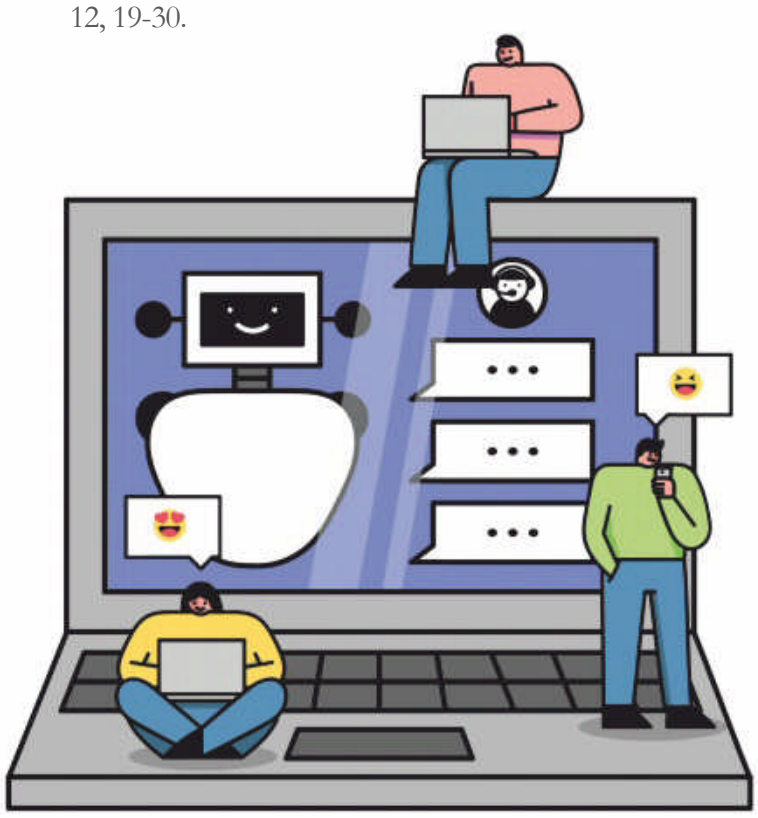
Efforts to optimise the functioning of organisations have led to the increasing use of algorithms, sometimes even up to the level that algorithms are given complete decision control. Schrage (2017), for instance, argued that "at some of the world's most successful enterprises – Google, Netflix, Amazon, Alibaba, Facebook – autonomous algorithms, not talented managers, increasingly get the last word." Unfortunately, this has been done without much thought about whether humans are ready to accept algorithms. The present research is pivotal, because it informs organisations that the majority of human managers are willing to accept a partnership in which humans have 70 percent weight and algorithms 30 percent weight in managerial decisions.

But, at the same time, our findings also warn organisations that a substantive part of the workforce – including approximately 30 percent of all managers – wishes to exclude algorithms completely from managerial decisions. Because of their strong aversion to algorithms, it can be accepted that these managers will do anything to exclude algorithms. It is even possible that they will incur high financial costs for either themselves or the organisation to avoid algorithms having a say in managerial decisions. It

is of crucial importance that organisations should be made aware of the existence of this particular subgroup, since their reservations regarding the introduction of algorithms can have severe negative consequences for organisational efficiency.

References

• Beck, A. H., Sangoi, A. R., Leung, S., Marinelli, R. J., Nielsen, T. O., Van De Vijver, M. J., ... & Koller, D. (2011). Systematic analysis of breast cancer morphology uncovers stromal features associated with survival. Science Translational Medicine, 3, 108ra113-108ra113.
• Bigman, Y. E., & Gray, K. (2018). People are averse to machines making moral decisions. Cognition, 181, 21-34.
• Bort, J. (2019). Amazon's warehouse-worker tracking system can automatically fire people without a human supervisor's involvement. Business Insider.
• De Cremer, D. (2020). Leadership by Algorithm. Hampshire: Harriman House Ltd.
• Dietvorst, B. J., Simmons, J. P., & Massey, C. (2015). Algorithm aversion: People erroneously avoid algorithms after seeing them err. Journal of Experimental Psychology: General, 144, 114-126.
• Dietvorst, B. J., Simmons, J. P., & Massey, C. (2018). Overcoming algorithm aversion: People will use imperfect algorithms if they can (even slightly) modify them. Management Science, 64, 1155-1170.
• Grove, W. M., Zald, D. H., Lebow, B. S., Snitz, B. E., & Nelson, C. (2000). Clinical versus mechanical prediction: a meta-analysis. Psychological Assessment, 12, 19-30.



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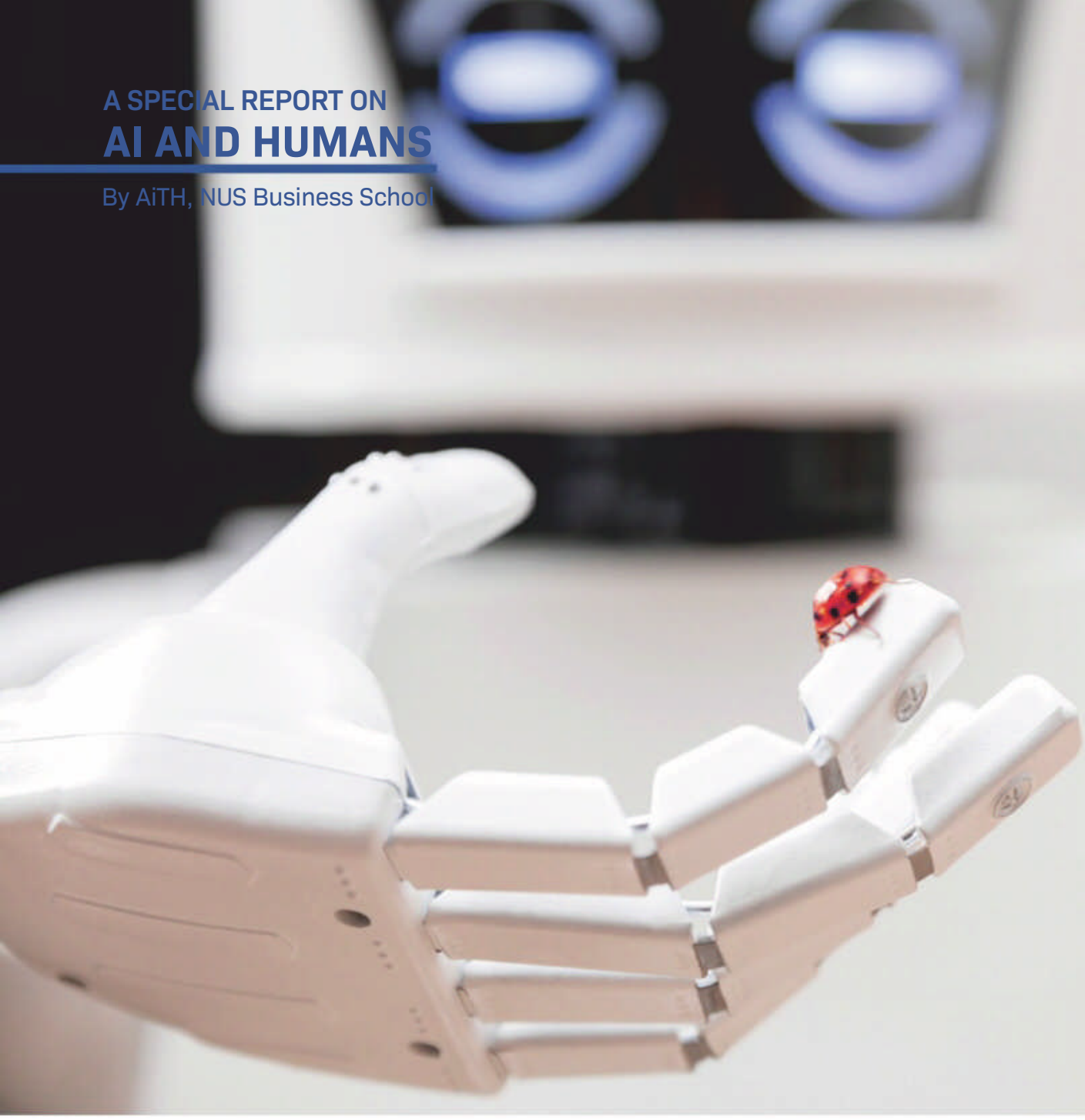
• Highhouse, S. (2008). Stubborn Reliance on Intuition and Subjectivity in Employee Selection. Industrial and Organizational Psychology, 1, 333-342.
• Hoffman, M., Kahn, L. B., & Li, D. (2018). Discretion in hiring. The Quarterly Journal of Economics, 133, 765-800.
• Lee, M. K. (2018). Understanding perception of algorithmic decisions: Fairness, trust, and emotion in response to algorithmic management. Big Data & Society, 5, 2053951718756684.
• Nelson, J. (2019). AI in the boardroom – Fantasy or reality?
Schrage, M. (2017). 4 models for using AI to make decisions. Harvard Business Review.
• Wang, D., Khosla, A., Gargeya, R., Irshad, H., & Beck, A. H. (2016). Deep learning for identifying metastatic breast cancer. arXiv:1606.05718.
• Wilson, H. J., & Daugherty, P. R. (2018). Collaborative intelligence: humans and AI are joining forces. Harvard Business Review, 96, 114-123.



Are there parallels between the Industrial Revolution of the eighteenth century and the changes now being wrought on twenty-first-century society by recent advances in AI and robot technology? And, if so, what are some of the consequences for which we should prepare ourselves this time round?

THE SERVICE REVOLUTION, INTELLIGENT AUTOMATION AND SERVICE ROBOTS

BY JOCHEN WIRTZ, WERNER KUNZ AND STEFANIE PALUCH

Dawn of the Service Revolution[1]

The industrial revolutions started in the late eighteenth century and automated blue-collar jobs in manufacturing, thereby providing massive structural benefits to our societies. They rapidly increased our standard of living by bringing high-quality, low-cost manufactured goods to the masses, and relieved people from laborious manual work.

Today, our economies seem to face a turning point similar to the industrial revolution, but this time in the service sector. Technologies rapidly become smarter and more powerful, while, at the same time, they get smaller, lighter and cheaper. These technologies include hardware such as that related to physical robots, drones and autonomous vehicles and their components (e.g., processors,

sensors, cameras, chips), wearable technologies, and code or software such as analytics, speech processing, image processing, biometrics, virtual reality, augmented reality, cloud technologies, mobile technologies, geo-tagging, low-code platforms, robotic process automation (RPA) and machine learning. Together, these technologies will transform virtually all service sectors. Service robots and artificial intelligence (AI), combined with these technologies, will lead to rapid innovation that can dramatically improve the customer experience, service quality and productivity, all at the same time.[2]

Robot- and AI-delivered service offers unprecedented economies of scale and scope, as the bulk of the costs are incurred in their development. Physical robots cost a fraction of adding to the headcount, and virtual robots can be deployed at negligible incremental cost. Virtual service robots (e.g., chatbots and virtual agents) can be scaled at close to zero incremental cost. Such dramatic scalability does not apply only to virtual service robots such as chatbots, but also to 'visible' ones such as holograms. For example, an airport could install a hologram-based humanoid service robot every 50 metres to assist passengers and deal with common questions (e.g., provide arrival and departure information, directions to check-in counters for a particular airline, and an airport hotel) in all common languages. These holograms only require low-cost hardware (i.e., a camera, microphone, speaker and projector) and do not need to take up floor space (travellers can push their baggage carts through a hologram when it gets crowded).

Already, many firms are showing eager interest in experimenting with service robots. For example, hotels are introducing humanoid robots in their lobbies, where they welcome guests, provide information and entertain guests. At airports, they scan boarding passes and help passengers to find the right departure gate. Self-moving check-in-kiosk robots detect busy areas and autonomously go there to help passengers reduce waiting time. Particularly, the outbreak of COVID-19 has increased the demand for medical service robots that check people's temperature or take over disinfection work[3]. The market size for service robots is projected to reach USD 41.5 billion by 2027.[4]

Robot- and AI-delivered service offers unprecedented economies of scale and scope, as the bulk of the costs are incurred in their development.

Such robots in hotels, airports and restaurants, chatbots and delivery bots are only the beginning of the service revolution. This means that, similar to the shift that started in the industrial revolution from craftsmen to mass production, an accelerated shift in the service sector towards robot- and AI-delivered services can be expected. The exciting prospect is that many services, including healthcare and education, are likely to become available at much lower prices and much better quality, and lead to a dramatic increase in our standard of living.

What Are Service Robots and How Are They Different from Current Self-Service Technologies?

Service robots have been defined as "system-based autonomous and adaptable interfaces that interact, communicate and deliver service to an organisation's customers".[5] These abilities differentiate service robots from traditional self-service technologies (SSTs) that we are familiar with in the context of ticketing machines, websites and apps. As shown in table 1, service robots can deal with unstructured interactions and guide customers through their service journey. For example, a ticketing robot will not let customers get stuck, as it can ask clarifying questions (e.g., "Is your return trip today?" "Can you travel off-peak?) and can even recover customer errors

The "Gran Caffè Rapallo" restaurant in Liguria is the first restaurant in Italy to use robot waiters.
Stefano Mazzola / Shutterstock.com

Table 1 **Contrasting Service Robots with Traditional Self-Service Technologies[6]**

Service Aspect	Self-Service Technologies (SSTs)	Service Robots
Customer Service Scripts and Roles	• Customers have to learn the service script and role, and follow it closely. • Deviations from the script tend to lead to service failure and abandonment of unsuccessful transactions. • Need to be self-explanatory and intuitive, as customers have to control and navigate the interaction.	• Customers do not need to learn a particular role and script beyond what they would do when interacting with a frontline employee. • Flexible customer journeys, interaction and scripts are supported. • Can guide the customer through the service process very much as a service employee would.
Customer Error Tolerance	• Generally, do not function when customers make errors or use the SST incorrectly. • Generally, are not effective in recovering customer errors; customers typically have to start the transaction again, or a service employee needs to take over.	• Are customer error-tolerant. • Can recover customer errors and guide the customer to conclude a successful service transaction.
Service Recovery Capability	• The service process tends to break down when there is a service failure; recovery is unlikely within the technology.	• Is "trained" to recover common service failures. • Can recover the service by offering alternative solutions, very much as a service employee would.

Robots can surface-act and consistently be pleasant; they are not prone to emotional burnout.

(e.g., a wrong button pressed, incorrect information entered or a rejected credit card). For most standard services, customers will interact with service robots in much the same way as with service employees (e.g., "I need a same-day return ticket and can I use Apple Pay?").

What Are the Differences Between Service Robots and Human Employees?

Robots are not able to feel and express real emotions. This can be important in some services, whereby the service management literature distinguishes between deep acting (i.e., employees displaying real emotions) and surface acting (i.e., they show superficial fake emotional responses).[7] In contrast, a robot's emotions are just displayed and not authentic. Consumers generally know this and respond accordingly. On the other hand, robots can surface-act and consistently be pleasant; they are not prone to emotional burnout. This may make robots perform better than humans in jobs that require display of surface-acted emotions. Other significant differences are summarised in table 2.

What Services Will Be Delivered by Robots?

Initial deployments of service robots focused on simple and repetitive tasks that tended to be low in their cognitive and emotional complexity (figure 1). For example, physical robots in hotels deliver room service and bring baggage to guest rooms. Text and voice-based conversational agents increasingly handle routine customer interactions. Even when interacting with a

Table 2

Contrasting Frontline Employees with Service Robots[8]

Dimension	Service Employees	Service Robots
Employee/ Robot Training and Learning	• Act as individuals, individual learning	• Act as part of systems, are connected, system learning
	• Need training	• Upgradable, system-wide
	• Limited memory and access	• Virtually endless memory and access
Customer Experience	• Heterogeneous output	• Homogenous output
	• Customisation and personalisation depend on employee skill and effort	• Customisation and personalisation can be delivered on scale at consistent quality and performance
	• Unintended biases	• Potentially no biases
	• Have genuine emotions	• Can mimic emotions
	• Can engage in deep acting	• Can engage in surface acting
	• Can engage in out-of-box thinking and creative problem-solving	• Limited out-of-box thinking, have rule-bound limits
Firm Strategy	• Service employees can be a source of competitive advantage	• Service robots are unlikely to be a source of competitive advantage, as service robot solutions are likely to be supplied by third-party providers (very much as ATMs are sold to banks)
	• High incremental cost	• Low incremental cost
	• Low economies of scale and scope	• High economies of scale and scope
	• Differentiation on service can be based on better hiring, selection, training, motivation and organisation of service employees	• Economies of scale and scope and related network and service platform effects will become important sources of competitive advantage

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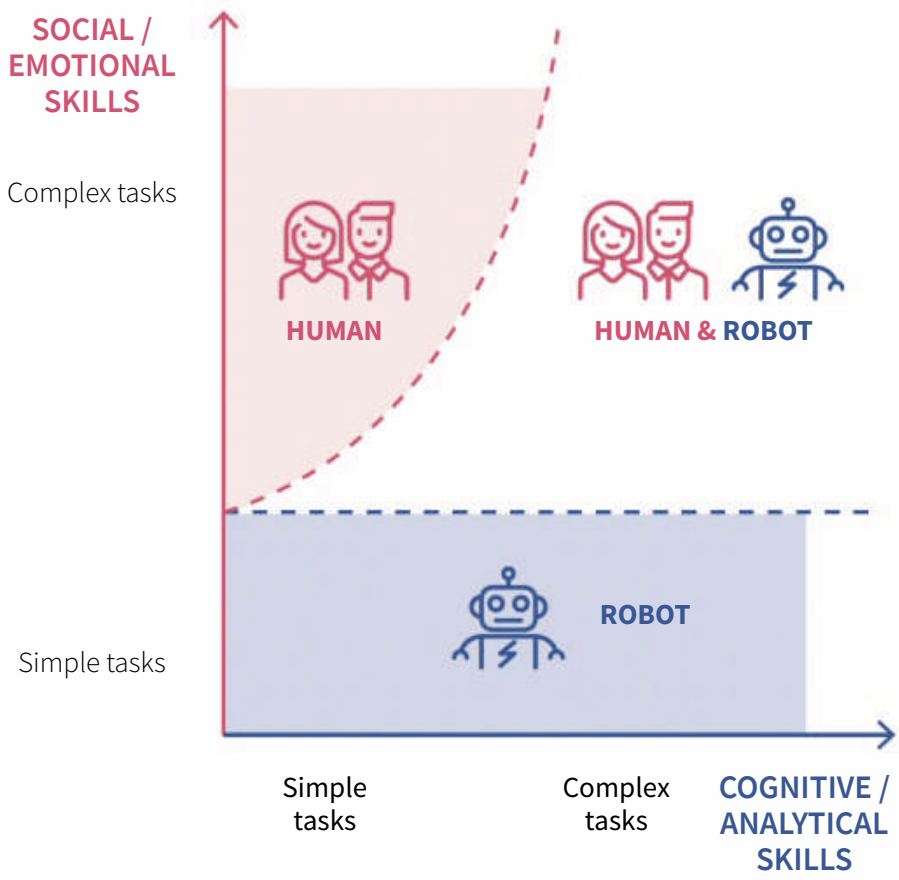
human service employee, that employee may well be supported by AI, and calls are pre-screened, preprocessed and then escalated to the human agent because of their complexity. The outcome is that customer contact staff do not have to deal with high volumes of trivial customer requests but instead can spend their time on higher-value and higher-level tasks. For example, a chatbot for the NUS MBA Programme handled 20,000 unique conversations per month right after launch and answered all the routine questions the admission team had to deal with previously (e.g., "Do I need a GMAT?" "When are the fees payable?" and "When is the application deadline?"). The admission team can now focus on top-quality candidates and the trickier and more complex discussions.[9]

Figure 1
The Service Robot Deployment Model[10]



In addition to routine tasks, services that require high cognitive and analytical skills will be delivered effectively by service robots (e.g., financial services). For example, service robots can analyse large volumes of data, integrate internal and external information, recognise patterns and relate these to customer profiles. Within minutes, these robots can propose best-fitting solutions and make recommendations.

It is difficult for robots to deal with emotions that go beyond a pleasant display of surface demeanour. Especially complex and emotionally demanding tasks are still better handled by service employees, as they can bring genuine emotions such as excitement and joy or empathy and compassion to the service encounter. For example, in complaint and service recovery situations, humans can respond better to the individual context and show understanding.

Human-robot teams will increasingly deliver tasks that require high cognitive and emotional skills. For example, in a healthcare context, service robots will do the analytical work (e.g., analyse symptoms and compare them with databases to identify possible diagnoses), and humans will make the final recommendations and decisions and take over the social and emotional tasks (e.g., advising and persuading patients). For example, the first author's daughter returned from Singapore to Munich with dengue fever; the symptoms only showed a week after her return. General practitioners in Germany may never see a dengue fever patient in their professional life and may not be effective in diagnosing it. On the other hand, a service robot compares patient data and symptoms and provides a 'hit list' of possible diseases with a fit index. The general practitioner can then work down the list and discuss with the patient (e.g., "Have you been in the tropics in the last two weeks?") and then identify the most likely diagnosis and test for it.

It is difficult for robots to deal with emotions that go beyond a pleasant display of surface demeanour.

Implications for Service Organisations

This revolution of the service sector will have enormous implications for business. Some of the most pressing issues for service organisations to tackle include[11]:

Implication # 1
Restructure the Service Frontline.

With the implementation of service robots, organisations will inevitably transform and be dramatically reorganised. This requires strong leadership and support, and the willingness and ability of employees to change. That is, employees will be assigned to new tasks and responsibilities and will need to develop the required skills (incl., RPA, basic programming and technology troubleshooting).

Implication # 2
See Robots as a Long-Term Investment.

The deployment of service robots comes with investments, including acquisition costs, development of IT specialists and programmers, and building virtual networks and maintenance of systems. It takes some time for these investments to be recouped; typically less than 12 months for successful implementations.[12]

Implication # 3

AI as an Opportunity for Cost-Effective Service Excellence.

We predict that hybrid human-robot teams and collaboration will be the service model of the future for many more complex service contexts. These hybrid teams will be able to realise productivity and service quality gains for the company by combining the advantages of AI and human employees. Robots' enormous knowledge and data is an undeniable advantage for creating customised services. Organisations should focus on implementing, managing and fine-tuning the deployment of robot-employee-customer co-creation teams to deliver unprecedented quality of interaction for their customers.[13]

We predict that hybrid human-robot teams and collaboration will be the service model of the future for many more complex service contexts.

Implication # 4

Mitigate Potential Risks of Robot Deployment.

Organisations need to mitigate potential misconceptions, prejudice and anxieties related to customer-facing service robots, such as algorithm aversion, perceived loss of the human touch, and consumer privacy. This requires organisations to embrace corporate digital responsibility (CDR) and develop a set of shared values, norms and actionable guidelines on the responsible use of technology along the full cycle. For example, related to data, it includes their capturing (e.g., using biometrics or social media accounts), their use (e.g., building variables such as a healthiness index or financial score), decision-making (e.g., approving loans and setting interest rates), and their retirement (e.g., when information on a bounced payment should be deleted from the firm's database).[14]

In summary, service robots and AI will transform our service sector and bring unprecedented improvements to the customer experience, service quality and productivity, all at the same time.[15] In turn, this service revolution has the potential to dramatically increase our standard of living, very much as the industrial revolution did for manufactured goods. The difference is that, this time, it is services such as financial, logistics, healthcare and education that are being industrialised.

AIRSTAR - a passenger aiding robot at Incheon International Airport.
Bandersnatch / Shutterstock.com

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References

[1] This article draws on Jochen Wirtz, Paul Patterson, Werner Kunz, Thorsten Gruber, Vinh Nhat Lu, Stefanie Paluch, and Antje Martins (2018), "Brave New World: Service Robots in the Frontline", Journal of Service Management, Vol. 29, No. 5, p. 909, https://doi.org/10.1108/JOSM-04-2018-0119; Pascal Bornet, Ian Barkin and Jochen Wirtz (2021), Intelligent Automation - Learn How to Harness Artificial Intelligence to Boost Business & Make Our World More Human, https://intelligentautomationbook.com; Jochen Wirtz (2020), "Organizational Ambidexterity: Cost-Effective Service Excellence, Service Robots, and Artificial Intelligence", Organizational Dynamics, Vol. 49, No. 3, https://doi.org/10.1016/j.orgdyn.2019.04.005.
[2] Jochen Wirtz and Valarie Zeithaml (2018), "Cost-Effective Service Excellence", Journal of the Academy of Marketing Science, Vol. 46, No. 1, pp. 59-80. https://link.springer.com/article/10.1007/s11747-017-0560-7
[3] Paluch, Stephanie, Wirtz, Jochen and Kunz, Werner H. (2020), "Service Robots and the Future of Service", in Marketing Weiterdenken – Zukunftspfade für eine marktorientierte Unternehmensführung, 2nd ed., Bruhn, M. and Kirchgeorg, M., and Burmann, C., eds., Springer Gabler-Verlag, pp. 423-435, https://doi.org/10.1007/978-3-658-31563-4
[4] Service Robotics Market Size Report and Industry Forecast, Fortune Business Insights, 2020. https://www.fortunebusinessinsights.com/industry-reports/service-robotics-market-101805
[5] Jochen Wirtz, Paul Patterson, Werner Kunz, Thorsten Gruber, Vinh Nhat Lu, Stefanie Paluch, and Antje Martins (2018), "Brave New World: Service Robots in the Frontline", Journal of Service Management, Vol. 29, No. 5, p. 909, https://doi.org/10.1108/JOSM-04-2018-0119;
[6] Adapted from Jochen Wirtz, Paul Patterson, Werner Kunz, Thorsten Gruber, Vinh Nhat Lu, Stefanie Paluch, and Antje Martins (2018), "Brave New World: Service Robots in the Frontline", Journal of Service Management, Vol. 29, No. 5, p. 909, https://doi.org/10.1108/JOSM-04-2018-0119.
[7] Jochen Wirtz and Christina Jerger (2017), "Managing Service Employees: Literature Review, Expert Opinions, and Research Directions", Service Industries Journal, 36(15-16), 757-788.
[8] Adapted from Jochen Wirtz, Paul Patterson, Werner Kunz, Thorsten Gruber, Vinh Nhat Lu, Stefanie Paluch, and Antje Martins (2018), "Brave New World: Service Robots in the Frontline", Journal of Service Management, Vol. 29, No. 5, p. 909, https://doi.org/10.1108/JOSM-04-2018-0119.
[9] Try this chatbot at https://mba.nus.edu.sg/.
[10] Adapted from Jochen Wirtz, Paul Patterson, Werner Kunz, Thorsten Gruber, Vinh Nhat Lu, Stefanie Paluch, and Antje Martins (2018), "Brave New World: Service Robots in the Frontline", Journal of Service Management, Vol. 29, No. 5, pp. 907-931, https://doi.org/10.1108/JOSM-04-2018-0119.
[11] This section is based on Paluch S., Wirtz J., Kunz W.H. (2020) Service Robots and the Future of Services. In: Bruhn M., Burmann C., Kirchgeorg M. (eds) Marketing Weiterdenken. Springer Gabler, Wiesbaden. S. 423-435 https://doi.org/10.1007/978-3-658-31563-4_21
[12] Pascal Bornet, Ian Barkin and Jochen Wirtz (2021), Intelligent Automation - Learn How to Harness Artificial Intelligence to Boost Business & Make Our World More Human, https://intelligentautomationbook.com;
[13] Jochen Wirtz (2020), "Organizational Ambidexterity: Cost-Effective Service Excellence, Service Robots, and Artificial Intelligence", Organizational Dynamics, Vol. 49, No. 3, https://doi.org/10.1016/j.orgdyn.2019.04.005.
[14] Lara Lobschat, Benjamin Müller, Felix Eggers, Laura Brandimarte, Sarah Diefenbach, Mirja Kroschke and Jochen Wirtz (2020), "Corporate Digital Responsibility", Journal of Business Research, published online first.
[15] Jochen Wirtz and Valarie Zeithaml (2018), "Cost-Effective Service Excellence", Journal of the Academy of Marketing Science, Vol. 46, No. 1, pp. 59-80. https://link.springer.com/article/10.1007/s11747-017-0560-7

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BY JAKOB STOLLBERGER AND DAVID DE CREMER

SYNERGY OR CONFLICT?

LESSONS FOR MANAGERS ON HOW TO SUCCESSFULLY ADOPT AI TO AUGMENT EMPLOYEE CREATIVITY

Artificial intelligence undeniably offers the potential to improve decision-making, at least in certain contexts. In this article, AI experts Jakob Stollberger and David De Cremer offer guidance for managers on how best to integrate the technology into work processes, even those associated with creativity, while continuing to meet the needs of the "human components" in the system.

The digital transformation offers near-boundless opportunities to improve work processes, including those on which organisations depend for their survival, such as creativity and innovation. A key challenge in this respect is how to successfully integrate AI in work processes that have previously been exclusively reserved for human team members, such as creative problem-solving. In this article, we make several recommendations on what managers can do to enable AI-augmented creativity in their organisations.

THE POSITIVE SIDE OF AI FOR ORGANISATIONS, AND THE NEGATIVE, TOO

The on-going digital transformation of workplaces and the increased integration of machine learning and artificial intelligence (AI) into work processes hold the potential to substantially augment work carried out by human employees and take it to the next level (Reeves, 2015). The last decade saw AI taking another developmental leap in that its capabilities are now not limited to relatively routine clerical or administrative tasks but extend to those that are more knowledge-intensive and necessitate considerable thinking capability (Huang, Rust, & Maksimovic, 2019), such as tasks requiring creativity.

However, despite the potential economic benefits, the automation of work processes by means of AI has sparked fear over a possible devaluation of human labour, rising unemployment due to the computerisation of jobs, and suggestions that AI represents a threat to democracy itself (Helbing *et al.*, 2017). Looking into the future, although some are optimistic about the various ways in which AI might enhance human creativity and help ensure continued societal progress (Amabile, 2020), others (Barrat, 2013; Lindebaum, Vesa, & den Hond, 2020) are more sceptical, arguing that the fruit of human creativity may undermine our own ability to be creative in the future. Because AI is not human-like, the initial perceptions of AI are characterised by a lack of trust in its capabilities (Glikson & Woolley, 2020), as well as lack of authenticity (Jago, 2019) compared to humans, leading to a preference for human collaborators over AI (Dietvorst, Simmons, & Massey, 2015). Moving forward, managers face the challenge of successfully integrating AI in work processes (De Cremer, 2019), such as those requiring creativity. In the following, we will therefore outline some ideas of how AI can be integrated alongside humans in the creative process and formulate three takeaways for managers on how to facilitate effective AI integration in organisations.

Despite the potential economic benefits, the automation of work processes by means of AI has sparked fear over a possible devaluation of human labour, rising unemployment due to the computerisation of jobs, and suggestions that AI represents a threat to democracy itself.

HUMAN-AI COLLABORATION FOR IMPROVED CREATIVE PROBLEM-SOLVING

Creativity can be described as the generation of ideas that are both novel and useful (Amabile, 1996), implying that ideas are considered creative if they (a) differ from the existing body of knowledge on a chosen topic and (b) add value in a human work environment, for example, in the context of improved products or services. The process underlying creative idea generation, however, is not uniform and varies depending on what kinds of activities one engages in (Nijstad, de Dreu, Rietzschel, & Baas, 2010). Specifically, creative ideas can be the result of either engaging in activities that require *persistence*, for example those involving methodical information search and the exploration of a limited number of prescribed categories, or activities that necessitate *flexibility*, such as those that involve breaking habitual thinking and meaningfully connecting knowledge across a variety of broad, previously unrelated categories. In a way, the persistence–flexibility duality can be likened to the relationship between

exploration and exploitation that has previously been linked to enhanced innovative potential in organisations (Bledow, Frese, Anderson, Erez, & Farr, 2009). We take the two different pathways to creativity, that is, persistence and flexibility, as a starting point to outline a division of labour for humans and AI as part of the creative process, which will also guide our recommendations on how to effectively integrate AI in creative processes in organisations.

Specifically, the typical capabilities of AI appear to be better suited to contributing to the creative process when it comes to activities that require *persistence*. For example, if programmed appropriately, AI is able to search vast databases for relevant predefined categories and keywords, as well as formulate suggestions on how the information gathered can translate into novel additions to existing products and services. Thus, AI is a prime candidate to augment the creative process via the persistence pathway to creativity because, compared to humans, it excels at storing and processing information, as well as at engaging in systematic and incremental search processes within large data sets (Logg *et al.*, 2019; Metcalf, Askay, & Rosenberg, 2019; Raisch & Krakowski, in press). Conversely, the typical capabilities of humans should enable them to contribute to the creative process on activities that require *flexibility*. This is in part because flexible out-of-the-box thinking is, to a large extent, driven by quintessentially human experiences, such as emotions (Nijstad *et al.,* 2010), which AI cannot yet emulate (Huang *et al.,* 2019), underlining the significance of human contributions to the creative process and offering a glimpse of how human-AI collaboration for creativity could play out in practice.

MANAGING THE INTEGRATION OF AI IN CREATIVE WORK PROCESSES

Having identified the unique contributions that AI and humans can make to augment the creative idea-generation process in future workplaces, the question becomes what managers can do to manage human-AI collaboration and effectively integrate AI into creative work processes in their organisations.

1 Spell out an overarching vision that is inclusive of both humans and AI

In many ways, the advent of AI in organisations presents a challenge for diversity and inclusion at work. Whereas previous organisational efforts in this respect may have focused on managing a diversity of individuals with different demographic (e.g., gender, age, ethnicity) or functional backgrounds (e.g., diversity of knowledge, skills and expertise; Guillaume *et al.*, 2014), diversity management will likely be both more complex and more important for organisational effectiveness in the future. This is because the introduction of AI adds another layer of diversity, that of humans versus AI. Fortunately, the wealth of research on diversity and inclusion is not merely applicable to purely human diversity in organisations, but can also be used to manage the new human-AI diversity moving forward. One particularly promising way to manage such human-AI collaboration is to spell out an overarching vision to employees (Stam, Lord, van Knippenberg, & Wisse, 2014), specifically on how AI will contribute to work processes, such as those involving creativity, reassure humans that their role in this context is still essential and will not fall prey to AI-related automation, and that the input from both AI and human employees is necessary to achieve collective goals.

Research has shown that many of the negative perceptions and biases humans have towards AI can be resolved by allowing humans to retain an element of control over the collaborative work process in question.

2 Allow for a degree of human control regarding idea selection in the creative process

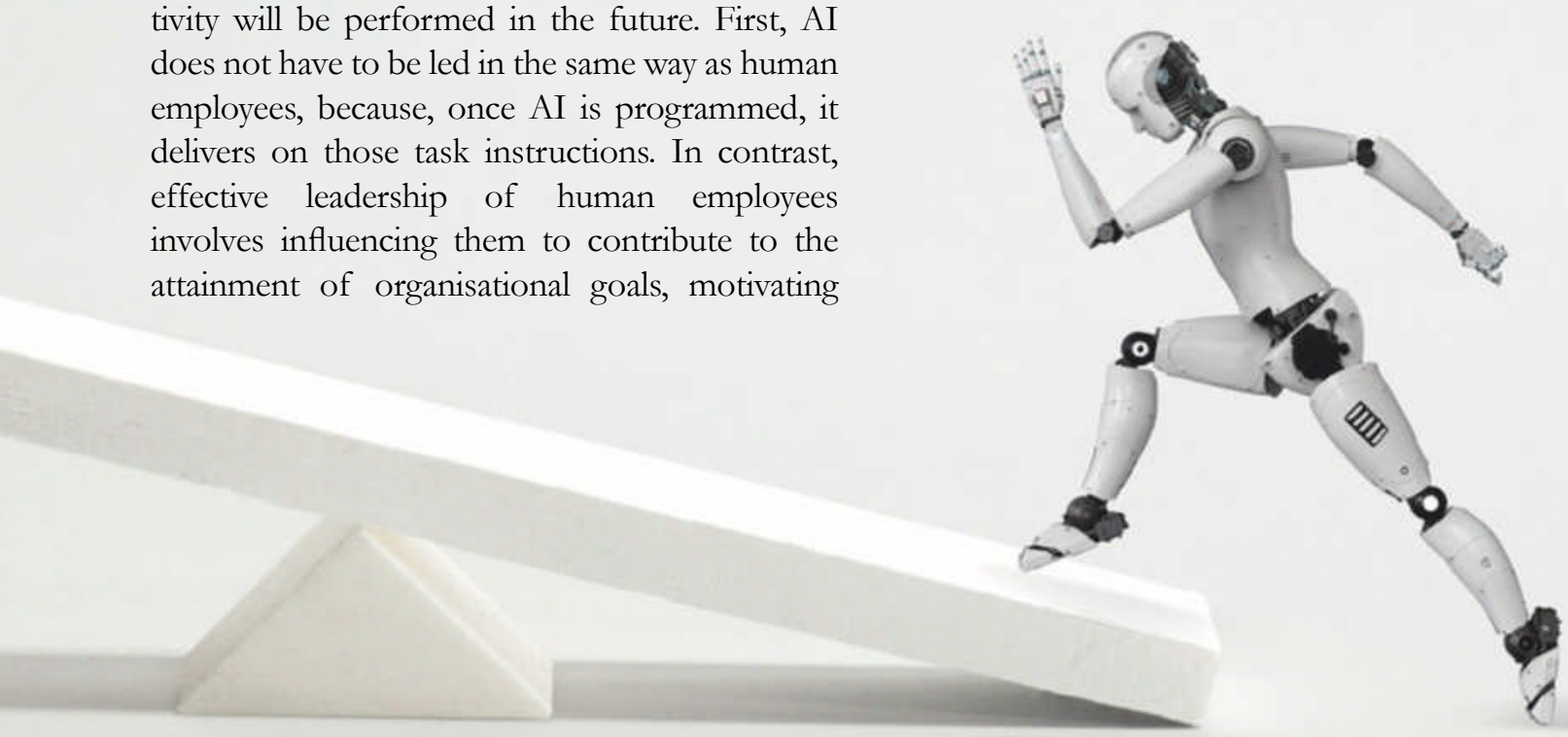
Research has shown that many of the negative perceptions and biases humans have towards AI

can be resolved by allowing humans to retain an element of control over the collaborative work process in question (Dietvorst, Simmons, & Massey, 2018). In the case of humans and AI contributing to creative processes, this element of control could reside in bestowing upon human employees an idea-selection capacity. Specifically, although AI may come up with ideas as a result of engaging in persistence-related activities, this does not guarantee that AI-generated ideas are automatically useful for organisations and markets comprised of humans; in fact, they may even prove harmful (Amabile, 2020). Here, human ombudsmen may be tasked with making sense of AI-generated ideas and selecting those that hold the greatest potential to add value to products and services in a human environment.

Human ombudsmen may be tasked with making sense of AI-generated ideas and selecting those that hold the greatest potential to add value to products and services in a human environment.

Focus leadership for creativity on exploitation and implementation of new ideas

Effective leadership for creativity ought to be ambidextrous, that is, involve behaviours that promote exploration and exploitation activities of their employees (Bledow *et al.*, 2009). The integration of AI into creative work processes, however, is likely to change how leading for creativity will be performed in the future. First, AI does not have to be led in the same way as human employees, because, once AI is programmed, it delivers on those task instructions. In contrast, effective leadership of human employees involves influencing them to contribute to the attainment of organisational goals, motivating continued goal pursuit, and providing resources to enable eventual goal attainment. In the context of leading for creativity, because AI – due to its unique capabilities to generate ideas by analysing large databases – covers substantial ground regarding the exploration of potential creative ideas, human involvement will to a large extent be focused on efforts associated with the exploitation of ideas. As previously mentioned, these efforts may include sense-making and idea-validation activities with the aim of implementing the most promising ideas to develop new products and services. As a result, leadership for creativity will have to follow suit and predominantly shift to those creative activities that retain mostly human involvement, specifically focusing on behaviours geared towards exploitation, such as idea validation and implementation (Stollberger, West, & Sacramento, 2019; Zhou, Wang, Bavato, Tasselli, & Wu, 2019). This may, for example, involve an increased focus on setting meaningful deadlines



for brainstorming and creative problem-solving activities to ensure greater efficiency of human-AI collaboration. Furthermore, even if ideas arising from collaborative efforts are novel and potentially useful, they may not be easily implemented in practice and thus prove unfeasible.

The effectiveness of teams comprised of both AI and humans will, in large part, depend on managers finding a way to successfully integrate AI into relevant work processes, such as those requiring creativity.

CONCLUSION

The digital transformation holds the promise to augment human capabilities at work and add value to the development of products and services in the future. However, the introduction of "digital co-workers" comes with challenges, as well, that include but are not limited to the restructuring of work processes and related transition to human-AI collaboration, as well as manoeuvring the potential pitfalls of effective AI integration. The effectiveness of teams comprised of both AI and humans will, in large part, depend on managers finding a way to successfully integrate AI into relevant work processes, such as those requiring creativity, and thereby unlocking the value proposition of AI for organisations.

References

• Amabile, T. M. (1996). Creativity in context: Update to the social psychology of creativity. Boulder: Westview Press.

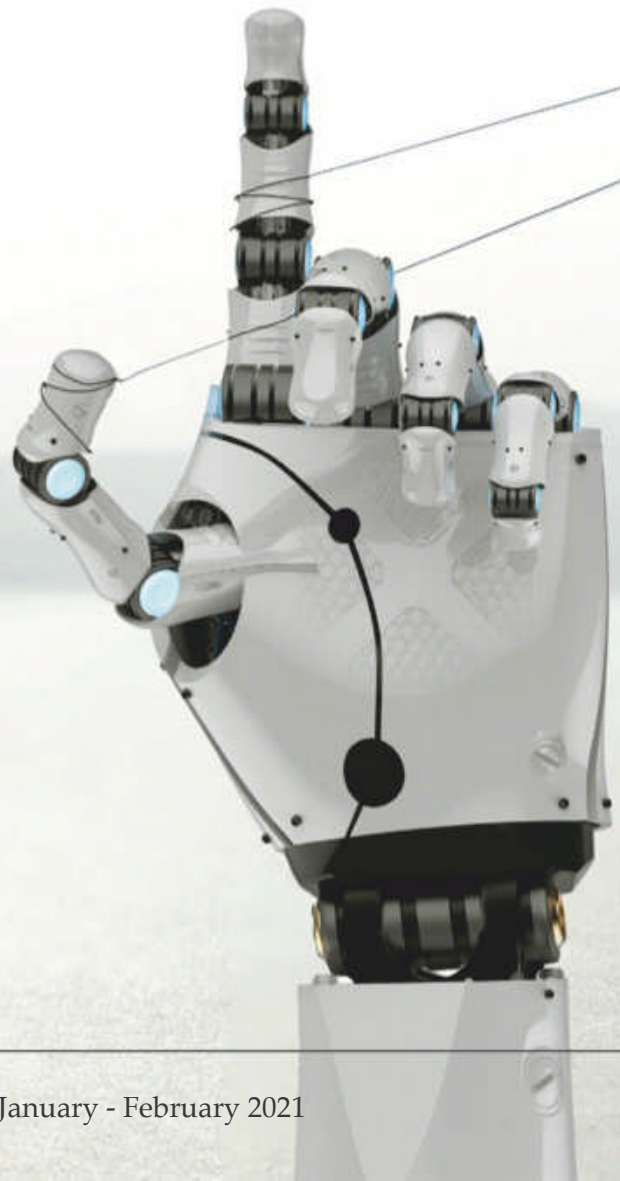
• Amabile, T. M. (2020). GUIDEPOST: Creativity, artificial intelligence, and a world of surprises. Academy of Management Discoveries, 6(3), 351–354.

• Barrat, J. (2013). Our final invention: Artificial intelligence and the end of the human era. New York: Thomas Dunne.

• Bledow, R., Frese, M., Anderson, N., Erez, M., & Farr, J. (2009). A dialectic perspective on innovation: Conflicting demands, multiple pathways, and ambidexterity. Industrial and Organizational Psychology, 2, 305–337.

• De Cremer, D. (2019). Leading artificial intelligence at work: A matter of facilitating human-algorithm cocreation. Journal of Leadership Studies, 13, 81–83. https://doi.org/10.1002/jls.21637

• Dietvorst, B. J., Simmons, J., & Massey, C. (2015). Algorithm aversion: People erroneously avoid algorithms after seeing them err. Journal of Experimental Psychology: General, 144, 114–126. https://doi.org/10.5465/ambpp.2014.12227abstract



• Dietvorst, B. J., Simmons, J. P., & Massey, C. (2018). Overcoming algorithm aversion: People will use imperfect algorithms if they can (even slightly) modify them. Management Science, 64, 1155–1170. https://doi.org/10.2139/ssrn.2616787

• Glikson, E., & Woolley, A. W. (2020). Human trust in artificial intelligence: Review of empirical research. Academy of Management Annals, 14, 627–660. https://doi.org/10.5465/annals.2018.0057

• Guillaume, Y. R. F., Dawson, J. F., Priola, V., Sacramento, C. A., Woods, S. A., Higson, H. E., … West, M. A. (2014). Managing diversity in organizations: An integrative model and agenda for future research. European Journal of Work and Organizational Psychology, 23, 783–802. https://doi.org/10.1080/1359432X.2013.805485

• Helbing, D., Frey, B. S., Gigerenzer, G., Hafen, E., Hagner, M., Hofstetter, Y., Zwitter, A. (2017). Will democracy survive big data and artificial intelligence? Scientific American

• Huang, M. H., Rust, R., & Maksimovic, V. (2019). The feeling economy: Managing in the next generation of Artificial Intelligence (AI). California Management Review, 61, 43–65. https://doi.org/10.1177/0008125619863436

• Jago, A. S. (2019). Algorithms and authenticity. Academy of Management Discoveries, 5, 38–56. https://doi.org/10.5465/amd.2017.0002

• Lindebaum, D., Vesa, M., & den Hond, F. (2020). Insights from The Machine Stops to better understand rational assumptions in algorithmic decision-making and its implications for organizations. Academy of Management Review, 45, 247–263.

• Logg, J. M., Minson, J. A., & Moore, D. A. (2019). Algorithm appreciation: People prefer algorithmic to human judgment. Organizational Behavior and Human Decision Processes, 151, 90–103. https://doi.org/10.1016/j.obhdp.2018.12.005

• Metcalf, L., Askay, D. A., & Rosenberg, L. B. (2019). Keeping humans in the loop: Pooling knowledge through artificial swarm intelligence to improve business decision making. California Management Review, 61, 84–109. https://doi.org/10.1177/0008125619862256

• Nijstad, B. A., de Dreu, C. K. W., Rietzschel, E. F., & Baas, M. (2010). The dual pathway to creativity model: Creative ideation as a function of flexibility and persistence. European Review of Social Psychology, 21, 37–77.

• Raisch, S., & Krakowski, S. (in press). Artificial intelligence and management: The automation-augmentation paradox. Academy of Management Review.

• Reeves, M. (2015). Algorithms can make your organization self-tuning.

• Stam, D., Lord, R. G., van Knippenberg, D., & Wisse, B. (2014). An image of who we might become: Vision communication, possible selves, and vision pursuit. Organization Science, 25, 1172–1194. https://doi.org/10.1287/orsc.2013.0891

• Stollberger, J., West, M. A., & Sacramento, C. A. (2019). Innovation in work teams. In P. B. Paulus & B. A. Nijstad (Eds.), The Oxford Handbook of Group Creativity and Innovation (pp. 231–252). New York, NY: Oxford University Press.

• Zhou, J., Wang, X. M., Bavato, D., Tasselli, S., & Wu, J. (2019). Understanding the receiving side of creativity: A multidisciplinary review and implications for management research. Journal of Management, 45, 2570–2595. https://doi.org/10.1177/0149206319827088

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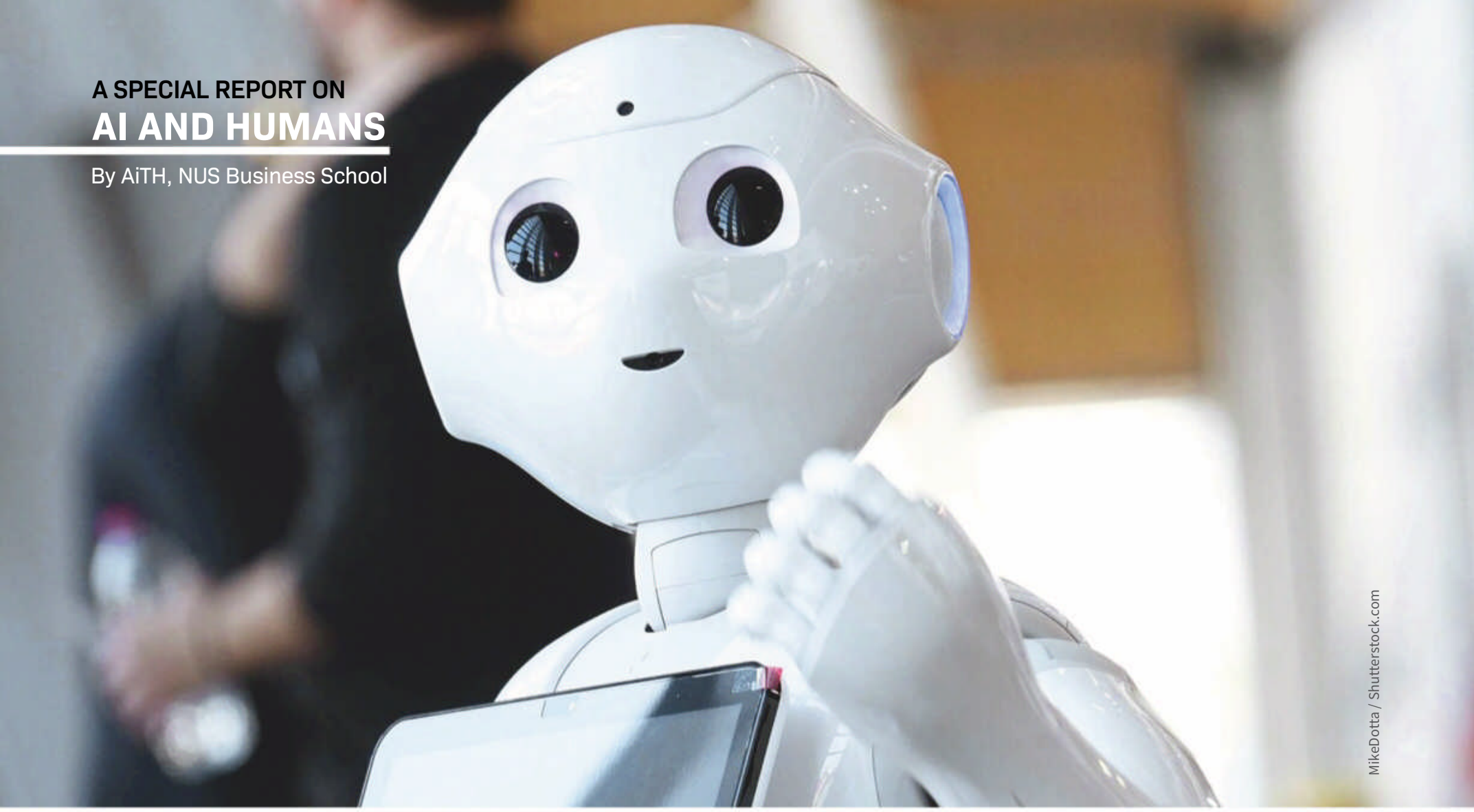

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Want your customers to have a positive, forgiving attitude towards your robot employees? Then make your robots human – but not too much! Kai Chi Yam and David De Cremer of the National University of Singapore fill us in on their intriguing work on the subject.

HUMANISING ROBOTS

INCREASES CONSUMER SATISFACTION AND FORGIVENESS OF THEIR FAILURES

BY KAI CHI YAM AND DAVID DE CREMER

Organisations have started to adopt the use of service robots at an increasing pace. The International Federation of Robotics, for example, found that there was a 61-percent increase in the sales of service robots in 2019. As service robots clearly become more prevalent, the next challenge concerns whether they should be made more humanlike. The New York Times, for example, recently published an article entitled "Should Robots have a Face?". Anecdotes reported in that article suggest that consumers generally react more positively to robots with faces. In our research, recently accepted by the Journal of Applied Psychology, we tested this hypothesis systemically with two randomised experiments.

We used both psychological and physical means to manipulate how participants thought about the robots in our studies. In Study 1, we used a concept called anthropomorphism – imbuing robots with humanlike characteristics, motivations, intentions and emotions – and

explored whether anthropomorphised robots become more likeable. To test this hypothesis first in the field, we went to the world's first robot-staffed hotel, in Japan, which uses a raptor robot and a humanoid lady as receptionists.

As hotel guests checked into the hotel, we randomly approached half of them and asked them to treat the robots in the hotel as if they had humanlike traits and write a brief description of the anthropomorphised robots, a previously validated manipulation of anthropomorphism. A day later, we approached guests as they checked out and asked them to report on any service failures by the robots that they had encountered during their stay, and their overall satisfaction with the hotel.

We found that the guests we had instructed to think and write about the robots in an anthropomorphised way later reported higher overall satisfaction with the hotel. Notably, we also found that robot service failures were not uncommon. But what is interesting is that guests who were in the anthropomorphism condition were much more forgiving of such failures, compared to guests in the control condition, who were not asked to think of the robots in anthropomorphised ways. This finding is particularly important, given that robots are not yet able to navigate and coordinate well with humans, which means that service failures are likely and common. As a result, companies that today rely on the use of robots in the service sector will definitely need to create the right conditions under which their customers are willing to be tolerant towards these types of failures.

Armed with this insight, we sought to replicate our findings in a more controlled, laboratory setting. In a second experiment, we used a robot to serve participants food and we manipulated anthropomorphism via three factors – voice, name and face. In the anthropomorphism condition, the robot introduced "herself" as "Allison". "She" also spoke in a normal female voice in an American accent. Finally, the screen mounted on the robot displayed a smiley face during the study and its lips would move while "speaking". In the control condition, the robot introduced itself as "robotic arm 57174", spoke in a mechanistic voice, and only displayed a blank screen.

All of our findings were replicated; the participants who interacted with the anthropomorphised robot reported higher satisfaction with the robot. In addition, when the robot failed to deliver the correct food choice, participants in the anthropomorphised condition were much more forgiving of its error.

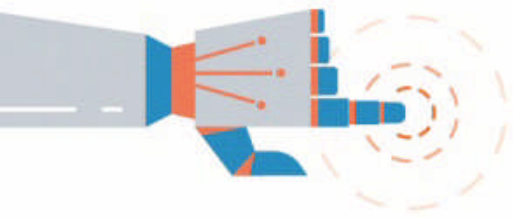
Given these findings, we suggest that organisations adopting robots in their workforce should do the following to maximise consumer satisfaction:

1 Humanise your robot employees whenever possible. This goes beyond just giving them a face. Organisations can change the way and the tone with which robots speak, as well as their accent. Our work and that of others have shown that robots who speak with a humanlike voice and a local accent and use slang are more likeable.

Robots who speak with a humanlike voice and a local accent and use slang are more likeable.

A picture of the robot receptionists at Henn na Hotel
feber.se

2 Making robots more humanised will definitely matter most when automation is used in areas where service failures may still emerge from time to time. Under those circumstances, your customers' satisfaction will be shaped largely by how tolerant they want to be towards robotic failures. Ensuring that your



robots have human characteristics (such as a face) may then go a long way to ensuring that kind of tolerance.

3 At the same time, however, it is important to avoid making robots look too much like a human. Indeed, while robots that have a face are generally more likeable, animated faces should be preferred over faces that closely resemble the physical features of humans. Research suggests that we react positively to robots with physical features that are familiar to humans (i.e., animated faces), but push that a little further – close to, but not quite, human – and then they become disturbing, creepy and untrustworthy. This phenomenon is known as the uncanny valley, which refers to the uneasiness people often feel when seeing humanoid robots that resemble actual human beings.

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Kai Chi (Sam) Yam is an Associate Professor and Dean's Chair at the National University of Singapore Business School. Sam is also a research affiliate at AiTH and received his PhD in Organizational Behavior from the University of Washington. Sam's research focuses primarily on behavioral ethics, leadership, humor, and the future of work. His work has been published in premier journals such as *Proceedings of the National Academy of Sciences, Academy of Management Journal, Academy of Management Review, British Medical Journal, Journal of Applied Psychology, Journal of Personality and Social Psychology, Organizational Behavior and Human Decision Processes, and Personnel Psychology*. In 2016, Sam was named by Poets and Quants as one of the Best 40 under 40 Business Professors in the world.

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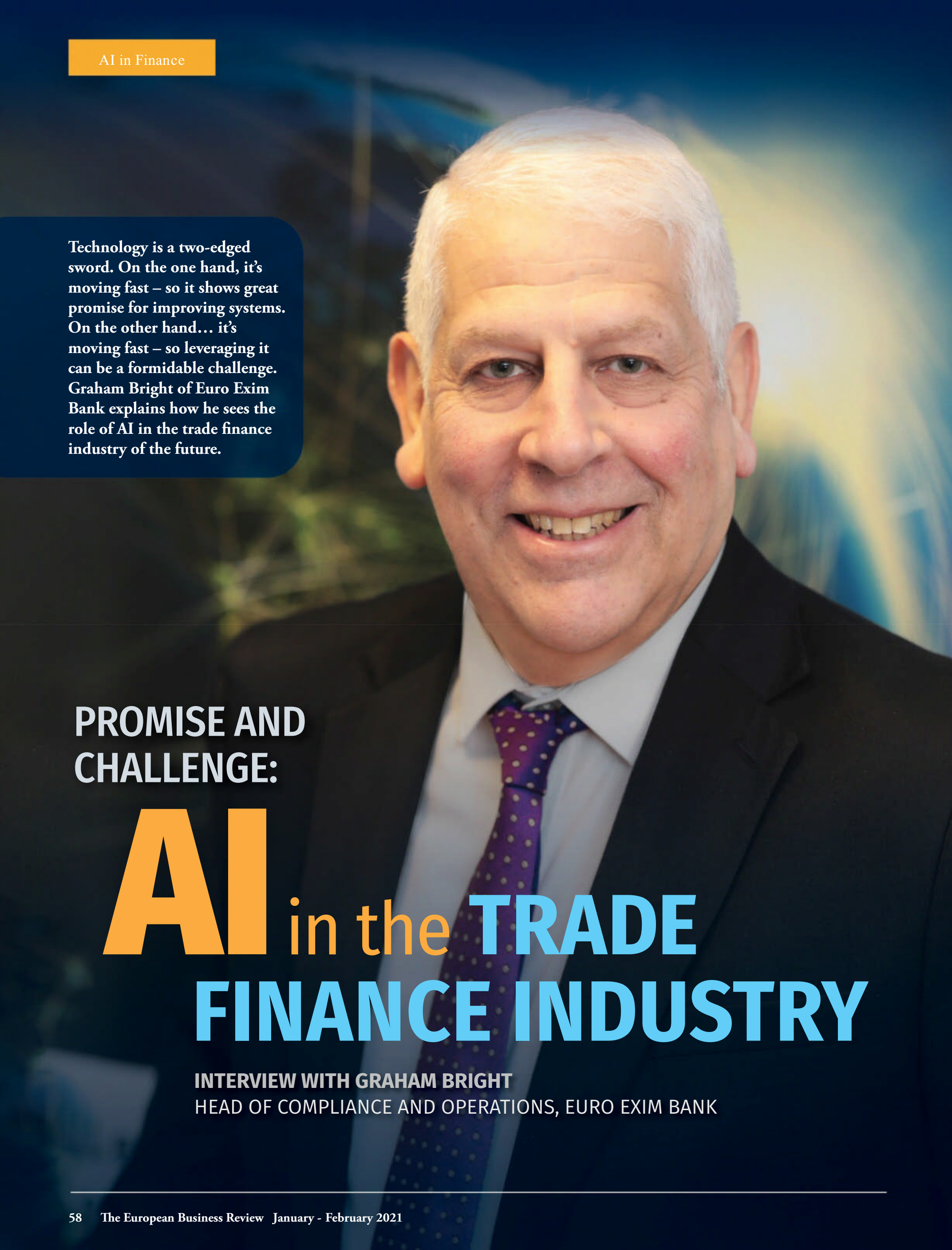


Technology is a two-edged sword. On the one hand, it's moving fast – so it shows great promise for improving systems. On the other hand… it's moving fast – so leveraging it can be a formidable challenge. Graham Bright of Euro Exim Bank explains how he sees the role of AI in the trade finance industry of the future.

PROMISE AND CHALLENGE: AI in the TRADE FINANCE INDUSTRY

INTERVIEW WITH GRAHAM BRIGHT
HEAD OF COMPLIANCE AND OPERATIONS, EURO EXIM BANK

Q EEB has described itself as "future-ready". What place does the exploitation of leading-edge technology, including artificial intelligence, have in the overall strategy of the company?

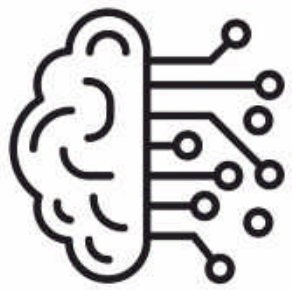
A Our Future Ready strategy brings clarity and vision to complex scenarios, delivering peace of mind, lower lifecycle costs and resilience, making not only our applications but our infrastructure ready for future challenges.

In competitive, fast-changing markets with significant events, we have not let up in our investment in new technologies, which optimise the systems we use, enhance and simplify the way we use them, and draw best value from the data and information available to us.

In terms of planning, analytics, audit and longevity, our systems have been carefully developed with specialist trade experts and IT to provide ease of integration, implementation, security and functionality specific to our business sector.

Add to this our extensive use of cloud technology, protection of data with DR and backup processes, we are confident that, whatever significant event, demand or challenge may be thrown at us, we are not only able to contain, but to control and manage and continue. And AI is just one of the technologies already implemented and used in defined areas today, with the prospect of greater usage in future.

Artificial intelligence is changing the way that players in trade do business, **helping to make trade assets more efficient, affordable and competitive.**



Q What do you see as the most promising areas for the deployment of AI in the industry?

A Before looking at promising areas, what is meant by AI? Not the areas of translation services, chatbots and autonomous vehicles but, in our market sector, a more general meaning, namely "self-learning systems that can learn from experience with humanlike breadth and surpass human performance on all tasks".

Artificial intelligence is changing the way that players in trade do business, helping to make trade assets more efficient, affordable and competitive.

The commercial focus is mostly on compliance and due diligence, such as natural language processing to create comprehensive profiles of individuals or businesses involved in a transaction, based on extensive web searches. Other compliance applications scour trade finance documents to find anomalies - for example discrepancies between the price per unit of a product and the final invoice value.

The overwhelming volume, variety, velocity and value of data cannot be ignored, and neither can the efficiency and accuracy of AI solutions. We now see products that allow the complete automation of trade finance document processing, analysing documents, digitising and extracting data before feeding it into transaction processing, audit and information systems.

AI technology has evolved enough to combine compliance and portfolio management capabilities and bring the ecosystem of trade finance closer together.

Q Can you give us a hint of any specific plans that your company might already have for the use of AI in the future?

A We see AI as one of the building blocks of our internal systems architecture, supporting

changes in the way we work. The industry has long spoken about paperless banking, and the nirvana is true paperless trade, although the proprietary, non-standard nature of the systems, process, documents and regulation means this may be some years away.

Q What do you think are the principal challenges for the industry in leveraging AI?

A AI promises much. The reality is that there are still significant challenges.

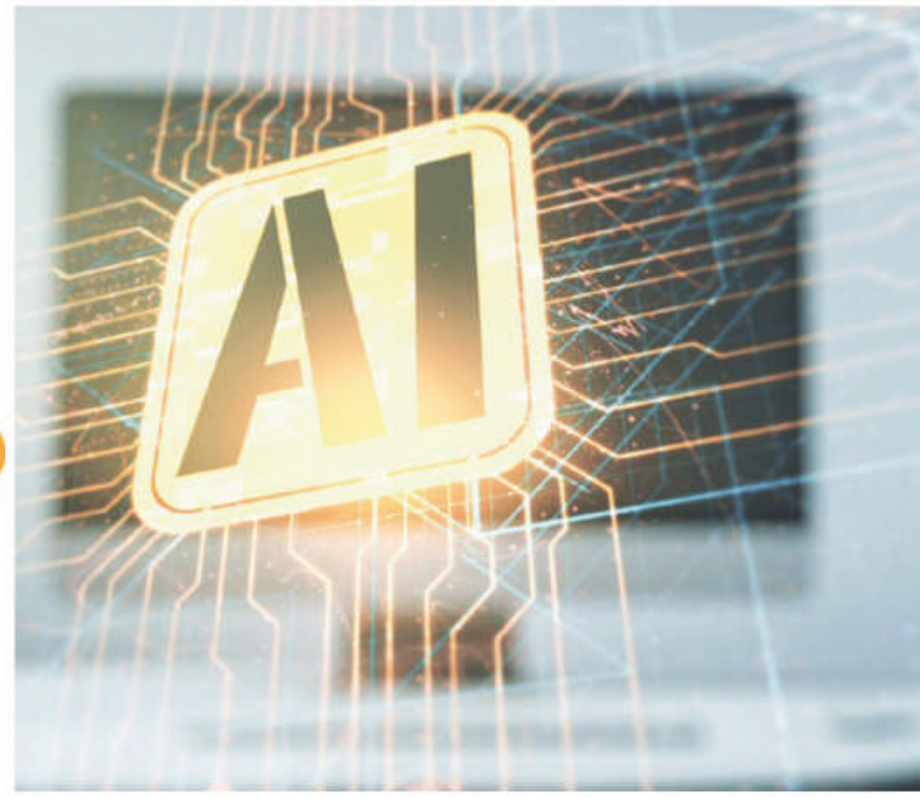
Firstly, consistent data quality. It takes time, resource and effort to perfect the collection of unbiased, meaningful, trusted data. Having a data-quality programme in place is a prerequisite to any large-scale AI initiative.

Secondly, an autonomous black box. Leaving everything to a process operative at light-speed can be daunting. Options are not verifiable, doubts can creep in, reasonable action vs best action are hard to assess, and a perceived loss of control can undermine the task in hand. Speed does not always enable efficiency.

Thirdly, specific focus. AI cannot solve everything – it needs to be applied in specific situations for unique roles. Detecting suspicious trade information in a letter of credit would not mean an ability to track suspicious payments. Also, AI does not 'take a view', but relies on rational rather than emotional process, without the ability to discern context, tone or empathy. The computer can say 'no'.

Fourthly, and perhaps most importantly, responsibility and liability. Intelligent machines may be the goal, but at what cost, and who is ultimately responsible? Humans are still needed to oversee business functions, and are not yet able to delegate regulatory and compliance obligations to critical automated processes, and how long will it be before the automated system is challenged in court?

We see AI as one of the building blocks of our internal systems architecture, supporting changes in the way we work.



Q Do you foresee decision-making being taken out of the hands of managers, to become the sole province of machines?

A No, as mentioned above, there is still a significant role to be played by real people, managing the process, dealing with exceptions, liaising with regulators, ensuring compliance, taking unique and often hard decisions.

Q Would you say that AI could be valuable in reducing the risk inherent in international trade?

A There is certainly value in implementing AI, especially in improving the dissemination of trusted, unambiguous electronic forms, no more wet signatures on documents, faster ID and KYC checks, data sharing and general digitisation of documents into standard formats.

Euro Exim Bank

Euro Exim Bank Limited is an innovative global financial institution with Head Office in St. Lucia and Representative Office in London.

We hold a "Class A" international banking license from Financial Services Regulatory Authority (FSRA) of St. Lucia. This license provides authorisation to conduct business with third parties across industries and geographies worldwide, exercising strong due diligence, full compliance and operational excellence in our processes.

Euro Exim Bank is an associate member of the Caribbean Association of Banks Inc (CAB). Being a member of CAB offers us opportunities and knowledge sharing with industry leaders that are applied to modernise our operations and customer service.

Q How might AI be applied towards, for example, improving the security of transactions?

A AI can help monitoring of data in real time, spot oddities for further investigation and eliminate or reduce the occurrence of payment frauds committed by professional cyber-criminals.

Payment frauds are now more sophisticated and often exceed the detection capabilities of rules-based systems. They have different patterns or digital footprints, structure and sequence, and are not detectable with predictive modelling and rules logic only. It might have been possible in early e-commerce days, but now greater AI is needed to confront the constant challenges of dealing with high-volume, often state-sponsored, complex payment fraud schemes.

AI provides real-time fraud prevention. Businesses with AI-based secure payments have an immediate advantage over those that don't, since the fraudulent payments are detected almost instantly with real-time analysis of payments data. As AI companies compete with each other to provide faster solutions, the response rate for risk calculation is increasing.

Predictive analytics of AI and machine learning combined can find discrepancies in large data sets within seconds. As a machine-learning algorithm works more accurately with more data, it provides better predictive values. While ensuring secure payments, AI algorithms can distinguish fraudulent and legitimate transactions with greater accuracy.

With advancement in technology and the rise of sophisticated cyber-criminals, financial institutions are now leveraging AI to ensure secure payments and improve customer experience. Though some small organisations may not be able to move to advanced analytics and AI immediately, they can begin by analysing existing data and building the expertise required to start as early as possible.

With advancement in technology and the rise of sophisticated cyber-criminals, financial institutions are now leveraging AI to ensure secure payments and improve customer experience.

Q What might the benefits be in terms of carrying out checks on compliance?

A Certainly speed, exception processing, defined, universally accepted results. But AI cannot succeed by itself. AI models are extremely dependent on educated and experienced expertise, and therefore collaboration between human and machine is mandatory to perfecting AI in order to rely on it to drive consistent, auditable, and accurate decisions.

AI is very good at dealing with tasks on a large scale and in super-quick time. It's not that AI is more intelligent than the human brain, it's just that it can work at much faster speeds and on a much bigger scale, making it the perfect fit for the data-heavy world.

For compliance purposes, this makes it an ideal solution for double-checking work and an accurate detector of systemic faults, one of the major challenges that regulators in the financial sector in particular have faced in recent years.

Rather than a replacement for humans in the compliance arena, AI is adding another layer of protection for businesses and consumers alike.

When it comes to double-checking work, AI can pinpoint patterns or trends in employee activity and customer interactions much more quickly than any human, enabling remedial action to be taken to ensure adherence to regulations.

Similarly, by analysing the data from case management solutions across multiple users, departments and locations, AI can readily identify systemic issues before they take hold, enabling the business to take the necessary steps to rectify practices to guarantee compliance before they adversely affect customers, and before the business itself contravenes regulatory compliance.

Again, it's not a case of replacing humans but complementing existing processes and procedures to not only improve outcomes for customers, but to increase compliance, too.

At its most basic level, AI can minimise the time taken to complete tasks and reduce errors, which, in theory, makes it the ideal solution for businesses of all shapes, sizes and sectors. For highly regulated industries, where compliance is mandatory, it's not so clear-cut.

While there are clearly benefits to be had from implementing AI solutions, for the moment they should be regarded as complementary technologies, protecting both consumers and businesses by adding an extra guarantee of compliant processes.

Recent AI advances, while seemingly impressive, are very narrow in scope and require a lot of human supervision and input to work in real applications.

While knowledge and understanding of the intricacies of AI are still growing, it would be a mistake to implement AI technologies across the board, particularly when a well-considered human response to the nuances of customer behaviours and reactions plays an important role in staying compliant.

That's not to say that we should be frightened of AI, and nor should the regulators. As the technology develops, so will our wider understanding. It's up to businesses and regulators alike to do better, being totally transparent about the uses of AI and putting in place a robust, reliable framework to monitor the ongoing behaviour of AI systems.

Q Many worry that AI inevitably translates into job losses. Do you see that as inevitable in your industry and, if so, how can it be addressed?

A Job losses in the short term are inevitable, but not as a direct result of AI. The immediate threat is the worldwide effect of the pandemic, with firms evaluating whether to bring back furloughed staff in an economic downturn.

Staff effectiveness, locations and cost are primary factors as firms review tasks and costs, especially maintaining and redeploying staff where possible.

Recent AI advances, while seemingly impressive, are very narrow in scope and require a lot of human supervision and input to work in real applications. While as many as 47 percent of current jobs contain tasks that may be automated, fewer than 5 percent of jobs will be fully automatable by 2030. The actual percentages may be lower, as technology adoption lags behind technology development due to costs in implementation, maintenance, and overcoming cultural and regulatory hurdles.

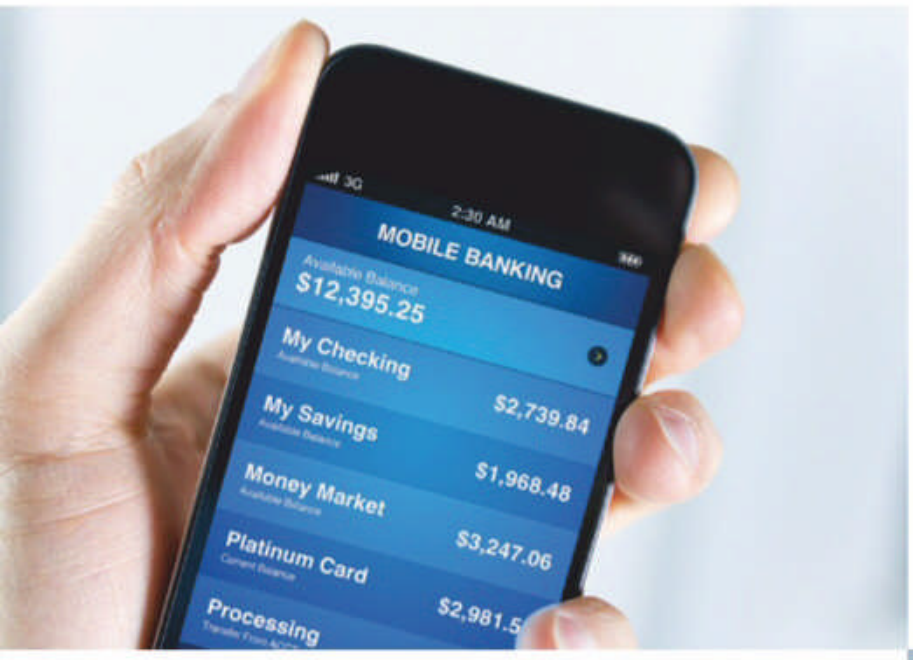
As with many new technologies, AI tools will augment and not replace workers by automating subtasks of a job. For the jobs that AI will displace, the impact will vary greatly across countries, industries, education levels, socioeconomic status, age and gender. These disparities may have socially and politically destabilising effects.

To alleviate short-term economic impact, it is important for govern-

ments to enact policies that value human capital and help displaced workers transition to new jobs in growing industries, such as healthcare and education.

Q EEB has invested much in developing its team of experts in the field. How do you see AI as fitting in to the company's processes? Do you see the technology as an alternative to "the human touch", or as augmenting it?

A Definitely augmenting it. Where economies have relatively low costs of living and wages, costly technology will not be implemented for some time.



As with many new technologies, AI tools will augment and **not replace workers by automating subtasks of a job.**

should, to the greatest extent possible, be based on the price actually paid or payable for the goods being valued. The WTO Agreement on Valuation also allows countries to include in, or exclude from, the customs value, in whole or in part, such components as (1) the cost of transport of the imported goods to the port or place of importation; (2) loading, unloading, and handling charges; and (3) the cost of insurance.

Q Some may say that AI, with its dependence on huge data resources, is firmly in the domain of large corporations, so that smaller companies could be, to some extent, locked out of the competitive arena. Do you see a future in which small to medium-sized companies struggle to compete through lack of access to adequate data?

A Yes, in the short term, access to cost-effective data will restrict some SMEs from being as cost- and process-efficient as larger companies. We do, however, see an increase in the number of specialist firms offering data and API technology at affordable rates to engage with smaller companies.

Q Could competition in the future, even among large corporations, hinge on who has access to the best data and, hence, the most effective AI?

Q AI depends on having large quantities of high-quality data from which the systems can "learn". What do you see as the principal sources of such data in the case of your industry?

A The data elements involved in trade are many and various, and non-standard, including export, import, volume type, location, tax, regulation, tariffs, etc. Additional information includes standard units of quantity, weight, etc., such as commodity codes with individual products classified using six digits, four or two numbers for national purposes, country of last-known destination for exports, or the country of origin/consignment for imports.

Then there are recommended standard units of quantity for weight, length, area, volume, electrical power, and number, and customs value

A Yes. As seen in volatile equity markets, microseconds can mean the difference between profit or loss. Access to fast quant-strategy analytical engines linked to secure fast communications will inevitably be easier to maintain and exploit for larger organisations.

In trade, with fewer time constraints, emphasis will be on getting the data correct, trusted, shared and valued, and this is available to all players in the ecosystem.

Q Are you unreservedly optimistic about the possibilities offered by AI technology for the industry, or are there any aspects that worry you?

A Unreservedly optimistic? No, caution is required, as witnessed in 2012 with a catastrophic outcome in programmed trading, compounded when a program at Knight Capital went rogue. It sent out trade orders that were costing nearly $10 million per minute. Staff eventually found and disabled the code, but the damage was done.

Heeding serious lessons, trading firms today have implemented automated high-speed trading algorithms accounting for more than half of all US stock trading, with specific controls, regulatory obligations and a high degree of oversight.

Computer programs send and cancel orders tirelessly in a never-ending campaign to deceive and outrace each other, or sometimes just to slow each other down. But are they intelligent? No, they just act on pre-programmed instruction. Financial organisations need to be fast and correct; for example, sources from MNC Bank in India assert that one small error regarding price movements could destroy their margins for the entire year.

As seen in volatile equity markets, microseconds can mean the difference between profit or loss.

For AI to be most effective, the incorporation of AI into the trade industry will require the development of a range of new standards, enabling improvement of warehouse management, demand prediction, and greater accuracy of just-in-time manufacturing and delivery. Robotics can increase productivity and efficiency in packing and inventory inspection.

Business can also use AI to improve physical inspection and maintenance of assets along supply chains, and we stand ready to enhance and implement as and when necessary to improve data flows and information sharing BR

Executive Profile

Graham Bright is the Head of Compliance and Operations at Euro Exim Bank. He has more than 35 years of experience in the finance industry in a number of roles, working collaboratively with industry utilities, regulators and central banks, and in consulting and partner/channels management. He holds a BA (Hons) degree in Business Studies, and is also a serving UK Justice of the Peace in the magistrates' court, having sat on criminal and proceeds of crime trials, and he also sits on Crown Court appeals. Graham is a regular contributor to trade journals (GTR, TFR), with published thought-leadership articles in the financial technology press, and a speaker at international trade industry conferences, such as SIBOS, GTR and Ripple Regional events.

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NO FIRM IS AN ISLAND: SUCCEEDING WITH ALLIANCES

High levels of uncertainty often lead businesses into predictable directions, many of them negative. Extreme risk aversion, pre-emptive layoffs, and a laser focus on the short term are all common examples. On the positive side is the forming of alliances, a move that has become increasingly popular during the pandemic. Partnering with other firms can help strengthen a competitive position by enhancing market power, increasing efficiencies, accessing new or critical resources or capabilities, and entering new markets.

"In many instances, alliances are not only the preferred method for growth, but also the only feasible one," says Wharton management professor Harbir Singh. Consider the race for a COVID vaccine. Multinational pharma giants Pfizer and AstraZeneca, for example, respectively joined forces with BioNTech, a boutique German firm, and scientists at Oxford University. Singh, academic director of Wharton's ***Driving Growth Through Strategic Partnerships***, says these partnerships were not altruistic, but instead based on self-preservation. "Improving your competitive position alone is often no longer an option. COVID has gotten companies to reexamine their footprint – they must consider how much they want to do in house versus outsourcing through partnerships."

Alliances are invaluable not only in challenging and uncertain times, but also otherwise as a means to drive competitive advantage and growth. As the business world explores opportunities that materialized with the growth of the digital economy or efforts to address environmental sustainability, alliances and partnerships play a critical role. For example, to help clients with digital transformation, consulting companies like McKinsey or Accenture are partnering with design firms to build capabilities in design thinking to complement their in-house strategy or technology consulting skills. Walmart has partnered with Microsoft to strengthen its position in the "phygital" (physical + digital) retailing landscape.

18+

WHAT IS AVAXHOME?

AVAXHOME-

the biggest Internet portal, providing you various content: brand new books, trending movies, fresh magazines, hot games, recent software, latest music releases.

Unlimited satisfaction one low price
Cheap constant access to piping hot media
Protect your downloadings from Big brother
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18 years of seamless operation and our users' satisfaction

All languages
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Research shows that those companies that consistently generate greater levels of alliance value have one thing in common: a dedicated alliance function.

Avoiding the "Alliance Paradox"

But alliances are fraught with high failure rates, and the viability of an alliance-based strategy is critically dependent on a firm's alliance capability. "The answer to this 'alliance paradox,'" notes Singh, "isn't to stop forming alliances. They are and will continue to be a fast and flexible way to access complementary resources and skills that reside in other companies. Organizations need to get better at managing their alliances by developing firm-level capability. Not only will such a capability create greater and repeatable alliance success, but it will become in itself a source of competitive advantage."

Singh, a leading researcher in strategic alliances, is now sharing insights and guidance in a new live virtual program. He expects ***Driving Growth Through Strategic Partnerships*** to continue to draw participants from a wide range of industries and geographies. The longest-running business school program of its kind, it is taught by the same faculty as the on-campus program. "We're able to explore strategies on a number of levels, including cross-cultural. But no matter the business or the country of origin, a key measure of alliance success is how well they are supported at an organizational level. Research shows that those companies that consistently generate greater levels of alliance value have one thing in common: a dedicated alliance function."

The Dedicated Alliance Function and Management Process

To succeed with alliances, organizations have to "get it right" at each stage of the alliance life-cycle, including creating a sound business case for forming one, selecting appropriate partners, designing the alliance to elicit the required cooperation and coordination to get the job done, and building relationship capital with partners. Organizations that coordinate their alliance activities through dedicated alliance-management efforts have a much higher success rate (about 70 percent) than firms without one (about 40 percent). These initiatives are charged with coordinating all alliance-related activity within the organization and institutionalizing processes and systems to teach, share, and leverage prior alliance-management experience and know-how throughout the company.

For example, Pfizer has an alliance infrastructure that includes internal alliance managers and groups such as External Research Solutions. The infrastructure helps improve consistencies and economies of scale, and its measuring tools clarify goals and monitor their progress. Another company, Philips, engaged in a multiyear project to improve its firm-wide capability to identify, negotiate, and manage alliances. This project substantially increased new product introduction in multiple businesses and also created corporation-wide economic value.

Timing Your Entrance—and Exit

"It's not enough just to join an alliance," says Singh. "You need to consider when to get in. There are advantages to getting in early, but there is also risk. Early entrants get the chance to shape the network – with no guarantee it will be successful. If you wait, though, it might be harder to join. You may or may not be attractive to the other members of the network."

He says in addition to considering the timing of your entry, you should also think about when to leave a network. "Many companies stay too long," Singh explains. For example, airline alliances have seen some of members leave when a competitor joined, while others weighed their options and stayed. Continental Airlines was initially part of the SkyTeam Alliance. When fellow network member Delta acquired Northwest Airlines, the merger created redundancy in terms of the uniqueness that Continental brought to the network. That redundancy diminished Continental's relative position and power in the alliance, and ultimately led to Continental's decision to leave. Thai Airways considered a similar move when Singapore Air joined the Star Alliance, but after consideration chose to stay.

Adding an Ecosystem Lens to Your Alliance Capability

The benefits of a strong alliance capability can be leveraged to an even greater extent by extending it beyond one-on-one partnerships. Digital platforms like Apple iOS and Google Android create competing ecosystems with a wide range of partners to generate their respective growth and advantage. In the environmental sustainability space, Tesla has carved a leadership position in the EV space on the back of many partnerships, including initial alliances with Daimler and Toyota and a long-standing alliance with Panasonic for batteries.

Wharton management professor Rahul Kapoor, who has been researching such partnerships for over a decade, believes most firms are, in fact, "only as good as their ecosystems. Developing them is an alternative way of thinking about growth and strategy that is critical for growth and, for some firms, survival."

While it may sound daunting, Kapoor says most firms are already part of multiple ecosystems, but they aren't taking full advantage of them. During a day-long session in ***Driving Growth Through Strategic Partnerships***, he helps participants identify and map the ecosystems their companies are engaged in, understand the inherent challenges of those ecosystems, and learn tools and frameworks for working within them to maximize growth potential.

Most firms are already part of multiple ecosystems, but they aren't taking full advantage of them.

"This view goes beyond customers," says Kapoor. "You are embedded in an ecosystem of partners, suppliers, and complementary services and remaining a passive participant isn't a sustainable model. You need to navigate and even orchestrate the ecosystem." He says developing an "ecosystem lens" makes these interdependencies more explicit. "The success of any growth initiative is often dependent on other initiatives in your external environment. No firm is an island."

But, he stresses, spending the time to create a "laundry list" of everyone in your ecosystem isn't necessary, or even helpful. "Identify the critical players and interdependencies and determine why they are so important. Those are where the value lies."

Kapoor says the ecosystem lens can help you better understand your competition and make wiser decisions about where and when to deploy resources. "It is as important as your growth strategy. You can't just focus on your own challenges for growth. Understand the challenges that lie beyond your firm. What are the potential roadblocks to success, and where are they? How can you work to navigate and manage them to insure that your strategy has a greater chance for success?"

If you are a traditional firm working on an established initiative, you're also keeping an eye on disruptive ones, which are threatening companies in nearly every industry. Instead of looking at the individual firm that's working on the disruptive initiative, look to its ecosystem – the technologies, service, standards, and regulations it needs to deliver on its value proposition. If it looks like that value proposition can be delivered, the question becomes: *when?* If the initiative is not dependent on complementary technologies (or its dependence is very low), that initiative has the potential to take over the market quickly. But if it's high, it could be years or even decades before it becomes a viable competitor.

Kapoor cites an example of low-dependence technology: a new light bulb that can be plugged into an existing socket. "It's literally 'plug and play,'" he says, "with virtually no bottlenecks from production to consumer." But HDTV, which was recently disrupted by HDR, took three decades to take over the market. It needed the successful creation of an ecosystem that included high-definition cameras, new broadcast standards, and updated production and postproduction processes. In other words, no matter how much better the viewing experience it offered, HDTV could not take over the market quickly.

Companies that engage in proactive efforts to build alliance capability reap substantial rewards.
They generate greater stock-market wealth through their alliances and enhance the reputation of a company as a preferred partner.

The ecosystem view has implications not only for incumbent firms working on more traditional growth initiatives, but also for those working on disruptive ones and for investors who are looking at who will grow and when. Initiatives that are highly dependent on an ecosystem that is relatively new or yet-to-exist give incumbent firms time to make incremental improvements and create a strategy for long-term survival.

"This is a very different way of thinking about growth and strategy," says Kapoor. It requires a hands-on, active approach. "To take advantage of ecosystems, you have to be clear about which ones you are a part of, understand their growth challenges, and navigate and orchestrate them," he says.

Ultimately, says Harbir Singh, "companies that engage in proactive efforts to build alliance capability reap substantial rewards. They generate greater stock-market wealth through their alliances and enhance the reputation of a company as a preferred partner. Hence an alliance-management capability can be thought of as a competence in itself, one that can reap rich rewards for the organization that knows its worth." EBR

focus on value:

WHAT YOUR COMPANY DOES MATTERS MORE THAN WHERE IT SITS

BY RACHAEL BARTELS AND KATHLEEN O'REILLY

Companies everywhere must find new sources of value creation both inside and outside traditional industry boundaries.

For decades, industry definitions have been used to both group certain companies and business activities together as well as to serve as the starting point for growth and operational business strategies.

In a pre-digital world, that thinking made a lot of sense.

Today, however, traditional industry boundaries are often blurred as companies jostle with convergence and consolidation. Strategy development in this boundaryless environment requires a new perspective. Companies need to think first about what they are famous for, and from which capabilities and services their business, employees and customers derive value, rather than their historical industry affiliation.

Profits Tell the Tale

To understand why the industry lens for strategy creation needs to be rethought, one can start by examining profitability across industries. Our analysis of the profit of the world's largest public companies by industry over a two-decade period found that approximately one-third of industries have seen a sharp decline in overall profitability, while in the other third, profit trends have been flat.

This trend began in roughly 2003, with accelerations in 2005 and 2015. It has continued through the COVID-19 crisis, with a widening gap between the top of the pack and the bottom. According to our analysis of the 2,000 largest public companies globally, using financial data from Capital IQ, industries that were in the top quintile before the crisis (such as software & platforms and life sciences) have pulled ahead from the less-profitable industries that were traditionally lagging. In the first half of 2020, the top quintile of companies overall had an average gain in profit of $3.4 billion while the bottom quintile lost money, by about $1.7 billion per company. That is a performance gap of almost $5 billion.

This and other research conducted at Accenture point to a clear trend: traditional industry-level approaches to value creation are not working in at least two-thirds of industries.

Classic industry strategies, such as Porter's Five Forces, are less and less effective in a converging marketplace. Ask yourself instead, "what is it that you actually do? What is your purpose?" "What do you uniquely contribute to the ecosystem you serve?" Looking at your strategy in a new way will allow you to identify untapped opportunities to create value.

The Role of a Lifetime

Our extensive qualitative analysis finds that leading companies are focusing on the roles they can play in creating customer solutions within their own industry and across new industries, often through their participation in large, complex, digitally-enabled ecosystems. Examples of roles include business activities such as creating intellectual capital, managing inbound and outbound logistics, or developing relevant, purpose-driven consumer experiences.

Traditional industry-level approaches to value creation are not working in at least two-thirds of industries.

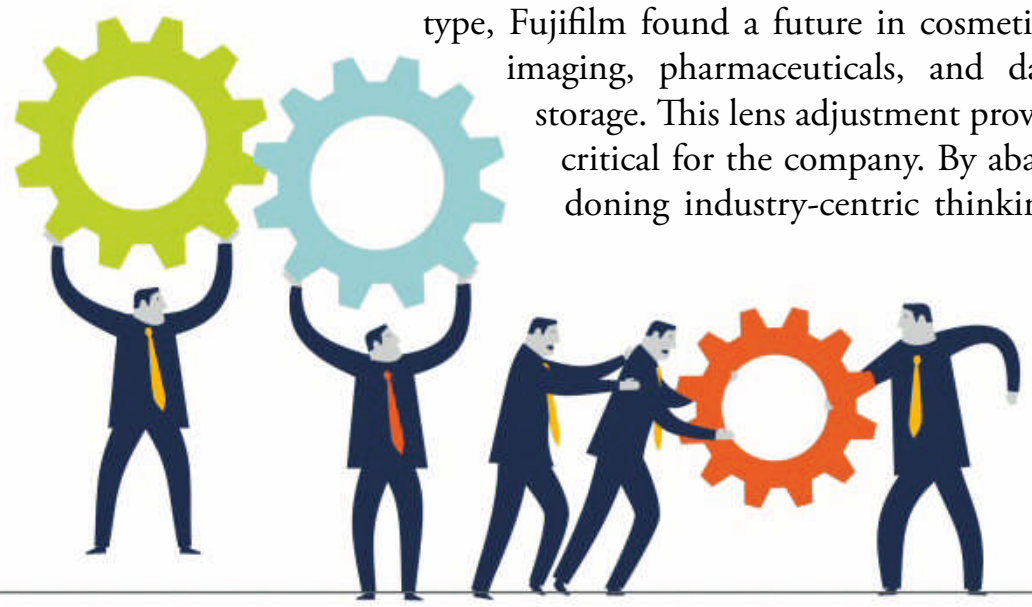
Our research identifies five business *archetypes,* each of which aggregates a set of roles that define how a business meets customer needs. These archetypes are not mutually exclusive nor collectively exhaustive; companies can, and often do, play more than one archetype.

Here are the five most important business archetypes:

- **Explorer:** invents new materials and processes and originates breakthrough components for use in many products.
- **Producer:** manufactures existing and newly invented materials and components at low cost and scale.
- **Assembler-Distributor:** brings together components, adds value and then distributes a final market-ready output.
- **Personalizer:** designs highly relevant customer solutions and experiences from the world of available components.
- **Networker:** facilitates the flow of digital and material goods across the roles.

Consider Apple's ecosystem of value creation. Apple is the *Personalizer* that designs what Foxconn the *Assembler* makes, bringing together thousands of components from hundreds of *Producers* and *Explorers,* such as Samsung and Corning, around the globe. Li & Fung is a central *Assembler* in the apparel industry, connecting thousands of cut-and-sew *Producers* to *Personalizers* around the globe.

Consider Fujifilm's progress over the past couple of decades. Had the company looked at value-creation opportunities only through the lens of the photographic-film industry, it might not have survived. But because it pursued value-creation based on its *Explorer* archetype, Fujifilm found a future in cosmetics, imaging, pharmaceuticals, and data storage. This lens adjustment proved critical for the company. By abandoning industry-centric thinking,



Fujifilm could apply its competence in areas like collagen application to new high-value activities and high-growth opportunities, rather than continue to chase shrinking fortunes in the photographic film industry.

We believe roles represent the new fundamental strategic choice when finding value in digital transformation. In increasingly industry-blurring ecosystems, how you expand and exploit your role, or multiple roles, will determine the opportunities you can access and those you will be shut out of.

Seeing is Believing

In applying this new lens of seeking role-based excellence for value creation, we see four essential activities:

See Opportunity Differently: *Look for a role you can play in underserved industries. Determine where profits are centered – by role – and where competition is likely to intensify.*

Disruptors look at opportunity in non-traditional ways. They gain a new advantage by staking a claim in the broader ecosystem, drawing heavily on innovation from outside traditional industry boundaries. Part of Netflix's early success came from seeing how badly Blockbuster was performing its primary job, which was fast evolving into making digital content available to consumers. Netflix saw the immediate benefit in expanding the availability and selection of content by mail and more recently expanded its reach across industries with the development of original programming. Similarly, Uber saw that the taxi industry was not fully satisfying the role of transporting people. Now it not only exploits technology to enhance its ability to fill the role of moving people, its *Networker* focus has allowed it to expand as a provider of food delivery with Uber Eats.

Leading companies are focusing on the roles they can play in creating customer solutions within their own industry and across new industries, often through their participation in large, complex, digitally-enabled ecosystems.

See Competitors Differently: *Redefine your competitive landscape, specifically outside your industry, based on the roles you currently play.*

Some disruptors place bets around the role they play, often to the consternation and confusion of industry analysts.

Look at Tesla. By adopting an "open source" position regarding its intellectual property, Tesla sought to secure its position as the indispensable *Explorer* within the broader electrical storage and battery ecosystem, especially as the invention relates to automotive applications.

Why did Tesla specifically choose to specialize around the *Explorer* role? One reason could be, because it recognizes that established *Assemblers* and *Producers* (automakers and their OEM suppliers) dwarfed it in size and would most likely continue to do so. Tesla has also been prepared to accept other automakers as *Personalizers* in the electric vehicle space. Tesla consistently seeks to cement its original innovations in the center of the broader ecosystem. This is especially true when it comes to battery storage and charging – a positioning that

would enable further growth into an array of distinct industries like utilities that will increasingly be drawn into the battery and storage ecosystem.

See Industry Differently: *Look for where scale and consolidation will blur industry lines.*

Once a company becomes good at an archetype's set of roles, it can often accelerate its growth by crossing traditional industry boundaries. Amazon never limited itself to the industry lens of online book retailing. While viewed as a bookseller early on, the company has always been an *Assembler-Distributor*, facilitating the flow of goods through world-class sorting and outbound logistics capabilities. Now Amazon is seeing the opportunity in owning and controlling the *Networker* archetype in its businesses.

Similarly, UPS has been focusing on being the outsourced logistics provider of an ever-growing number of companies while continuing to improve in its *Networker* roles. With healthcare shifting to the home, UPS sees opportunity in using its residential delivery network to connect doctors and healthcare companies with patients.

BMW started off as a producer of luxury automobiles. In 2019, the car maker co-founded the Open Manufacturing Platform with Microsoft to launch a digital ecosystem to enhance efficiencies and identify innovations at scale through cross-industry collaboration, venturing into a *Networker* archetype. To date, members include Anheuser-Busch InBev, Bosch and ZF Friedrichshafen, among others.

See Organization and Governance Differently: *Understand which archetypes can successfully coexist in a company. Then understand the governance structure needed to successfully manage businesses of multiple archetypes.*

The case for collaboration is stronger than ever. It takes such a significant investment to develop new products and services and to penetrate new markets that few companies can deliver exceptional performance across all the archetypes on their own. Not every company can respond to changes in the business environment based solely on their internal resources or abilities. Seeing and exploiting the synergies between archetypes and deciding the best partnership and collaboration structure is key.

Firms like Apple and Samsung have chosen to work closely with other businesses to improve and sustain their own competitiveness. While Apple and Samsung compete aggressively for smartphone market share, inside the iPhone there have always been essential parts that are supplied by Samsung. While this may seem counterintuitive, it is essential for the survival of both companies. Chip manufacturing is asset intensive and prone to obsolescence. Therefore, chip makers need to sweat the assets, making and selling as many chips as possible as fast as possible. To override this primary *Producer* strategy to achieve its goals as a *Personalizer* would put Samsung's business in peril.

Business roles represent a fundamental strategic choice of the future. If you strip away the traditional industry category, what roles can your company play to create value? What unseen opportunities does that create for you, for your traditional space and for innovation? Moving from an industry lens to a role and value-based lens will give your company a frame through which to innovate and the ability to identify new opportunities for growth and collaborative connections to accelerate results. ER

The authors would like to thank Paul Barbagallo, Dave Light, Svenja Falk, Paul Nunes and Ana Ruiz Hernanz for their contributions to this article.

Business roles represent a fundamental strategic choice of the future. If you strip away the traditional industry category, what roles can your company play to create value?

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THE WISE LEADER

BY MICHAEL CHASKALSON, PHILIPPA HARDMAN, AND CHRIS NICHOLS

We humans love a strong leader and we've seen plenty of them recently. The strong men of popular politics, in societies all around the world. They share characteristics with some of the corporate titans who turn up in the highest levels of organisations. Look at the front pages of business magazines and Sunday supplements and you see a pattern not far from the all-conquering kings of old. Risk takers, people movers, peddlers of compelling visions. They gather their teams and focus them on an enemy. Apparently fearless, they're ready to step into the danger, to battle and seize the day.

But other evidence can be brought to bear.

Grandiose, entitled, overly self-confident, risk-seeking, manipulative, and hostile leaders, say O'Reilly and Chatman, have profiles matching what the American Psychiatric Association classifies as narcissistic personality disorder. People with these characteristics are often those to whom we hand the highest power, the biggest jobs, the right to shape the world in which we live and work. We may speak of them as transformational players – the makers and shapers of our world.

The quiet ego is not a fragile, squashed or unwillingly silenced ego. It is deeply resilient, attuned to its own and others' inner dynamics.

In several notorious cases, dysfunctional organisational leaders such as this have led to the destruction of value amounting to many billions of dollars.

More often perhaps, and certainly less visibly, the consequences are less dramatic but no less serious. Employees and the organisation as whole suffer a loss of curiosity and creative possibility as contrary views become silenced. There is

a disappearance of nuance and difference as people try to follow the leader. Thinking and acting within the guardrails of the dominant style becomes the unconsciously enforced norm.

Noisy egos, at all levels in organisations, bring chaos or stifled compliance in their wake.

As educators and consultants working in the process of leadership development, we have come increasingly to recognise some of the problems inherent in the concept of leadership itself. High on the list is the notion that a leader is always somehow special. In response to this and to some of the issues we outline below, we have developed the concept of Wise Leadership – what it is and how it can be brought about.

One of the key characteristics of Wise Leaders, as we understand it, is that they have quieter egos.

Barring a very few exceptional saints and sages, all of us have an ego – that inner voice which nature has endowed us with and which, for thousands of years, played a key part in our rise to dominance as a species. That voice, abstracted from present moment experience, helps us plan for the future, reflect on the past and stay safe. It enables us to navigate our surroundings, understand ourselves in relation to others and create effective social groups.

It can also get in our way.

"Will I be OK?"

"Will they like me?"

"What did I do that she looks at me like that?"

"Have I got all the slides prepared for that presentation next week? Is it going to go well? Have I done everything I need to do? Have I?"

"One day they're going to find out I'm not good enough…"

"This is a good experience. I'm having a good experience right now. I'm fine. This is great, this is great…"

On and on and on.

Spend a few minutes alone with yourself in silence, turn your attention inwards and listen. The chatty voice of one's ego is rarely still.

Much of the time that's not a problem. But because our egos are generally disposed to seek out and prioritise our own interests first, there are times when, especially as leaders, it is important to come away from all that chatty-ego noise and focus on the needs and opinions of others. Failure to do this leads to the kind of self-serving attitudes to leadership we see reflected, for example, in the soaring levels of senior executive remuneration and increasingly problematic income disparity.

Wise Leaders recognize the self as a construction – a story that enables a sense of unity and purpose but throws the shadows of illusions that may sometimes be destructive.

To lead well, those of us who lead must learn to quieten our egos.

The quiet ego is not a fragile, squashed or unwillingly silenced ego. It is deeply resilient, attuned to its own and others' inner dynamics. It has no inherent need to assert itself over others. Loud egos, on the other hand, draw sustenance primarily from the world of external appearances to which they constantly turn for reassurance.

Wise Leaders have quieter egos. They have learned to build on their own strengths and they recognise, and engage in development around, areas where they are weaker. They have compassion for others and for themselves.

Not taken in by social image, Wise Leaders recognize the self as a construction – a story that enables a sense of unity and purpose but throws the shadows of illusions that may sometimes be destructive.

Noisier egos expend considerable energy in identifying and defending their constructed selves as if they were somehow real – asserting themselves into the world.

Wise Leaders are more self-aware than that – and less defensive. Seeing the interdependent nature of self and others, they are compassionate, resilient and self-assured.

Once the Covid-19 pandemic recedes, leaders will be called on to build a new world fit for the new circumstances. They will be called on to build back better. In this new space of leadership, simply repeating previous patterns won't work. This is a time of unprecedented challenge and opportunity and leaders will need to get their own egos out of the way so that they can enable and draw on the wisdom of a highly connected and collaborative community all around them.

With our old maps now to some extent broken, we can't use them to navigate in the new world beset by mass unemployment, unsustainable income inequality, climate change and extreme weather events, species extinction, novel viruses and other pandemics, AI and other technologies that disrupt and re-form the ways we live, work and consume.

Without maps and therefore unable to navigate, leaders must learn instead to explore this new terrain. To do that successfully, they must learn to still their own egos. They must find ways of coming away from the grandiosity and the anxiety that keeps their over-pumped egos in place, telling and re-telling inner-stories whose primary purpose is to keep them safe.

Drawing on the work of Wayment & Bauer, we suggest there are four factors which help the ego to quieten and for wisdom to begin to emerge. We think of of these four factors as crucial elements in leadership development. They are: mindfulness; a sense of interdependence; compassion; and a framework of values that spring from these and which support continuous personal growth.

Mindfulness

Mindfulness is a quality of present moment attention that is marked by three intertwined characteristics: Allowing, Inquiry and Meta-awareness (AIM).

Allowing is the reality-oriented willingness to let what is the case be the case. It is the non-judgemental acceptance of things as they are. As such, it is the necessary basis on which to freely choose to act or not on what one perceives.

Inquiry stands for a vital, open-hearted engagement with present moment experience.

Meta-awareness is the capacity at times simply to observe what you are thinking, feeling, and sensing. Like stepping out of a fast-flowing stream onto the riverbank, you see the rush of experience for what it actually is in the moment: a torrent of thoughts, feelings, sensations and impulses. As a result, you don't mistake your thoughts about things for things as actually they are.

These three capacities spark a curiosity and willingness to accept what one finds about oneself or others and to hold that lightly. That reduces defensiveness and enables deeper understandings. Increased resilience, better decision-making, richer and more generative conversations follow.

Compassion is the accepting, empathic desire to bring about the well-being of a person or group. It is the affective impulse that gives rise to compassionate action.

A sense of interdependence

A novel virus somehow infects a person in Wuhan in China and very soon the world's economies crash and over a million people lose their lives.

We live, and always have done, in an interdependent world.

Each of us interdepends not only on others but with the whole of nature. Wise Leaders intuit that interconnectedness. They know themselves to be embedded in a vital flow of life all around.

Valuing their connection with others, Wise Leaders seek to understand other people's perspectives. They see past differences to the more unifying aspects of our common humanity. And they naturally act in ways that are ecologically, socially and ethically responsible.

Compassion

Compassion is the accepting, empathic desire to bring about the well-being of a person or group. It is the affective impulse that gives rise to compassionate action.

Compassion can be directed to oneself as much as to others and wise leaders strive to balance their own and other's needs.

Compassion and interdependence are clearly co-related.

Recognising the complex web that sustains us all, wise leaders seek to maximise the wellbeing of their people, their teams, organisations, customers and other stakeholders. They don't turn away from the inevitable complexity and all the apparent contradictions that such impulses give rise to.

A framework of values

In a process of personal development, as wisdom emerges so self-preoccupation diminishes. Wise Leaders derive their sense of meaning and satisfaction from their own and others' growth and development; from their sense of social responsibility and from virtue. They get pleasure from their connection with other people and with humanity at large.Underlying all of this will be a framework of values that enable Wise Leaders to ground themselves in what they most deeply care about.

In the new world, Wise Leaders will build willing, co-operative communities, teams and organisations. They will help to enable higher levels of psychological safety, creativity and well-being amongst those they influence. That will increase team and organisational performance.

Wise Leadership can be taught.

Both mindfulness and compassion can readily be increased by training. A sense of interdependence can emerge from conceptual conviction. An impulse to grow further can be sparked and sustained by mentors and coaches who can help to illuminate leaders' values.

Our world is strongly marked by diminishing trust in our leaders. We need Wise Leadership as never before.

This is great news, because recent evidence shows we need better explorers of what is possible; people who are able to see the connection between things and who can work with others to create joined-up responses. We need leaders who are better able to understand that different people and groups have sometimes radically different experiences of the world, and who are open to this as data – using the potential of all to create stronger organisations and fairer societies.

Our world is strongly marked by diminishing trust in our leaders. We need Wise Leadership as never before.

There is a lot of work to do. It is time to begin.

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HOW ENTERPRISES CAN CREATE MEANINGFUL PURPOSE TOGETHER WITH THEIR STAKEHOLDERS

BY NICHOLAS IND AND VENKAT RAMASWAMY

Before the onset of COVID, there was a seeming shift in the idea of why business organizations exist. Having long been wedded to a belief in profit-maximizing shareholder primacy, businesses started to profess a different faith. Driven by the interdependent demands of investors, consumers, employees and activists and a growing recognition of a broader responsibility to society, businesses began to espouse a stakeholder view. Focusing solely on profit seemed out-of-place. An indication of this was the Business Roundtable (an association of the chief executive officers of nearly 200 of America's most prominent companies), and its replacement of its 1997 shareholder focused statement with a new commitment to the role of business in the world. The newly crafted 2019 purpose refers to creating "value for customers," "investing in employees," fostering "diversity and inclusion," "dealing fairly and ethically with suppliers," "supporting the communities in which we work," and "protect[ing] the environment", with "shareholders" not being mentioned until word 250 of a 300 word statement.[1] At the end of 2019, the World Economic Forum also refreshed its 30-year old Manifesto, to further emphasize its multi-stakeholder view: "The purpose of a company is to engage all its stakeholders in shared and sustained value creation. In creating such value, a company serves not only its shareholders, but all its stakeholders – employees, customers, suppliers, local communities and society at large. The best way to understand and harmonize the divergent interests of all stakeholders is through a shared commitment to policies and decisions that strengthen the long-term prosperity of a company."[2]

The COVID pandemic has led to some polarisation about the idea of corporate purpose. Some would argue that short-term necessity requires drastic action, which has led some companies that have publicly embraced a broader purpose, to be expedient when it comes to practice. Other organizations have seen that the need for a fair and equitable response to the pandemic, requires a real commitment to a purpose that defines the core reason for an organization's existence and determines its strategic direction. Here the emphasis is on stakeholder value creation, a broader responsibility to societal and economic well-being and a long-term perspective that involves employees. It's interesting here to note that, according to a McKinsey study of front-line employees in the US (2019), 82% think that having a purpose is vital, but only 42% think their organizations' purpose has impact.[3] This indicates the challenge of both defining and delivering a credible purpose. In this article, we argue that a purpose can only be truly lived, when stakeholders play an active role in co-creating it.

Defining a purpose, co-creatively

The traditional view of purpose is that it is an articulation of the essence of an organization, its reason for being, why it does what it does, and why that is relevant to its future. Yet, presentations on the subject tend to step over, the 'meaning'

attached to a purpose, and 'how' it is arrived at. Generally, it is seen as the task of management to filter out the superfluous and focus in on that, which best represents the uniqueness of the organization. Inevitably this editing process brings some aspects of the organization into view and pushes others into the background. Even when the process is rooted in gaining feedback from people, this is still an inside-out approach. There are three flaws to this. First, it encourages the purpose orchestrator to see the world from their perspective and to objectify consumers, citizens and others. If one of the premises of stakeholder theory is to deliver fair value to different stakeholders, it suggests a recognition of people's differing needs. That's harder to achieve when stakeholders are kept at a distance. Second, when a purpose reflects the prejudices of managers, it easily falls into the trap of adopting a language which is remote from the everyday realities of the lived existence of others. The purpose might play neatly in the board room, but then fail to connect more widely, which can inhibit the ability of suppliers, partners and employees to bring it to life through their actions. Or worse, it may result in a disavowal of the very idea. Third, there is a perception, that once something is committed to paper and presented its meaning is somehow fixed, but this is to ignore the way the meaning of words changes as people use the purpose as a guide to action. One of the prescriptions of a purpose definition is that it should be enduring – yet we must also recognise that the ideas underpinning the purpose will evolve, as once an action inspired by the purpose has been taken, then the meaning of the purpose is no longer the same.

The traditional view of purpose is that it is an articulation of the essence of an organization, its reason for being, why it does what it does, and why that is relevant to its future.

The alternative to the inside out approach is to become closer to stakeholders and to engage them as partners in the process of defining purpose together. For example, when the global science-based company, DSM began working on its purpose in 2016, it was very conscious of the need to develop something that was true to its heritage and its competencies; that would reflect the 'fundamental reality of who we are and what we have already achieved as DSM.' The aim of the process was not to 'create' a purpose as such, but to draw out, refine and articulate what was there in the company and its culture. This meant a participative approach to defining the purpose. Not surprisingly, some people in the organization were cynical. Was purpose simply a project? If the company was already concentrating on sustainability, what was the point of a purpose? Was this just another expression of the DSM brand? Inge Massen, Global Director Purpose, Brand and Employee Communications at DSM, says, 'An important learning here is that it is key to let the discussion play out fully and not try to respond with knee-jerk answers. The approach of leaving many perceived dilemmas almost deliberately unresolved was admittedly unusual, but it worked – the idea being that eventually our people would resolve them together, organically.' The challenge with this approach, was that it took longer than originally envisaged, but it meant that a natural consensus emerged, which made the resulting purpose statement 'Creating Brighter Lives for All', feel authentic.

For DSM, the focus was on uncovering an internal truth, that would resonate with employees, in terms of inspiring innovation in nutrition, health and sustainable living and tackling inequality. However, this is not innovation for innovation's sake – the orientation here is in improving the lives of the company's different stakeholders. The implication is that the articulation and implementation of purpose is far more than a project and requires it to be

To engage stakeholders the purpose has to have credibility and to have an emotional appeal. When a purpose is absorbed and actualised it can impact on the assemblage of elements that define experiences in the form of artifacts, persons, processes and interfaces.

operationalized together with stakeholders. An integral part of co-creating the purpose was to root it in the overall business strategy, which in turn is based on the U. N. Sustainable Development Goals (SDGs) that DSM can most impact. While, senior management support was vital in the articulation process, it is the ongoing work to embed the purpose through cultural programmes and purpose-led innovation initiatives (such as developing solutions to solve major societal problems related to living in megacities), that bring it to life. This points to the fact that while a purpose is generated together, it has to acquire meaning for employees and external stakeholders through action. And when that happens, positive SDG impacts are more likely to actually occur.

The virtue of this method of defining purpose is that it incorporates both the ideas and language of stakeholders. Internally, the purpose also resonates because employees are part of the process and better understand their specific role in helping to co-create the outcomes, and the aspirational impacts that can be potentially achieved. The final strand is the incorporation of the idea into strategic decision-making and its ongoing delivery together with those suppliers and partners who comprise the DSM ecosystem, in actualizing it together. As Massen notes, 'It's a lot about collaboration and finding like-minded companies, NGOs, government bodies and universities to realise our societal ambition.'

Co-creating a lived purpose

It's one thing to co-create a purpose statement, but another to bring it to life. As the example of DSM suggests, it requires commitment over time and a willingness to involve people in the development of the purpose. There should be sufficient precision in the underlying idea but also enough space to inspire managers and stakeholders to explore the meaning. Ambiguity is a necessary part of a purpose statement, but when a purpose is too ambiguous or simply vacuous, people will either ignore it or mock it. To engage stakeholders the purpose has to have credibility and to have an emotional appeal. When a purpose is absorbed and actualised it can impact on the assemblage of elements that define experiences in the form of artifacts, persons, processes and interfaces. The design of these elements will influence the emergence of meaning, but this is no means solely determined by the organization. Rather a purpose comes alive through co-creation; through the digital and physical interactions within an ecosystem.

Take for example, health technology company, Philips and its purpose statement, which is 'to improve people's health and well-being through meaningful innovation' - to which the company adds the specific goal of improving 2.5 billion lives per year by 2030 (including 400 million people in underserved communities). This is a pellucid and inspiring idea that is rooted in Philips' heritage but also stretches towards a future with measurable impact that the company monitors continuously. A key word in the purpose is 'meaningful', because it gives emphasis to a people-centric approach to innovation that combines an approach to challenges that involves patients and healthcare professionals in co-creating solutions together and the application of Internet of

Things (IoT) and AI. The development and use of such digital technologies is transformative in that it enables health care providers to build and adapt scalable solutions to different contexts, which is especially important in reaching underserved communities. Philips' approach delivers an ecosystem solution that makes best use of digitalization and gives health professionals more time to care for patients. Here the purpose guides decision-making while recognising that value is created – as the purpose statement goes on to say – 'in partnership with our stakeholders.'

Similarly, software company SAP uses its purpose in an active way to guide agile decision-making and to build meaning together with its network of 440,000 customers and 21,000 commercial partners. SAP's purpose has evolved from a more focused idea to 'help the world run better' to a more impactful and participative ideas with the addition of 'and to improve people's lives.' The initial purpose was a statement about efficiency, whereas the developed one is more emotive and recognises the transformative potential of SAP that can be realised together with others including customers, partners, non-profits, governments, universities and influencers. For SAP, the value of a purpose is not simply in the strategic direction of the business, but in the way, it is shared through its purpose network to co-innovate at scale. By integrating purpose into the organizational culture and embedding it into mainstream activities, it impacts on programmes, partnerships, people and products. An illustration of its role as a co-creative orchestrator of networks is the way it has engaged with the World Economic Forum's Global Plastic Action Partnership to provide the software tools and solutions to enable others to eliminate and reduce plastic waste in the oceans. Through its Plastics Cloud, companies can shift away from single use plastics, design better for circularity and help reduce ocean pollution. For SAP, the value of its purpose is directly linked to stakeholder well-being and the way in which it uses it to guide its decisions.

Enacting purpose: five important principles

In a Fortune survey in May 2020, around half the CEOs believed that COVID would accelerate the move to stakeholder capitalism.[4] This shift requires purpose to become a core tenet of how an organization meets the needs of its different stakeholders. How? We recommend the following:

Organizations always have a purpose – from the start-up to the multinational enterprise. However, as organizations grow and develop, they move from an intuitive understanding of purpose, to one that is more nuanced and that needs to be articulated.

1 Simple, but… A purpose statement only acquires meaning when it is used to steer the actions of stakeholders. Make a statement too complex and it will be ignored. Rather organizations should err on the side of simplicity and concision, but if a statement is so bland that it could apply to any organization at any time, then it is unlikely to appear relevant to employees and others. Of course, a purpose statement does not exist in isolation, and will be supported by other statements and values, but if it fails in its primary duty to direct and inspire, it becomes pointless.

2 Co-create it. Organizations always have a purpose – from the start-up to the multinational enterprise. However, as organizations grow and develop, they move from an intuitive understanding of purpose, to one that is more nuanced and that needs to be articulated. If a purpose is to meet the needs of stakeholders, it should not simply be a managerial creation, but rather the result of a participative and involving process.[5] This may slow things down, but it also helps to create something that is authentic and relevant to both internal and external audiences.

3 Integrate it. A core benefit of a clear purpose is its role in decision-making. As companies such as DSM, SAP and Philips show, a purpose that is lived can guide strategy, but also the detailed everyday decisions that people make. This helps companies to be agile, because the boundaries of choice become clearer. In COVID times, this has been particularly important in enabling companies to innovate rapidly in such areas as personal protection equipment, track and trace systems, home working processes and small business funding.

4 Let go. Alongside the managerial commitment to deliver on a purpose, organizations need to recognise that they also have to let go of the purpose and let others in their experience ecosystems build on it, develop

it and enrich it. There is sometimes a fear that letting go can lead to a purpose that heads off in an unintended direction. There is certainly a risk here, but this is ameliorated, when a properly integrated purpose and effective governance processes combine to determine the way companies work with the ecosystem.

5 Communicate outcome impacts. Often purpose statements deal in generalities about a future state - policies rather than outcomes and their impacts. This inhibits their organizational relevance, because it is hard to see what the impact will be and how stakeholders can contribute to it. Also, given that a purpose is designed to be enduring, how does an organization know whether it is making progress or needs to adjust. A company such as Philips, which has a target is in a better position in that it can measure its progress towards realising the purpose and motivate everyone involved.

Conclusion

In a recent study led by Oxford University into enacting purpose, several claims are made for the benefits it can deliver: "Clarity on purpose helps boards make better informed capital allocation choices. A clear purpose motivates employees, boosting productivity and reducing employee churn. Well-articulated, purpose becomes a strategic asset, a competitive differentiator in competitive markets"[6] However, organizations will only realise the potential of purpose if it us used to guide managerial choices and the actions of stakeholders. This co-creative approach means a purpose has to be seen as a fluid, ever-evolving idea rather then something fixed. The upside of this is that an organizational purpose that involves all stakeholders is likely to be seen as more meaningful, drive better engagement, and generate developmental impacts that are more sustainable.

References
1. https://www.businessroundtable.org
2. https://www.weforum.org/agenda/2019/12/davos - manifesto - 2020 - the - universal - purpose - of-a-company-in-the-fourth-industrial-revolution
3. Gast A., Illanes, P., Probst N., Schaninger B. and Simpson B. (2020). Purpose: Shifting from why to how. McKinsey Quarterly. April 22 2020.
4. Murray A., and Meyer D., (2020) CEOs don't see a full economic rebound happening for years. Fortune. May 14, 2020. https://fortune.com/2020/05/14/ceo-survey-economic-recovery-ceo-daily/
5. See also Ramaswamy V. and Gouillart F. (2010) "Building the Co-Creative Enterprise," Harvard Business Review, October 2010. https://hbr.org/2010/10/building-the-co-creative-enterprise
6. Younger, R, Mayer, C. and Eccles, R. (2020) Enacting Purpose within the Modern Corporation: A Framework for Boards of Directors. EPI.

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Venkat's book, The Future of Competition (2004), co-authored with C.K.Prahalad, introduced Co-Creation as a revolutionary concept. It provided a new frame of reference for jointly creating value through experienced environments and called for a process of co-creation – the practice of developing offerings through ongoing collaboration with customers, employees, partners, and other stakeholders.


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Are there parallels between the Industrial Revolution of the eighteenth century and the changes now being wrought on twenty-first-century society by recent advances in AI and robot technology? And, if so, what are some of the consequences for which we should prepare ourselves this time round?

WHY IS DIGITAL TRANSFORMATION SO HARD?

LEADERS MUST MANAGE MULTIFACETED CHANGE, NOT TECHNOLOGY ADOPTION

BY FRED GEYER AND JOERG NIESSING

Actively managing the multifaceted aspects of organisational change across the enterprise is the path forward for transformation leaders.

Leaders understand that digital transformation is an imperative. Shareholders demand it. Customers expect it. The commercial impacts of COVID-19 are accelerating it. Yet only a quarter to a third of digital transformations fully achieve their goals.[1]

Research points to several keys to transformation success, such as customer-centricity, well sequenced technology adoption, employee enablement, effective use of data and analytics and taking a step-by-step approach to transformation management. Meanwhile, torrents of best practices and expert advice flow from every imaginable source about what it takes to win at digital transformation. Large-scale digital transformations demand so much adaptation to specific company circumstances that much of this insight is useless without a context for transformation management and leadership.

What's a transformation leader to do?

We've concluded, based on synthesising research undertaken by MIT, McKinsey, Accenture, Altimeter, BCG, Forrester and Gardiner, that actively managing the multifaceted aspects of organisational change across the enterprise is the path forward for transformation leaders. Active management requires moving beyond treating transformation as a set of independent, technology-adoption initiatives by thinking about it as a comprehensive change-management undertaking.

Our research among transformation leaders and our examination of case studies among Prophet's clients and INSEAD's case partners indicate that actively managing the multifaceted aspects of digital transformation can be accomplished by addressing four dimensions of transformation: agenda-setting, change management, in-market implementation and capability-building. Not even the most successful transformers get every aspect of each dimension right. But those who fail to actively manage, measure and motivate teams in even one dimension rarely succeed. The dimensions of transformation are like layers in a wedding cake. Each supports the one above and consists of multiple aspects – cake, frosting, decoration – that must be carefully assembled. Insufficient attention to one layer or to binding layers together results in an unstable cake that topples easily.

We've been able to organise what we've learned about important aspects of each dimension into the following taxonomy to enable active, multifaceted change management.

Table 1

Digital Transformation Taxonomy

PLAN IT **Transformation Agenda**	Opportunity Prioritization	Vision & Goals	First Move Selection	Key Accountabilities	Pace
GUIDE IT **Change Management**	Initiative Integration & Sequencing	Measurement & Reporting	Governance & Troubleshooting	Culture & Communications	Resource & Investment Priorities
RUN IT **In-Market Implementation**	Sales & Marketing	Customer Experience	Solution Innovation	Operational Effectiveness	Human Resource Management
SCALE IT **Capability Building**	Technologies & Platforms	Data & Analytics	Employee Skills & Talent	Organization & Teaming	Culture & Leadership

Failure to declare transformation can result in a piecemeal approach as a substitute for a cohesive agenda.

Transformation Agenda

Planning a transformation seems straightforward and self-evident. It is remarkable, however, how many companies have identified and prioritised individual transformation initiatives but don't have a comprehensive agenda to address their most important growth and cost-saving opportunities, key leadership accountabilities, the desired pace of progress or even an articulation of a vision of what they want to achieve. Often, this is the result of falling prey to the pitfall of not declaring that a transformation is needed or underway. Failure to declare transformation can result in a piecemeal approach as a substitute for a cohesive agenda. A cohesive agenda can make the difference between improving in pockets versus transforming major inter-functional areas for sustained growth. Taking extra time and effort to identify and prioritise customer growth or internal improvement opportunities is a best practice among those who create a transformation agenda. The opportunities ground the vision in reality, inform the selection of the first moves to make and help set the pace of transformation.

Change Management

Actively managing the transformation requires sequencing initiatives, integrating them with each other, measuring and reporting out progress, using governance to overcome roadblocks and troubleshooting stalled initiatives. It also includes fostering the cultural changes that are so crucial to success, as well as maintaining a steady drumbeat of employee communication and dialogue. Resource and investment choices are another important aspect of change management. A best practice we've observed is the establishment of a transformation management office (TMO) with a dedicated team and budget to take on this role, and with the support of a C-suite sponsor who is charged with guiding the overall transformation. A common pitfall is treating the job of guiding the transformation as a project-management, rather than a change-management, activity. Project management is important, but it doesn't include building a culture, generating momentum and prioritising the use of human resources that are important aspects of transformation change management. Managing, measuring and motivating change in agenda, capabilities and in-market implementation are essential to transformation.

In-Market Implementation

Digital transformations succeed when the work of the business in sales and marketing, services, customer experience, innovation, operations and HR substantially digitises in ways that tangibly and measurably improve business and customer results. This requires running new processes and using new digital tools and data. It also needs dedication to continuous improvement and progress. Two best practices have emerged in our examinations of large-scale transformations. The first is the implementation of test-and-learn processes that often start with small-scale efforts, followed by scaling and enhancement as they prove their worth and as barriers or mistakes in

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Maersk shifted from an operational to a customer-centric, experience-driven, digital orientation

implementation are overcome. Agile processes and teams are required, because they speed up piloting, testing and learning that otherwise can bog down the pace of progress. Failure to train, incentivise and enable middle management is a common pitfall. They are essential to execution but may feel threatened by the disruption of digital transformation. Despite their criticality, they are also often ignored in large-scale transformation efforts.

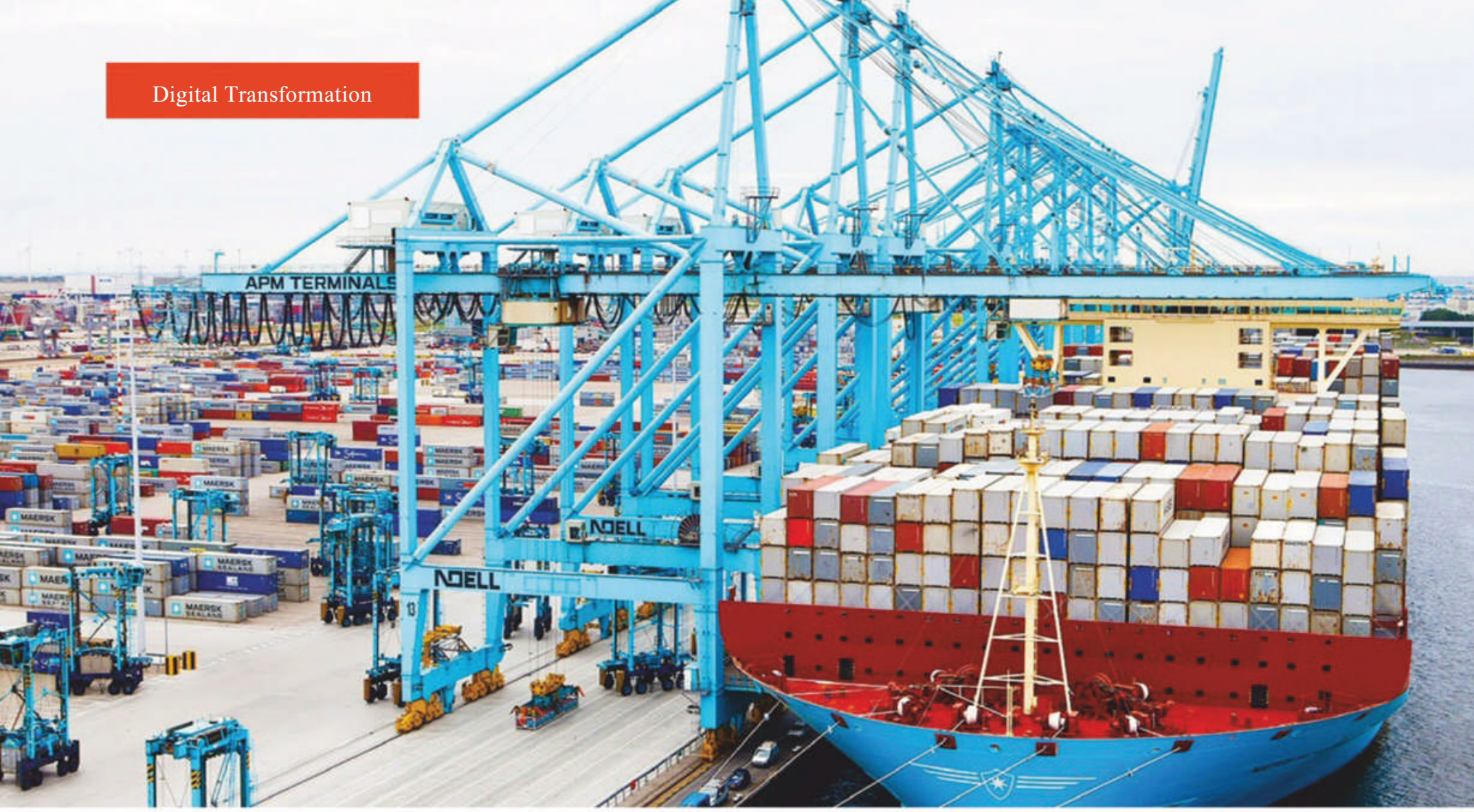
Capability-Building

Digital transformations cannot scale in most companies without significant capability-building in both technology and data, and in organisation, people and culture. Diligence is required to identify the capability requirements for individual areas of transformation, like marketing and sales transformation, and the capability requirements across multiple areas, such as transformations that involve customer experience, solution innovation and operational improvements. It is also important to determine what skills or processes should and should not be strategically owned or developed, what should be outsourced with ecosystem partners and how outsourced capabilities can play a productive part in transformation delivery. Benchmarking capabilities is a best practice in successful capability-building. Benchmarking opens leaders' eyes up to what it really takes to change. Over and over again, the biggest pitfall companies fall into is underinvesting in people, culture and leadership, because these aspects are more difficult in terms of setting requirements and measuring progress than the technology or data side of capability-building. These "human' aspects of transformation may also not be valued as much by the IT professionals who frequently lead digital transformations.

The Maersk Example of Active Transformation Management

A.P. Møller - Maersk, powered by a company-wide digital transformation that began in 2015, found new ways to sharpen their customer focus, increasing revenue by 41% and boosting EBITDA by 221%.[2] In 2016, A.P. Møller - Maersk declared that digital transformation was a key strategic pillar. To maintain its leadership position, Maersk shifted from an operational to a customer-centric, experience-driven, digital orientation.[3]

Maersk leaders established a transformation agenda by identifying customer opportunities at key points, such as booking and traffic management, by talking to customers and prospects throughout the world. They established



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a bold vision and articulated it clearly. "We want to transform our business to fit around our customers' needs instead of our assets by delivering a more personalized experience," said Vincent Clerc, CEO of Ocean and Logistics. The vision demanded digitising the entire industry ecosystem, not just Maersk's interactions with customers. The agenda clearly articulated and sequenced a set of quick wins to improve terminal utilisation, inland services, hub operations, joint production planning and cross-purchases across its brands.

From the outset, Maersk leaders took the job of managing change extremely seriously and invested substantial resources in it. Søren Skou, A.P. Møller - Maersk CEO, and Vincent Clerc, CEO of Ocean Logistics, took personal ownership of the transformation, declaring it openly in quarterly investor calls and explaining it to employees through regular communications and updates, assigning clear accountabilities among key leaders in the organisation, such as Sonny Dahl, the Head of Customer Experience for the enterprise. They also developed an entirely new measurement system to judge the progress of the transformation from the customer's viewpoint through a shipping information viewer that can be used by individual customers, while it provides an enterprise-wide view of transformation progress.

"We want to transform our business to fit around our customers' needs instead of our assets by delivering a more personalized experience."

In-market implementation of the transformation began with quick wins in shipment booking and management and grew into significant customer experience redesign as Maersk built momentum and dedicated resources to areas that could generate the most impact. These initiatives included:

The digitally powered Spot System to streamline a time-consuming 13-step, person-to-person booking and purchase process into five simple, integrated steps – all online.

The launch of Self-Service Instant Bookings was another major initiative. Using a portal on Maersk.com, Instant customers can receive booking confirmation within seconds, instead of waiting the two-hour industry norm.

Maersk's largest digital experience initiative is TradeLens, an open digital platform jointly developed with IBM, which CMA, MSC, Hapag-Lloyd and Ocean Express joined in 2019. TradeLens gives supply chain parties easy access to, and the ability to share, data. The first two applications that Maersk has launched on the platform are a tool facilitating paperless trade, and a viewer to improve visibility of the shipping information pipeline.

Active transformation management requires melding employees, customers and partners with technology.

Capability-building evolves as the transformation proceeds. The experience-design teams powered by the customer data and analytics function remain at the heart of the talent that powers this transformation. What sets Maersk apart is the incorporation of expertise in integrating systems and data within a larger ecosystem with multiple stakeholders. Capability-building has extended from new software platforms to support customer applications to helping line managers implement change within their teams and use the new digital tools at their disposal. Both Skøu and Clerc have been particularly attentive to managing cultural change in an organisation skilled at operational efficiency but not oriented towards customer-driven innovation and personalisation.

Implications for Transformation Leaders

Three priorities for active, multifaceted transformation management emerged from our examination of cases and discussions with transformation leaders:

Actively manage all four dimensions of transformation; set the agenda, manage change, implement in-market and build capabilities. Don't let any single dimension lag. Don't fall prey to the trap of project-managing individual in-market initiatives rather than driving a comprehensive agenda.

Focus on getting most aspects mostly right most of the time within each dimension, while improving and filling in the gaps as the transformation proceeds. A culture of improvement based on testing and learning is essential in this regard, as is the ability to shift over time as the transformation and outside circumstances evolve or change.

Keep in mind the people side of transformation. In this article, we've highlighted the human aspect to every dimension. We've also noted that failure to address these human aspects is a common pitfall. Active transformation management requires melding employees, customers and partners with technology. In some ways, it's more of a people challenge than a digital one.

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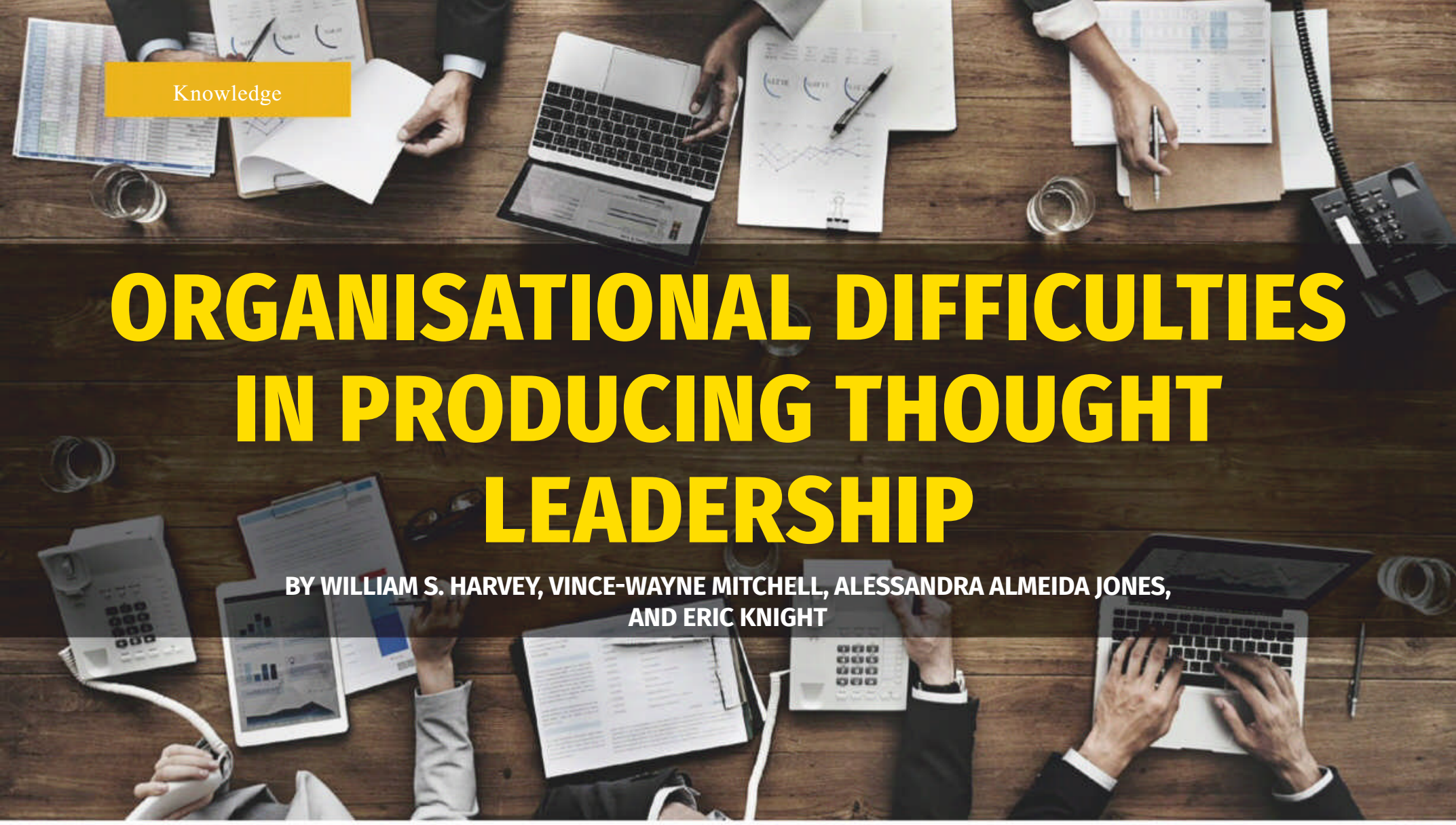
REFERENCES

[1] Patrick Forth et al., "Flipping the Odds of Digital Transformation Success" October 2019, https://www.bcg.com/en-us/publications/2020/increasing-odds-of-success-in-digital-transformation

[2] A.P. Moller Maersk, Annual Report, 2019, p. 5, https://investor.maersk.com/static-files/984a2b93-0035-40d3-9cae-77161c9a36e0

[3] Gerald Kane et al., "Strategy, not Technology, Drives Digital Transformation: Becoming a Digitally Mature Enterprise" MIT Sloan Management Review, reprint no. 57181 (July 14, 2015) http://sloanreview.mit.edu/projects/strategy-drives-digital-transformation/ ; Thomas Jensen, Jonas Hedman and Stefan Henningsson, "How TradeLens Delivers Business Value with Blockchain Technology," MIS Quarterly Executive, 18, issue 4 (December 2019): 221-243; Kirstine Helvig Kromberg, "How to Achieve Digital Mastery at Maersk Line: The Journey Towards Sustainable Digital Innovation," Copenhagen Business School, 2016, https://research.cbs.dk/en/studentProjects/b6b8a78c-62d5-4002-b827-695ea2710eb3



Knowledge

ORGANISATIONAL DIFFICULTIES IN PRODUCING THOUGHT LEADERSHIP

BY WILLIAM S. HARVEY, VINCE-WAYNE MITCHELL, ALESSANDRA ALMEIDA JONES, AND ERIC KNIGHT

Over the past several decades, thought leadership has moved from being individual gurus to organisations operating a considerable budget. We define thought leadership as: "Knowledge from a trusted, eminent and authoritative source that is actionable and provides valuable solutions for stakeholders."

Today, many organisations have a head of thought leadership and thought leadership industry awards. Here we identify nine such difficulties which such organisations face, and organise them according to where tensions can lie at the individual, organisational and industry level (see inset).

Individual thought leadership tensions

Although thought leadership should intrigue, challenge and inspire through generating new ideas and pushing the boundaries of knowledge, we find that thought leadership is often incremental and has led to a cycle of thought followership, copying competitors and developing content that has been tried and tested. This raises the first tension of:

How can individuals balance the risk of thought leadership with the safety of thought followership so they do not damage their reputation among salient stakeholders?

One effective way to begin generating ideas for thought leadership is to identify all the questions that stakeholders are asking, for example H & R Block selfless approach to answering tax-related questions. The solutions created for these challenges become a resource for developing thought leadership content. Moreover, sometimes clients themselves are often a valuable source of new knowledge and new ideas can be co-created with them. However, this client information poses problems for thought leadership as it cannot be divulged for confidentially reasons. This raises the tension of:

How do individuals balance using the thought leadership derived from client engagement, with the restrictions of client confidentiality and intellectual property?

A key issue is that thought leadership is supposed to be rare, original and substantively challenge the status quo in the way we think. But if this is so, clearly not everyone can be a thought leader because if everyone is challenging the status quo, there is no status quo to challenge. Instead, many people resort to publishing poor quality thought leadership which just acts as 'communication confetti', which gives the appearance of activity, but is light on substance and incoherent.

This raises the tension of;

If thought leadership is supposed to be rare, how can it become common for individuals to consistently produce?

Organisational thought leadership tensions

A challenge of many individuals in an organisation attempting to produce their own thought leadership is that it

is difficult to manage the overall organisational brand. This raises issues of who is the owner of the thought leadership or who is the reputation beneficiary and how therefore thought leadership relates to its wider approach to reputation management.

This leads us to ask:

How can organisations effectively navigate the tension between promoting 'me' and 'we'?

In the race to get the best thougth leadership, organisations have begun to buy-in from an external provider which is then branded in-house to help position themselves as thought leaders. This is often done when organisations either do not believe their employees can produce high quality thought leadership or they do not think that the opportunity cost of doing so is worth it. The can substitute or compleent a buy-out approach where an employee's time to is bought-out to self-produce thought leadership, for example McKinsey & Company. The cost-benefit for each is uncertain and leads to another organisational tension:

How should organisations decide which and how much thought leadership to commission and co-brand (buy-in) versus incentivise employees to develop (buy-out)?

There is major confusion around how thought leadership can be measured and therefore what the impact of thought leadership is for organisations. Some of the most popular metrics include: the number of content downloads, media hits, social media engagement, search engine ranking, client meetings, qualitative feedback, web traffic, inbound web links and quality and quantity of leads, client retention and sales revenue. However, the cost of measuring and analysing these data, and determining how much a specific thought leadership activity caused a certain outcome is difficult and leads to a third organisational tension:

Leadership implies knowledge industries should share their expertise and knowledge, which once in the public domain can be shared further and rapidly.

How do organisations weigh up which outcomes are worth the time and cost of measuring, and how can they be attributed to thought leadership activities to establish a return on investment?

Industry thought leadership tensions

Knowledge industries face a broader set of tensions relating to thought leadership. At this level, there is often a tradeoff between the wider social benefit of sharing thought leadership, which may be beneficial to an industry, profession or society at large, versus the immedate commerical benefit this creates for the organisation. This is typical of the tension between agency capitalism and stakeholder capitalism, and leads to a first industry tension:

How do knowledge-based industries navigate longer-term knowledge advancement for wider stakeholder benefit compared to the narrower and short-term interests of satisfying the immediate needs of customers and clients?

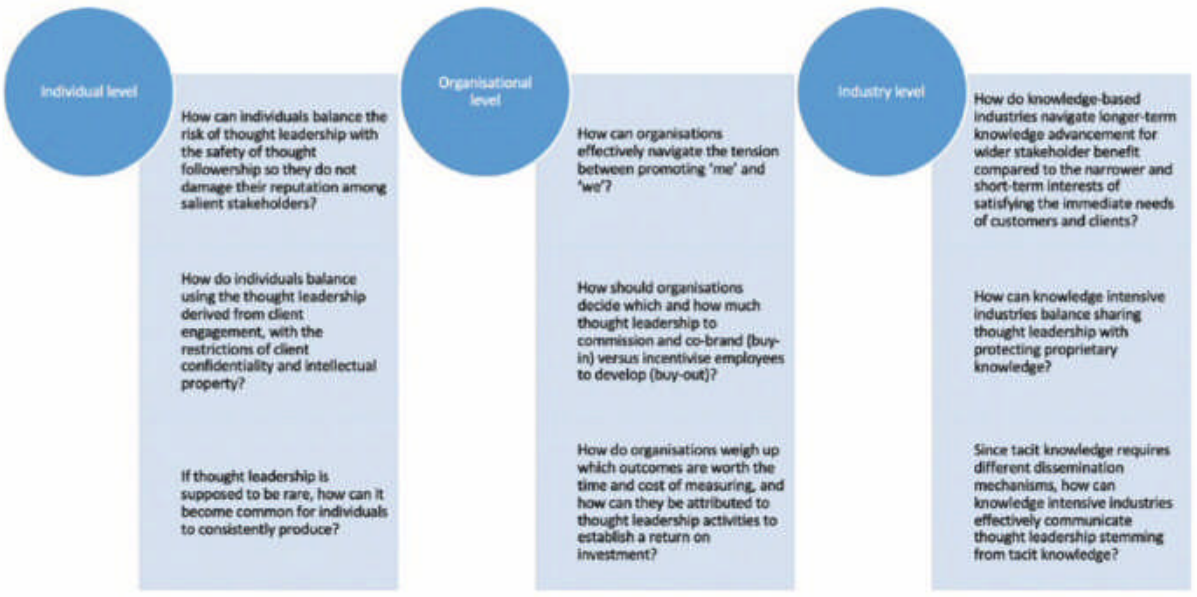
By definition, thought leadership implies knowledge industries should share their expertise and knowledge, which once in the public domain can be shared further and rapidly. However, sharing the insights of an organisation's knowledge base indiscriminately can reduce its competitive advantage as others can quickly acquire and use their intellectual property. Knowledge industries then face a delicate trade-off between signalling and giving away their knowledge, between sharing and protecting information, which leads to our second industry tension:

How can knowledge intensive industries balance sharing thought leadership with protecting proprietary knowledge?

At the heart of knowledge industries is how they can capture and convey tacit know how of their knowledge. Yet, one of the distinctive attributes of knowledge professionals is the value they bring through their unique experience and intuition, which is not conducive to codification. This raises a fundamental question

A challenge of many individuals in an organisation attempting to produce their own thought leadership is that it is difficult to manage the overall organisational brand.

Figure 1: Nine Thought leadership tensions



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of how current thought leadership mediums such as newsletters, blogs, webinars, e-mails, videos and social media postings can capture and convey tacit knowledge and it leads to our third industry tension:

Since tacit knowledge requires different dissemination mechanisms, how can knowledge intensive industries effectively communicate thought leadership stemming from tacit knowledge?

Summary

If managed well, thought leadership can be a significant source of reputation and competitive advantage for individuals, teams, organisations and industries. However, organisations need to recognise, consider and navigate tensions, and the difficulties in attempting to scale up thought leadership activity.

Currently, the volumous thought leadership being created , suggests that much thought leadership does not pass the quality threshold test because of some of the tensions we have raised above in creating, developing, sharing and promoting thought leadership. We hope that knowledge practitioners and knowledge management academics will join in research and practice to help better understand how to navigate these and other tensions to help organisations to create a compelling and sustainable thought leadership strategy.

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References
Nonaka, I., & Takeuchi, H. (1995). The Knowledge-Creating Company: How Japanese Companies Create the Dynamics of Innovation. Oxford University Press, Oxford.

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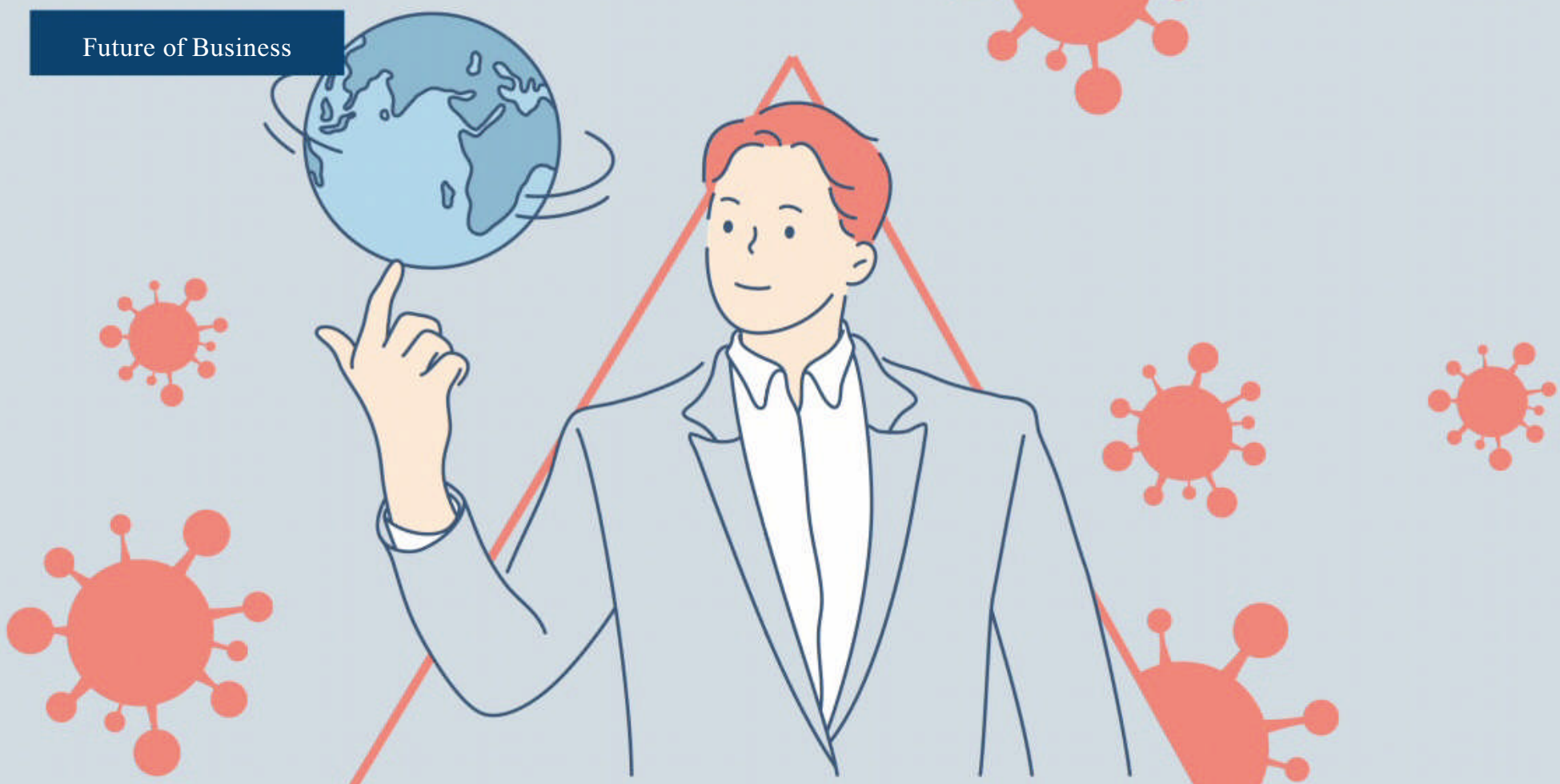


USING THE TRIAXIAL MODEL OF VALUES TO BUILD RESILIENCE IN A COVID-19 VUCA WORLD

BY ANAT GARTI AND SIMON L. DOLAN

The coronavirus (COVID-19) pandemic began at the end of 2019 in China and quickly spread globally. Millions of people around the world are infected and hundreds of thousands have died. The COVID-19 plague has brought uncertainty over the future and an understanding that the pandemic is far from over. Economic conditions are in great volatility. The complexity and ambiguity of the plague and its implications challenge the health systems in many countries and also result in a political quagmire. In short, the COVID-19 plague is an intense example of the VUCA world.

VUCA is an acronym that describes an environment of volatility, uncertainty, complexity and ambiguity[1]. Volatility means relatively unstable change; uncertainty implies a lack of knowledge as to whether an event will have meaningful ramifications; complexity suggests many interconnected parts forming an elaborate network of information and procedures; and ambiguity is the lack of knowledge as to "the basic rules of the game" (Bennett and Lemoine, 2014).

A **VUCA environment** is challenging even the most able of business leaders, who may find their skills growing obsolete as quickly as their organisations change in this volatile, unpredictable landscape.

Since the late eighties and early nineties, pundits and leaders alike have asserted that we live in a "VUCA world". A VUCA environment is challenging even the most able of business leaders, who may find their skills growing obsolete as quickly as their organisations change in this volatile, unpredictable landscape (Lawrence, 2013). At this time in history, assuming that we are learning from the past, we should have been

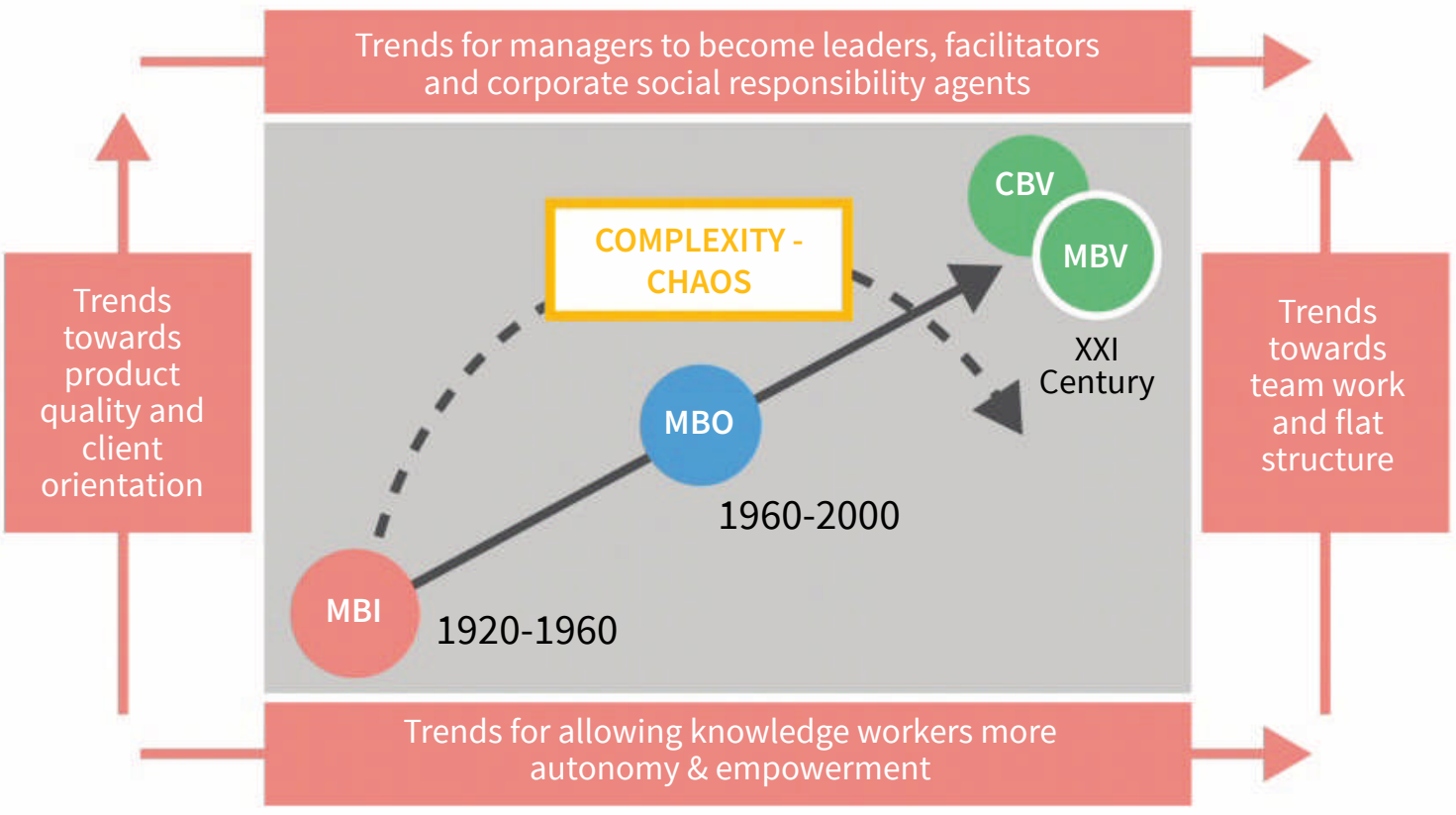
ready for this world of uncertainty, and ready for the challenges that COIVD-19 presents. Unfortunately, we are not quite there.

Understandably, medical professionals and public health specialists are focused on taking care of individuals who are very sick, while containing the coronavirus's spread in the general population (Sher, 2020). Less attention is given to managing the VUCA economics and psychological consequences of the COVID-19 crisis. This article uses the framework advocated by Dolan et al. of the "Managing by Values" (MBV) model and, more specifically, its triaxial model (Dolan, Garcia and Richley, 2006) to design a way to build resilience in the VUCA world in general, and the COVID-19 era in particular – resilience that facilitates reducing those related economic and psychological consequences.

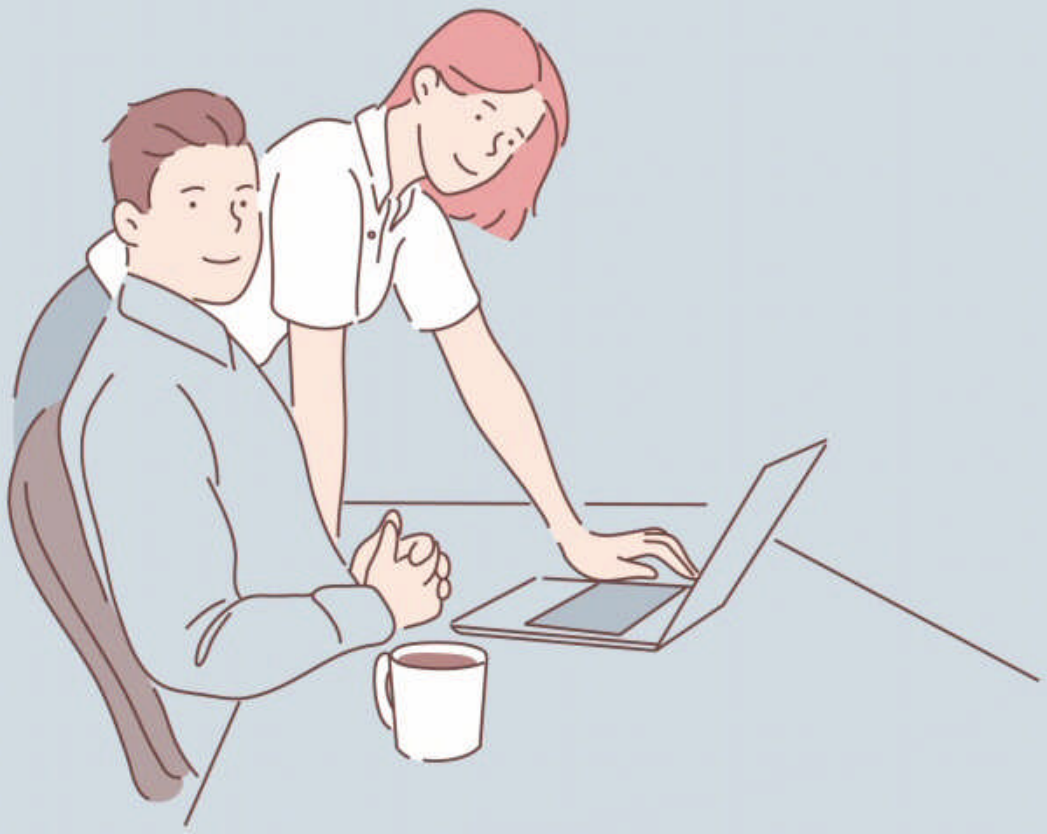
Garcia and Dolan (1997) and Dolan and colleagues (2006) developed the "Managing by Values" (MBV) model to help organisations handle this VUCA world by developing a value-based configurational compass. In their

book, they describe the evolution of the school of thought in management due to the increasing complexity in the environments that organisations operate in. Figure 1 summarises this evolution that started with MBI (Managing by Instructions) to MBO (Managing by Objectives) and finally to MBV (Managing by Values). The evolution is driven by the need to manage environmental and intra-organisational complexities (Dolan, Garcia and Auerbach, 2003; Dolan and Richley, 2006).

Figure 1: Dolan et al. synopsis of the evolution of management philosophy: A macro perspective



Modified from Garcia and Dolan, 1997 (in Spanish); Dolan, Garcia and Auerbach, 2003; Dolan, Garcia and Richley, 2016; and Garti and Dolan, 2019. Used with the permission of the authors.



In the early 20th century, Management by Instruction (MBI) was an appropriate and adequate way to run an organisation. Change happened at a slower pace and therefore the way things were done in the past worked well enough to pass on to others. By the 1960s, change was accelerating to the point where more flexibility of action was required by managers. Thus, the introduction of Management by Objectives (MBO) enabled managers to agree on a direction and to choose their own strategy. As changes in the environment began to intensify (e.g., global competition, impact of technology, global economic crisis, etc.), MBO proved to be an insufficient strategy for managing in an interconnected and fast-paced VUCA world. Managing by Values (MBV) aims to help us create a set of values that directs us towards being productive, ethical and, all in all, satisfied human beings, as described in Dolan, Garcia and Richley (2006) or Dolan (2011, 2019 and 2020). The model argues that a full, balanced and healthy life needs to include three groups of values: the economic pragmatic group, the ethical-social group and the emotional-developmental group; this is the essence of the **3Es Triaxial Model of Values**. We will use these three groups of values to develop the concept of resilience.

Managing by Values (MBV) aims to help us create a set of values that directs us towards being productive, ethical and, all in all, satisfied human beings.

Resilience was originally introduced by Holling (1973); he stated: "Resilience determines the persistence of relationships within a system and is a measure of the ability of these systems to absorb changes of state variables, driving variables, and parameters, and still persist" (p 17). Brand and Jax (2007) review the variety of definitions proposed for "resilience" and concluded that there are two distinct meanings of resilience. In the first, resilience is defined as the time required for a system to return to an equilibrium point following a disturbance event. The second defines resilience as the amount of disturbance that a system can absorb before changing to another stable regime, which is controlled by a different set of variables and characterised by a different structure. In this article, we refer to the second definition, in the sense that resilience incorporates the capacity of social-ecological systems to cope with, adapt to, and shape change, and learn to live with uncertainty and surprise (Folke 2003, 2006). Managing by value with the three groups of the **3Es Triaxial Model** encourages developing values which will help build the capacity to cope with, adapt to, and shape change, and learn to live with this COVID-19 VUCA era.

The **economic pragmatic group** deals with values that direct behaviour in an effective manner which is instrumental to achieving our goals in life or at work. This group includes values such as excellence, planning, diligence, efficiency, etc. Developing resilience means having **transformability** as an economic-pragmatic value. Walker and colleagues (2004) and Folke and colleagues (2010) emphasise the importance of transformability for building resilience. They argue that transformability is the capacity to create a fundamentally new system when ecological, economic or social (including political) conditions make the existing system untenable. This value should be the answer to our need for control and certainty. Instead of trying and failing, controlling and predicting the COVID-19 VUCA life, which may lead to desperation and the development of "learned helplessness", we should embrace the volatility, uncertainty, complexity and ambiguity of the situation, be **creative** and derive a new system. Instead of waiting for our life to "return to normal", we have to transform our way of thinking and see the VUCA world as the next normal.

We argue that **"creativity"** is an important component of the **emotional-developmental axis.** In this VUCA situation, people often do not consider this value group seriously. They are so busy in the struggle merely to survive that they block the constructive emotional development. The underlying values in this axis are oriented towards constructing a life filled with interest, with passion and with creativity, despite the fact that this last is difficult to define. Creativity in the VUCA world can be viewed as a new sense of coping, adapting and solving novel problems. In this environment, creativity needs to be viewed out of the box; hence, it needs to surpass inhibitions, overcome the traditional way of the past of relying on experience, and break away from habitual assumptions and routines. The clear indicator of the need for creative solutions is apparent in the ongoing experience with the continuing waves of COVID-19 infections. Having succeeded in the first wave is not a guarantee that the same remedies will work again in the second wave. Actually, the facts show that many countries are failing in generating this creative solution in the next round, and the pandemic is becoming worse. That may be the reason that children are more creative than adults (Runco, 2014); they transform our way of thinking and see the VUCA world as the new normal, and are not bound in their imagination to the previous "normal" life.

The COVID-19 challenge, for most individuals, organisations and nations, can be reduced to tackling the issue of survival. Thus, another emotional-developmental value that is required precisely in this period is **vitality**. Vitality is one's conscious experience of possessing energy, enthusiasm, spirit and aliveness (Ryan and Frederick, 1997). Vitality will bring resilience, since vitality is our psychological survival ally. By vitality, we intend to create the small pleasures on a daily basis and capture the corresponding fulfilling experiences. Vitality can be instrumental and enhance resilience only when it breaks away from yesterday's world (which no longer exists) and tackles the new VUCA world positively, yet realistically.

The third axis in the 3Es Triaxial Model is the **ethical-social group of values.** This group deals with relationships, values that direct behaviour of thoughtfulness, influence, loyalty, tolerance, etc. Developing resilience during the COVID-19 VUCA era means having **engagement** as one of the top ethical-social values. The COVID-19 VUCA era generates an extreme amount of ongoing stress. According to Dolan's model of acute or prolonged (chronic) stress (Dolan, 2006), there are factors that can either filter or amplify the stress reaction. Stress means "wear and tear" to the body (physically) or the soul (emotionally). Any strategy addressed to minimise the wear and tear can enhance resilience. One main factor in this regard is the critical need for support systems. Research shows that effective support systems can play an important positive role, leading to fewer signs and symptoms of stress (Dolan et al., 1992; Dolan and Renaud, 1992). Since COVID-19 requires us to implement social distance, developing and maintaining our support systems is an essential value. There are attempts to replace social support virtually, which seems to be effective to some degree, but not for everyone.

The COVID-19 challenge, for most individuals, organisations and nations, can be reduced to tackling the issue of survival.

Values are an abstract concept. To build economic and psychological resilience to COVID-19, we have to translate these abstract concepts into concrete behaviours. For this translation process, we will use Garti's "behave your values" model (Garti and Dolan, 2019). The model borrows from the evolution of management by instruction (MBI) to management by

objectives (MBO) and then to the present concept of managing by values (MBV). For translating values into behaviour, the model proceeds in the opposite direction, dismantling the abstract value identified in the (MBV) phase, into concrete objectives (MBO) and finally into one or several contingent context specific behaviours (MBI).

It is important to note that the objectives must be understood in light of the values and not as stand-alone, otherwise we return to MBO of the sixties. The objectives interpret the spirit of value. They are flexible and come to serve the value. They are the means, and value is the goal. The instructions that follow are examples of ways in which the objectives that translate the essence of the value can be implemented. They should not be seen as instructions, as in MBI.

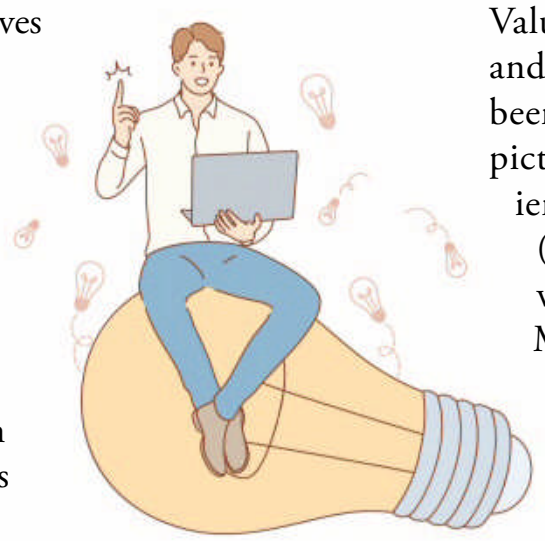


Table 1 displays the way we recommend dismantling the values noted to objectives and examples for some specific behaviours.

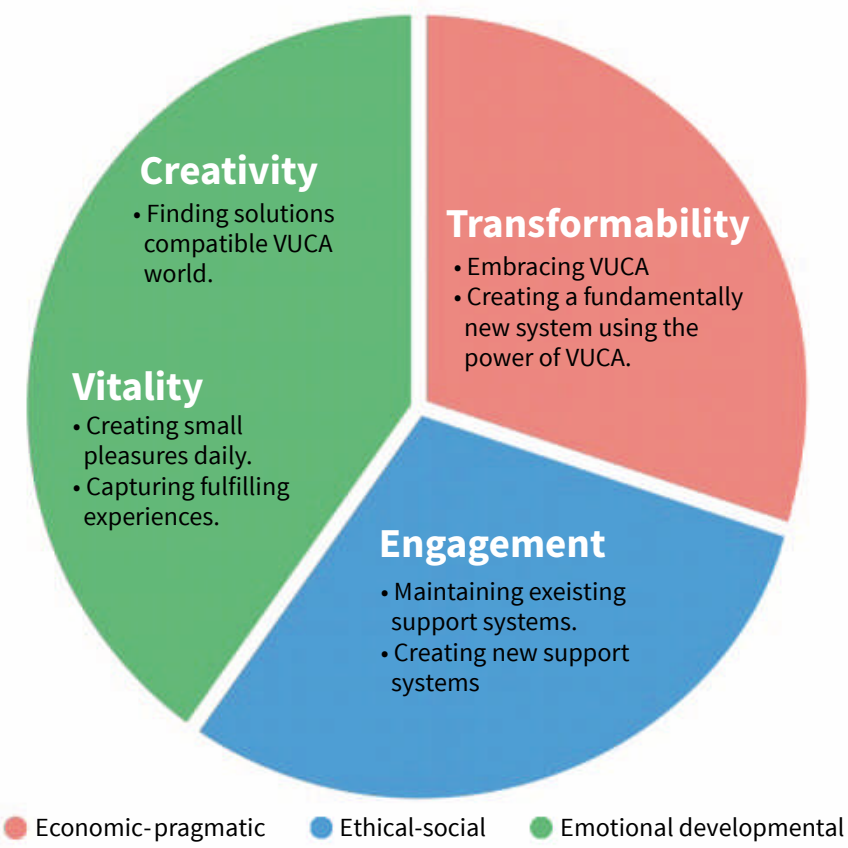
In summary, the resilience value system is recommend for living in the COVID-19 era. To be more specific, we propose to use the Values Pie chart (Garti and Dolan, 2019). The Values Pie integrates the 3Es Triaxial Model and the "behave your values" model, as has been described above, and creates a clearer picture for the way one wants to build resilience. The Values Pie has four ingredients. (1) The correct portion of each axis in the value system. Remember that in the Triaxial Model, the pie has to contain all three axes divided in any way that suits the system. (2) Each slice of the pie contains the values of that axis. (3) The size of the font of each value expresses the impor-

Table1: Translating values through MBV-MBO-MBI: Some illustrative examples

Axis	Economic pragmatic	Emotional-developmental		Ethical-social
MBV	**Transformability**	**Creativity**	**Vitality**	**Engagement**
MBO	(1) Embracing VUCA; (2) creating a fundamentally new system using the power of VUCA.	Finding solutions that are compatible in the VUCA world.	(1) Creating small pleasures daily; and (2) capturing fulfilling experiences.	(1) Maintaining existing support systems; (2) creating new support systems.
Examples of Organisational MBI	Converting to agile management (McKinsey, 2020a).	See the Special Edition of the Innovation Update, which highlights how UN entities are leveraging innovative approaches to respond to the COVID-19 pandemic.[2]	An organisation was forced to work remotely. Every Monday, the mangement sends a cake to every employee's house; and at 9:00, all employees were invited to a Zoom engagement of coffee and cake before starting the week.	
Examples of personal MBI	A sports coach who lost his income due to the closure of this gym because of COVID-19 limitations. He can create a hybrid fitness programme that allows a quick transition between training in the gym, training in the park, and remote workouts. A programme with colatility that addresses the uncertainty of the era.		Due to social distance restrictions, restaurants are closed. My spouse complains that it is impossible to enjoy life today. I cooked us a special meal and set the table with candles and flowers.	We now work from. To maintain friendships at work, I call my colleagues and talk to them daily.

tance of the value for the Values Pie owner. A value that is expressed in a small font represents a relative less important value compared to a value that is expressed in a bigger font. (4) Each value has its objectives (MBO). Given that the Values Pie portrays a holistic view of the axes distribution, the values that are in each axis show their importance and their objectives. The Resilience Values Pie recommended for living in the COVID-19 era is displayed in figure 2.

Figure 2: The "Resilience Values Pie"



Conclusions and implications

Today's world is best described by the concept of VUCA (volatility, uncertainty, complexity, ambiguity). The coronavirus pandemic has created unprecedented disruption and stress at the personal level as well as for organisations and their workforces. Entire countries are affected by it as well. Only with time will we learn and understand the real devastation that has happened (and is still growing strongly).

There are numerous articles, papers, books and even TV documentaries on the suffering, the stress and the devastation. A recent McKinsey report says that COVID-19 is "first and foremost a human tragedy, affecting hundreds of

thousands of people". Furthermore, at the macro level, "it is upending entire industries" (McKinsey, 2020b). At the very personal level, it is affecting people's physical and mental health, as well as their livelihoods. Meanwhile, there are no definite answers about how long the disruption will last, when the outbreak might weaken and when it will come back.

Against this gloomy background, we are attempting to propose a focus on positivity by creating hope. We have chosen to focus on the concept of resilience. Resilience can apply to individuals, to teams, organisations or an entire community. Building a resilient workforce in an organisation, for example, is one of the best defences against adversity, helplessness and even numbness in a VUCA world.

Resilient organisations are those that can successfully bounce back and grow from adverse experiences. Resilient people do the same. Thus, business leaders over the past twenty years have adopted the US Army War College's concept of VUCA as a way to describe the massive change and disruptions that have continually rocked organisations, markets and governments around the world. VUCA has become the new normal, especially in light of COVID-19, and leaders have realised that there is little we can do to change these kinds of external factors; we can only prepare and respond by strengthening the internal factors.

The understanding of the configurations of the values on which this paper focuses can lead to the emergence of a targeted, resilience-based behaviour. In the paper, we move from the abstract theory of resilience to the concrete way of illustrating the value-driven compass. By adopting the behaviours and strategies of these highly resilient people, we can create

Building a resilient workforce in an organisation, for example, is one of the best defences against adversity, helplessness and even numbness in a VUCA world.

an entire workforce that will become better equipped to face adversity with a positive outlook, recover quickly and contribute in innovative and creative ways to driving value, even in such volatile times.

References

1. The acronym VUCA, according to many sources, originated in the US military (Whiteman, 1998).
2. https://www.un.org/sites/un2.un.org/files/2020-06_-_unin_quarterly_innovation_update_-_second_covid-19_special_edition.pdf

- Bennett, N., and Lemoine, G.J. (2014). What a difference a word makes: Understanding threats to performance in a VUCA world. Business Horizons, 57(3), 311-317.
- Brand, F.S., and Jax, K. (2007). Focusing the meaning (s) of resilience: resilience as a descriptive concept and a boundary object. *Ecology and society, 12*(1).
- Dolan, S.L. (2006). *Stress, self-esteem, health and work*. Springer.
- Dolan, S.L., (2011). Coaching by Values: A Guide to Success in the Life of Business and the Business of Life. iUniverse. Bloomington, IND.
- Dolan, S.L., (2019). Más coaching por valores. Madrid, LID editorial.
- Dolan, S.L., (2020). The secret of Coaching and Leading by Values: How to ensure alignment and proper realignment. Routledge.
- Dolan S., Garcia S., and Auerbach, A., (2003). Understanding and Managing Chaos in Organizations, International Journal of Management; Mar 2003; (20), 1; 23-30.
- Dolan S., Garcia S., and Richley, B. (2006). Managing by values: A Guide to Living, Being Alive, and Making a Living in the XXI Century. Palgrave MacMillan, London (U.K).
- Dolan, S.L., and Renauld S., (1992). Individual, organizational and social determinants of managerial burnout: A multivariate approach. Journal of social behavior and personality (7) :95-110.
- Dolan, S.L., and Richley, B., (2006). Management by values (MBV): a new philosophy for a new economic order, Handbook of Business Strategy Volume 7 Issue 1.
- Dolan, S.L., Van Ameringen, M.R., and Arsenault A., (1992). "Personality, Social Support and Workers' Stress" Relations industrielles / Industrial Relations, vol. 47 (1):125-139.
- Folke, C. (2003). Freshwater for resilience: a shift in thinking. *Philosophical Transactions of the Royal Society of London. Series B: Biological Sciences, 358*(1440), 2027-2036.
- Folke, C. (2006). Resilience: The emergence of a perspective for social–ecological systems analyses. *Global environmental change, 16*(3), 253-267.
- Folke, C., Carpenter, S.R., Walker, B., Scheffer, M., Chapin, T., and Rockström, J. (2010). Resilience thinking: integrating resilience, adaptability and transformability. *Ecology and society, 15*(4).
- Garcia S., and Dolan S.L. (1997). La dirección por Valores . Madrid. McGraw Hill
- Garti, A., and Dolan, S.L. (2019). "Managing by Values" (MBV). *The European Business Review*.
- Holling, C.S. (1973). Resilience and stability of ecological systems. *Annual review of ecology and systematics, 4*(1), 1-23.
- Lawrence, K. (2013). Developing leaders in a VUCA environment. *UNC Executive Development*, 1-15.
- McKinsey (2020a). Agile resilience in the UK: Lessons from COVID-19 for the 'next normal'. October 14. https://www.mckinsey.com/business-functions/organization/our-insights/agile-resilience-in-the-uk-lessons-from-covid-19-for-the-next-normal
- McKinsey (2020b). COVID-19: Implications for business – Executive briefing. October 7. https://www.mckinsey.com/business-functions/risk/our-insights/covid-19-implications-for-business
- Runco, M.A. (2014). ***Creativity: Theories and themes: Research, development, and practice. Elsevier***.
- Ryan, R.M., and Frederick, C. (1997). On energy, personality, and health: Subjective vitality as a dynamic reflection of wellbeing. *Journal of personality, 65*(3), 529-565.
- Sher, L. (2020). The impact of the COVID-19 pandemic on suicide rates. *QJM: An International Journal of Medicine*.
- Walker, B., Holling, C.S., Carpenter, S.R., and Kinzig, A. (2004). Resilience, adaptability and transformability in social–ecological systems. *Ecology and society*, 9(2).

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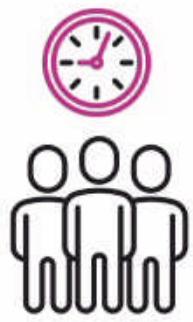
There is a growing need to increase ethics into the corporate world. In this article, we call for the deployment of an "ethical audit," a process that evaluates whether a firm's actions are ethical, and if they are meeting their own internal ethics goals and expectations. We argue that by undertaking a valid and well-tested ethical audit, companies will experience primary and secondary benefits for both the organization and their shareholders.

ETHICAL AUDITS AND POSITIVE CULTURE TRANSFORMATION

BY SIMON L. DOLAN, STEVEN HAWKINS, CHAD ALBRECHT, AND BONNIE RICHLEY

While most organizations have a code of conduct (or a code of ethics), many employees don't care about, nor even recognize, their own company's code of ethics. As pointed out by Liran and Dolan (2016)[1], "There is a growing discrepancy between the values stated on the wall and values in action." In the "Report to the Nations: 2020 Global Study on Occupational Fraud and Abuse", the Association of Certified Fraud Examiners estimates that organizations lose approximately 5% of their revenue or $4.5 trillion globally to occupational fraud and abuse each year[2]. Furthermore, the European Anti-Fraud Office (OLAF) reports fraud of roughly €485 million to the EU budget in 2019 alone[3]. Clearly, there is a lack of ethics in both the private sector and in government. Research suggests that unethical behavior is not unique to a time or place and that unethical acts happen in organizations of all types and across all industries.

The Yale Center for Emotional Intelligence, in collaboration with the Faas Foundation, conducted a national survey of more than 14,500 employees across industries to better understand how Americans experience work. The sample represented the U.S. economy in its distribution of industries, sectors, and demographic diversity. While the majority of workers stated that they never, or almost never, experienced pressures from management (or direct supervisors) to act unethically, 11% sometimes experienced this pressure and 12% experienced this pressure often. In other words, 23%, or nearly one in four people, feel pressure to do things they know are wrong. In the research, the authors suggested that we need to find ways to alleviate the pressure to act unethically and prevent the fear of speaking up[4]. While there are many reasons that employees engage in unethical behavior, one reason is that employees want to find ways to benefit their organization. In the process, they often face a conflict between the desire to maximize self-interest and the desire to act ethically. Other reasons for engaging in unethical behavior may include: (1) Influence of supervisors and/or peers, (2) Actions consistent with Social Exchange Theory where employees feel underpaid and thus allow themselves to settle their lack of rewards by cheating and bypassing the organization's ethical codes, (3) Productivity crisis and the perceived urgent need to do whatever it takes to contribute to the firm's success.



Companies with unrealistic revenue goals are more likely to pressure employees to cut corners to achieve short-term results.

Under which circumstances, are unethical acts most likely to occur?

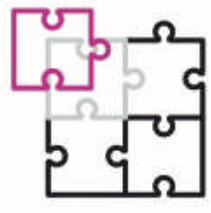
While it is difficult to single out a specific industry where unethical acts are most likely to occur, research on ethics allows us to make some predictions. For example, companies with unrealistic revenue goals are more likely to pressure employees to cut corners to achieve short-term results. Such has been the case in social media, financial, retail, and multiple other industries, leading to frequent security and privacy violations. Furthermore, the desire to grow and control costs has consistently resulted in underfunding IT functions eliminating appropriate cybersecurity and customer data privacy policies and procedures. In some cases, governmental regulations have even been ignored to achieve business objectives. In the case of Volkswagen, for example, unrealistic market share goals trumped engineering integrity. As a result, under-resourced and difficult-to-achieve objectives led Volkswagen managers and engineers to commit fraud on a global scale for years.

In the high tech industry, the market changes so quickly that there are additional pressures to behave unethically. For example, the speed with which artificial intelligence, autonomous vehicles, virtual reality, the internet of things, big data, and many other futuristic products are developed creates a vulnerability for many companies. This is further compounded by additional ethical issues such as artificial intelligence and other major technologies that could potentially impact society. Often, the need to beat the competition seems to override the responsibility to examine the ethical dilemmas they create leaving collateral damage. Such is the case with the immense speed and pressure to develop a vaccine for the COVID-19 pandemic. Due to a perceived lack of sufficient testing, and ignoring of internal controls on a scale rarely seen before,

experts fear that a significant proportion of the population will be hesitant to get vaccinated when the first vaccines become available. In the eyes of many consumers, high tech equals high risk. And, if left unchecked, ethics will continue to be thought of as irrelevant creating significant consequences for both individuals, organizations, and societies.

Unethical acts are also more likely to occur in organizational units located in remote locations and with individuals who spend more time with people external to the organization, such as customers, vendors, contractors, and others in conflict of interest situations. "Out of sight" can often mean "out of control" when it comes to employee ethical behavior. Those who spend most of their time with individuals external to an organization may align loyalty and values elsewhere. They are frequently vulnerable to kickbacks, bribery, misappropriation of funds, and other ethical problems. This type of problem has recently shaken the royal family in Spain, where the King Emeritus received (while he was still the King), a bribery of about 75,000,000€ as gratitude for having Spanish companies build the high-speed train system in Saudi Arabia. This along with other ethical scandals, forced the King to abdicate his position as king and pass the honor on to his son. The full story and the ramifications of this scandal are still unfolding.

Unethical behavior is more likely when individuals or organizations rely on the law to define what is and is not ethical. We argue that the law is not sufficient and hence cannot cover every possible ethical dilemma. As a result, values become increasingly important. Shared values represent the cultural DNA of the firm. These core values should be posted publicly (on the web site and other documents of the firm) and be followed meticulously by all employees and stakeholders[5]. Failing to do so, may lead employees and others to act unethically.



"Out of sight" can often mean **"out of control"** when it comes to employee ethical behavior. Those who spend most of their time with individuals external to an organization may align loyalty and values elsewhere.

Here are some examples of legal, but unethical, work behavior of employees:

- A manager that shares a resignation letter of a person with coworkers.
- A coworker that refuses to speak to his/her manager when he/she sees something unethical.
- Filling a job without advertising it and giving other people a chance to apply for it.
- A manager that reveals other employees' confidential information about the salary of coworkers.
- Favoritism – holding employees to different productivity expectations.
- A manager who shares someone's performance statistics with coworkers.
- A manager who selects a random coworker to deliver the message that someone is fired.

Hopefully, most people would agree that the above behaviors are unethical even though they may not be illegal. A major contributor to the infamous Enron fraud was the fact that many of their "accounting games" did not violate any laws or specific accounting regulations but were still considered unethical.

What mechanisms are in place to promote or increase ethics?

Most organizations have a code of ethics or conduct that employees are trained on and expected to follow. Most companies also have various processes and hiring practices to filter out bad actors applying for positions. But in many instances, however, long-term employees are often the perpetrators of fraud. One bank, for example, found that the biggest percentages of fraud perpetrators were those that had been with the organization between 15-20 years, had worked themselves into positions of trust, and who had financial pressures in their lives.

Auditing is another mechanism that should promote and increase ethics. Auditing is a necessary process for the long-term health of any organization, whether large or small. Larger firms often employ their own internal auditing departments, while smaller firms often employ third-party auditing or shared services. Public companies are also required to have external audits of their financial statements. The auditing process is currently required to assess and correct the financial statements of an organization according to accounting standards and good internal control processes. While some firms will undergo operational audits to improve efficiency, they are typically not required. The only type of auditing

required by law are financial statement audits and the related audit of internal controls over financial reporting for publicly traded companies. The primary focus on auditing is to detect errors in an organization's financial statements or deficiencies in the organization's internal controls over the financial reporting process. Detection can be one of the most important steps within the fraud prevention process, as most fraud schemes are not discovered for many months.

What mechanisms should be in place to promote or increase ethics?

The ACFE divides occupational fraud into three broad categories: (1) ***Asset Misappropriation*** – stealing or misusing an organization's resources (86% of cases); (2) ***Financial Statement Fraud*** – intentionally misstating or omitting material information in an organization's financial statements (10% of cases) of cases; and (3) ***Corruption*** – bribery, conflicts of interest, extortion etc. (4% of cases)[6]. External audits usually focus on only one type of fraud - financial statement fraud, leaving the majority of cases not subject to required audits. Asset misappropriation and corruption should also be included in the scope of combined audits or addressed with separate audits. Both asset misappropriation and corruption can significantly damage the financial health of an organization and often leave an audit trail that can be followed[7].

In addition to financial performance, another category of performance indicators that could be used to assess companies business practices would be an ethics audit. Ethical business practices are more relevant than ever before in the business world. In the wake of continuing major scandals within large corporations, calls from the public for corporate leadership to be held accountable are ever increasing. Some companies have heard public opinion and are increasingly trying to conduct their business in an ethical manner. Ethical considerations also permeate the work of auditors, who often have to resolve ethical dilemmas that arise during the auditing process[8]. Given their experience and knowledge of company operations, financial statement auditors may be well positioned to also perform ethics audits as well.

Although organizational-led efforts to become more ethical are notable, no formal standards exist to determine what it means to be ethical. This paper calls for the establishment of formal standards of ethical business practices. Although the meaning of what is ethical may be subjective, objective standards for ethical principles based on situations could be developed during the ethics audit process. If a situation-based approach is used in addition to the establishment of principles, then the ethical audit would be built from a solid foundation. The standards should produce quantifiable and measurable results that will allow larger scale ethical issues to be measured and improved. If governments and other regulators care about ethics as much as financial performance, an "ethics audit" should be required by regulators. If an ethics audit is not required but organizations sincerely care about ethics, they should voluntarily undergo regular ethics audits and report the results of those ethics audits to stakeholders.

In the wake of continuing major scandals within large corporations, calls from the public for corporate leadership to be held accountable are ever increasing.

In addition to ethical standards, ethics auditing procedures and tools should be developed to assist companies and auditors in performing internal or external ethics audits.

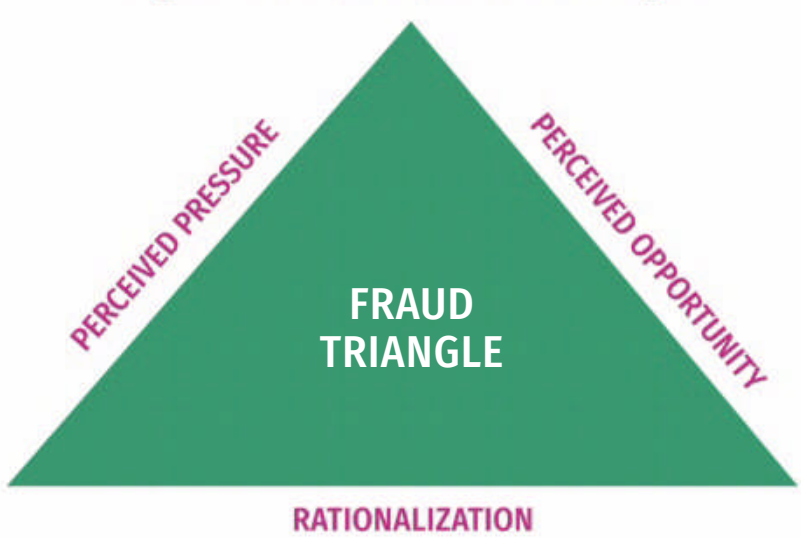
Albrecht et al (2017) suggests that the iconic fraud triangle could be applied more broadly to other types of ethical compromises, not just financial fraud. If this is the case, then the framework of the fraud triangle as expanded to the "Ethics Compromise Triangle" could be a useful tool to assess ethics of a company's culture and identify strategies to improve[9]. Using the compromise triangle as a framework, more detailed and specific tools and audit procedures can be developed to increase the efficiency and value of ethics audits.

The fraud triangle is an old concept and has existed for over 30 years, It is probably the most iconic and fundamental fraud theory developed. It has thoroughly permeated the fraud, criminology, accounting, auditing, and marketing literature and has provided the basis for accounting policy decisions. It has been universally accepted in every setting where fraud is described or analyzed. The fraud triangle states that individuals are motivated to commit unethical behavior (i.e. fraud) when three elements come together: (1) some kind of perceived pressure, (2) a perceived opportunity and (3) some way to rationalize the fraud as not being inconsistent with one's values. The fraud triangle is depicted in Figure 1:

The purpose of the ethical audit is to assess and diagnose the ethics behind an organization's actions and goals. An ethical audit would assess how well a company is living up to generally accepted ethical standards as well as its own ethical goals as an organization. In addition to building a more ethical foundation for the auditing process, the firms being audited will experience primary benefits to their organization. Firm leadership would be better able to determine if the ethical goals and guidelines set for the company are being met on an objective level. Leadership would have a valuable feedback tool to aid in the maintenance of a healthy ethical culture within an organization. The ethical audit will reveal if the firm has developed an ethical culture and will aid in the development of a better ethical culture in the future[10]. Various course corrections could be made if a firm's current ethical goals are not met. The ethical audit also indicates the overall

An ethical audit would assess how well a company is living up to generally accepted ethical standards as well as its own ethical goals as an organization.

Figure 1: The Classical Fraud Triangle



Regulations concerning the financial auditing process have increased over the years to ensure the system of financial auditing is better, more thorough, and more consistent.

health of a firm. If a company engages in ethical practices, they are less likely to become a victim to fraud, and suffer from the financial losses associated with such activities.

Much like the audit opinion firms receive for their financial statements, the creation of formal documentation that can certify a company as ethical would be beneficial for individual firms and the business community. Investor and consumer trust would increase, and the firm would be able to see a boost in its image within the business community. Firms have many benefits to gain when participating in an ethical audit. For an ethical audit to maintain the highest standards, the current approaches and attitudes towards auditing must change for the successful incorporation of a more ethical framework. Auditing practices should move from a rules-first approach to a principles-first approach, where ethical concerns are at the forefront of evaluative criteria[11]. An auditing approach that allows individuals to use an ethical framework will allow the implementation of an ethical audit. Additional transparency about the process will only help to foster a connection between a firm, its customers, and its shareholders.

Summary and conclusions

Regulations concerning the financial auditing process have increased over the years to ensure the system of financial auditing is better, more thorough, and more consistent. A series of recently passed laws in many countries seek to bring further transparency to the auditors and their processes. For example, following the lead of the EU, The United States of America also recently adopted standards requiring financial auditors to publicly disclose the name of each engagement partner[12]. The EU also passed a series of regulations called the 8th Company Law Directive, which required the establishment of an auditing committee for publicly traded companies to ensure the quality and transparency of financial reporting. Research has indicated that the effects of these laws on financial reporting quality have been positive[13]. If regulators and governments care about ethics similar attention should be given to ethical audits.

We call for laws and regulations that will require companies to undertake an ethical audit in a similar fashion to how these companies are required to undergo financial audits. Ethical audits will allow the discovery between what companies espouse and what they practice. Today, it is extremely difficult to know which companies are most ethical and which follow best business practices. Ethical audits will require companies to be held to a higher degree of transparency and responsibility. The establishment of new regulations will also increase the integrity of the ethical auditing process through the enforcement of formal standards.

Conducting an ethical audit can be crucial in the detection of any impropriety that would otherwise go unchecked. This can include uncovering unscrupulous or illegal activity within the firm, such as the unfair treatment of employees,

customers, or suppliers. For example, the audit may reveal breaches of external regulations relating to excessive working hours or an unsafe working environment. The ethical audit is done not only to ensure that prohibited practices do not take place, but that behaviors advocated in a company's code of conduct and within its written policies and procedures actually exist in practice. The value statements of a business should not be at odds with how its people behave. A dangerous precedent can be set by having corporate actions that are inconsistent with a company's values.

The ethical audit is the next step in the evolution of a firm's transparency to the public and a way to ensure that a company's values are actionable and accountable. Too many scandals and fraud schemes have happened when large companies are trusted to manage everything themselves and there is no third-party verification. Although most of these scandals have been perpetrated by individuals, a system of regulation will enable perpetrators to be caught faster and the mere fact that ethical audits exist will deter many people from being dishonest in the first place. Ethical audits will result in fewer frauds and unethical acts and will help companies improve their public images. When ethics are at the forefront of business strategies and transactions, everyone profits from living in a more honest world where values are aligned with actions.

References

1. Liran, Avi and Dolan, Simon L. (2016) "Values, Values on the wall, Just do business and forget them all: Wells Fargo, Volkswagen and others in the hall" *The European Business Review https://www.europeanbusinessreview.com/values-values-on-the-wall-just-do-business-and-forget-them-all-wells-fargo-volkswagen-and-others-in-the-hall/*
2. Association of Certified Fraud Examiners. (2020). *Report to the Nations: 2020 Global Study On Occupational Fraud and Abuse.* https://www.acfe.com/report-to-the-nations/2020/.
3. https://ec.europa.eu/anti-fraud/investigations/fraud-figures_en
4. Source: Zorana Ivcevic , Jochen I. Menges and Anna Miller: How Common Is Unethical Behavior in U.S. Organizations? Harvard Business Review, March 20, 2020 (https://hbr.org/2020/03/how-common-is-unethical-behavior-in-u-s-organizations)
5. Dolan, S.L. (2020) The Secrets of Coaching and Leading by Values. London-NY Routledge.
6. Association of Certified Fraud Examiners. (2020). *Report to the Nations: 2020 Global Study On Occupational Fraud and Abuse.* https://www.acfe.com/report-to-the-nations/2020/.
7. Espinosa-Pike, M. and Barrainkua, I. (2016). "An exploratory study of the pressures and ethical dilemmas in the audit conflict." *Revista de Contabilidad.* Vol. 19,Issue 1. https://doi.org/10.1016/j.rcsar.2014.10.001.
8. Jeppesen, K. (2019). "The role of auditing in the fight against corruption." *The British Accounting Review*. Vol. 15, issue 5. https://doi.org/10.1016/j.bar.2018.06.001.
9. Albrecht, Chad; Albrecht, Conan; Hawkins, Steven (2017) "Is there an Ethics Compromise Triangle?" Internal Auditing, Vol. 32:4. pp. 5-20
10. Semradova, I. and Hubackova, S. (2015). "Observations on the development of ethical culture." *Procedia - Social and Behavioral Sciences.* Vol. 182. https://doi.org/10.1016/j.sbspro.2015.04.737.
11. Satava, D., Caldwell C., and Richards, L. (2006). "Ethics and auditing culture: Rethinking the foundation of accounting and auditing." *Journal of Business Ethics*. Vol. 64, no. 3. https://www.jstor.org/stable/25123749.
12. Reid, C.D., and Youngman, J.F. (2017). "New audit partner identification rules may offer opportunities and benefits." *Business Horizons*. Vol. 60, issue 4. https://doi.org/10.1016/j.bushor.2017.03.008.
13. Bajra, U. and Cadez, S. (2018). "Audit committees and financial reporting quality: The 8th EU Company Law Directive perspective." *Economic Systems.* Vol. 42, Issue 1. https://doi.org/10.1016/j.ecosys.2017.03.002.

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DIGITAL MARKETING:
AI ENABLES EXPANDED ROLES FOR MARKETERS

BY SETH EARLEY

Successful marketing depends on delivering the appropriate information at just the right moment to move the user to the next step in their journey. However, agile digital marketing requires orchestrating messages across diverse systems, not all of which are controlled by marketers. Digital marketers must therefore become knowledge enablers, champions of data quality, architects of digital systems, and keepers of the ontology that powers it all.

Artificial intelligence (AI) is a powerful tool for leveraging these complex elements because it enables scaling up at the same time as it allows more granular analysis of data. So not only must marketers understand and work within their new digital roles, they must also master at least the concepts if not the practices entailed in using AI to empower the enterprise.

This is a tall order, but taking it step by step will get you there.

MARKETER AS KNOWLEDGE ENABLER

Being a knowledge enabler covers a wide range of potential actions in an organization. It may mean exposing the knowledge and expertise of engineers in a B2B organization, or it may mean enabling customers to have the insights they need to choose your product in a B2C context.

The only way to ensure good quality data is to establish a solid governance program.

Many AI programs attempt to deal with unstructured information and replicate how humans perform certain tasks, such as answering support questions or personalizing a customer experience. That may require pulling information from multiple systems and weaving together multiple processes, including some that have historically been done manually.

Systems are often deployed in isolation or with a nod to integration using web services; however, very few marketing leaders are in a position to develop the foundational data infrastructure that is needed for success. If the enterprise is to have any hope of a positive outcome from all of the investments being made in advanced marketing technologies that are meant to smooth the customer journey, marketing leaders have to streamline marketing operations and evolve supporting processes across all of their tools. They must pursue this effort in a holistic way that includes a framework so all of these systems can communicate.

Marketing is now about scaling the machinery of communication, collaboration, and content processes. It is about enrolling deeper levels of the

organization in the process. This means marketers must be involved in various aspects of governance and change management to get meaningful content created, managed, organized effectively, and presented to target customers in a consumable way. Marketers also need to be intimately involved in IT processes. They need to work closely with the CIO (chief information officer), and, if the role exists, the CDO(s) (chief data officer and/or chief digital officer).

In short, marketers need to facilitate the capture and processing of information throughout the enterprise in order to do their job. Wherever knowledge relevant to the customer experience resides, they need to be aware of it, understand how it interfaces with other enterprise systems, and surface what is needed at the right point in the customer journey.

MARKETER AS DATA QUALITY CHAMPION

Marketing is increasingly data-driven, and data quality will be essential to marketing success. Digital quality translates into data agility. Marketers need to show the organization what can be done with high-quality data as well as demonstrate the negative impact of poor quality, difficult to access, or missing data. Once leadership understands how capabilities will better serve the customer and lead to increased revenue, the organization will conclude that investment in data quality is worthwhile.

The best way for marketing leaders to champion data quality to show the impact on the bottom line through metrics linked to customer acquisition and revenue growth. A metrics-driven framework for managing decision-making and resource allocation removes opinion from decision making and ensures that the investments will produce value.

Ecommerce is just one aspect of the customer journey, but it generates revenue directly. As a result, it can be used to justify investments that in fact improve all aspects of the customer experience. For example, if ecommerce content is improved by more detailed attributes, a more understandable taxonomy, or better images, the results can be measured and those improvements can be leveraged in other parts of the enterprise to improve multiple upstream, downstream and adjacent processes. Ecommerce can create the foundation for metrics-driven governance, the decision-making playbook that is the cornerstone of a data-driven organization.

The only way to ensure good quality data is to establish a solid governance program. A governance program will provide the proper attributes as new products are on-boarded, monitor the impact of changes in products to adjust those attributes, and include content performance metrics in governance processes.

Any big company is likely to have an abundance of technology. It has systems for customers, inventory, and products, along with websites and mobile apps. These systems are spitting out data all day long. Within that data is exactly the information needed to make a business more responsive. The problem is, the data is often not used as it could (and should) be. In many cases, the technology may have been potentially capable of functionality, but the data, locked in siloed systems, was inaccessible, poorly structured, or improperly curated. To succeed in digital marketing, companies must be prepared to address foundational issues and build a coherent information management ecosystem.

MARKETER AS ARCHITECT OF DIGITAL SYSTEMS

Ultimately, digital marketers need to become digital architects. The marketing function leverages data assets from many parts of the enterprise—from customer purchase histories to call center feedback, survey responses, social media data, click-stream behaviors, campaign responses, external data feeds, mobile usage data, and search metrics. Marketers must understand all these functions and be able to communicate effectively with IT to create the information flow they need for decision-making.

Deriving value from these sources means translating this "digital body language" (i.e., what the person's online behavior is telling us) into meaningful content, campaigns, and offers. Increasingly, this means translating data models from various systems into attributes managed in the ontology. Those attributes become inputs into personalization engines, web content management tools, collateral creation processes, campaign management systems, and various outbound demand-generation activities.

Personalization on a large scale requires a process of continuously

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AI works only when it understands your business in a way that allows it to process information. It needs the key that unlocks that understanding.

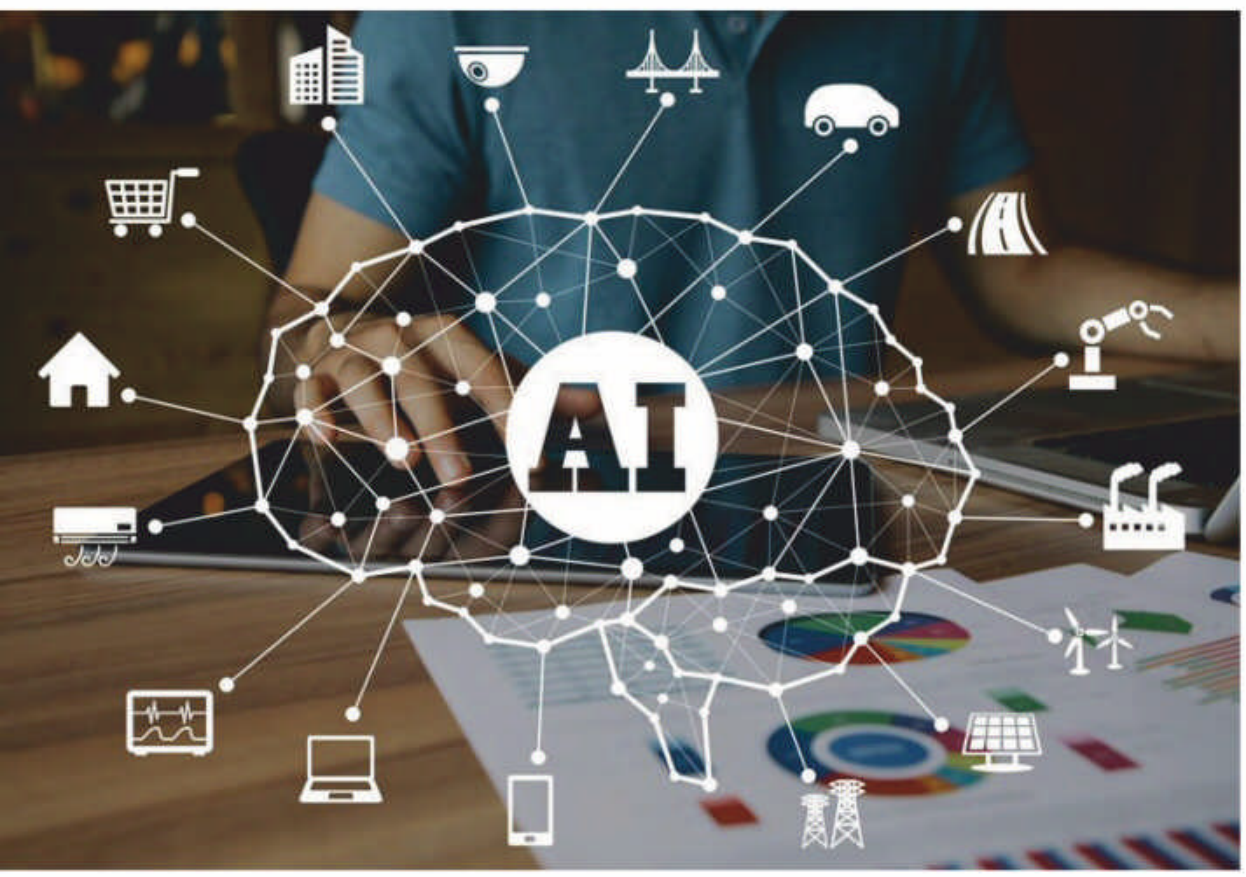
testing and recombining elements of design, messaging, and offerings. Marketers cannot manually customize messages across hundreds or thousands of different audiences. Even doing so on the scale of a handful of audiences requires "acts of heroics" to apply brute force to such a task. "Acts of heroics" do not scale and lead to team burnout. This is where AI comes in, so that analyses can become automated and the right content can be selected and presented to each group or even each individual. To do this, a messaging architecture (like Lego building blocks) is needed, so that the AI can optimize across these audiences by trying out different combinations of elements.

Just like organisms in an ecosystem, businesses consume energy and resources and then create solutions and structures from those resources. The resources and results primarily take the form of information. Businesses are in fact living organisms that consume and produce information. Their agility and adaptability depend on how effectively they metabolize that information.

For example, consider how our brains and bodies act on signals from the environment and interact with the world based on integrated information systems and feedback loops. When the amygdala (the part of the brain that registers fear or desire) identifies a threat, our sympathetic nervous system (which controls the "fight or flight" response) reacts in a highly orchestrated way. Another part of the brain – the hypothalamus – instantly sends a signal throughout the body.

This signal triggers the adrenal glands to release adrenaline, which causes a cascade of responses that we are all familiar with from instances when we are startled, such as if a car speeds toward us as we step into a crosswalk. The heartbeat increases, breathing becomes more rapid, and we feel a surge of energy. The brain also executes a new computational task – coming up with the appropriate expletives to hurl at the driver – and anticipates likely outcomes. Everything works holistically to respond efficiently and effectively to the stimulus, with very little friction.

It's easy to see why holistic and synchronized information flows are essential to survival. It would not do us much good if the brain had to rummage around our past memories and try to decide what to do. The same kind of holistic, synergistic, and simultaneously integrated flow of information is also what's needed to create transformative AI solutions that support today's marketing operations.



MARKETER AS "ONTOLOOGIST"

All of this leads to one conclusion: the ontology is very much the responsibility of the senior leaders in digital marketing. Executives are getting advice from all quarters about what they need to do to have a successful digital marketing strategy. What is conspicuously missing from this advice is any reference to the foundational role of ontologies.

An ontology is a consistent representation of data and data relationships that can inform and power AI technologies. In different contexts, it can include or become expressed as a data model, a content model, an information model, a data/content/information architecture, master data, or metadata. However you describe it, the ontology is essential to and at the heart of AI-driven technologies. To be clear, an ontology is not a single, static thing; it is never complete, and it changes as the organization changes and as it is applied throughout the enterprise.

In order to function, AI needs the correct "training data," including content, metadata

(descriptions of data), and operational knowledge. If that data and corresponding outcomes are not available in a way that the system can process, then the AI will fail. Those data and outcomes only become accessible when an ontology has been developed and integrated into the marketing stack.

AI works only when it understands your business in a way that allows it to process information. It needs the key that unlocks that understanding. The key that unlocks that understanding is an ontology: a representation of what matters within the company and makes it unique, including products and services, solutions and processes, organizational structures, protocols, customer characteristics, manufacturing methods, knowledge, content and data of all types. It's a concept that, correctly built, managed, and applied, makes the difference between the promise of AI and delivering sustainably on that promise.

THE MARKETER'S MANDATE

The marketer's role has and will continue to rapidly evolve as their responsibilities extend throughout the full customer journey. Emerging AI tools and technologies have tremendous promise but business leadership need to get back to the basics, and the marketer plays a critical role (or multiple roles as we've discussed). Perhaps your organization has experimented with AI, and perhaps it worked out well. But more often than not, it fails to live up to expectations. An executive at a major life insurance company recently told me, "Every one of our competitors and most of the organizations of our size in other industries have spent at least a few million dollars on failed AI initiatives." In some cases, technology vendors have sold "aspirational capabilities" – functionality that was not yet in the current software.

But in most cases, the cause of the failure was too much reliance on technology – overestimation of what was truly "out-of-the-box" functionality, overly ambitious "moonshot" programs that were central to major digital transformation efforts but unattainable in practice, or existing organizational processes incompatible with new AI approaches. Leadership may have bought into the promise of AI without adequate support from the front lines of the business.

Technology organizations may not have been adequately prepared to take on new tools and significant process changes. In many cases, the technology may have been potentially capable of functionality, but the data, locked in siloed systems, was inaccessible, poorly structured, or improperly curated.

So it really comes down to the basics of having good data, a deep understanding of organizational processes, and a governance plan. But questioning and examining the basics does not get people excited, especially in the marketing department. If the process for managing data is broken, the objective often just "just fix it," without an understanding of why it is broken.

Marketers must be involved in all aspects of governance and change management to ensure that content is created, managed, organized effectively, and presented to target customers in a consumable way. AI can be a strong enabler, but its power is only as strong as the data it rests on and the processes that drive the flow of information. The core premise of the dependency and relationship of information architecture (IA) to artificial intelligence (AI) can be summed up in one pithy phrase: "There's no AI without IA."

The online experience is comprised entirely of data. We need the data to be correctly curated and structured and of sufficient quality to power customer experience, ecommerce, collaboration and every traditional and emerging application in the enterprise. Internet pioneer Marc Andreessen stated that "software is eating the world," and data powers that software. Today's marketer needs to embrace these changing and varied roles in the ongoing evolution of the digital experience and its vast enabling technology ecosystem. EBR

About the Author

Seth Earley, author of *The Ai-Powered Enterprise: Harness the Power of Ontologies to Make Your Business Smarter, Faster, and More Profitable*, is CEO of Earley Information Science (EIS), a leading consulting firm focused on organizing information for business impact, with expertise in knowledge strategy, data and information architecture, search-based applications, and information findability solutions. He is currently on the editorial board of the Journal of Applied Marketing Analytics and is a former Data Analytics department editor for IEEE's IT Professional magazine. He lives in Carlisle, Massachusetts.

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