



The Future of Work

COVID-19 is accelerating technological and employment changes that were underway

MarketLine Case Study

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1. Overview

1.1. Catalyst

Technology is fundamentally transforming the way we work, fueling excitement but also anxiety. A prolonged decline in overall employment is unlikely, but society will have to adapt to significant structural changes. The COVID-19 pandemic has given businesses an unprecedented opportunity to implement profound changes to the way we work. From digitizing processes and re-shaping supply chains to redesigning offices, the pandemic will leave a lasting legacy. For manufacturers, technology will play an increasingly prominent role in building resilience. As for office work, this will not be the same after COVID-19. Physical spaces will be transformed, and remote working, supported by technology, will become the norm for millions of employees.

1.2. Summary

With the global economy expected to enter a deep and long-lasting recession, automation will accelerate as companies strive to cut costs, bringing with it renewed fears of job losses. While companies are experimenting with new technologies and ways to redesign their workflows to increase productivity, the impact of automation will be felt differently across job categories and disproportionately affect workers with lower levels of education. Fundamental shifts in the structure of the labor market, such as the polarization of the labor force and the rise of the gig economy, were already well underway before the pandemic but, post-COVID-19, these changes are likely to gain fresh momentum, making the discourse around the future of work and its potential positive and negative effects more relevant than ever.

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2. COVID-19's impact on the workplace has been dramatic

COVID-19 has been a massive catalyst for change and quite what its end effects on the workplace will be remains to be seen. But initially there has been a global surge in working from home, a further surge in the gig economy, manufacturing has halted and the reshoring argument has been bolstered.

2.1. Manufacturing has been changing dramatically for some time

Even before the COVID-19 emergency, the manufacturing industry was caught in a perfect storm triggered by the fourth industrial revolution, growing economic uncertainty, and the climate emergency. The current pandemic is a point of no return for manufacturing as the global supply chain is experiencing a level of disruption that has never been seen before. In a situation where manufacturers' priorities center on survival and recovery, the focus on the factory of the future becomes especially important to build a more resilient business. The factory of the future will play an important role in reducing the impact of the crisis and ensuring access to technologies that can help people and businesses to move forward. Technologies, like 3D printing and digital twins, which were seen as a nice-to-have before the crisis, will become increasingly popular as companies deal with the current level of disruption from the pandemic by ensuring the automation of the supply chain.

2.2. COVID-19 has turbocharged the push to work from home

Post-COVID-19, office work will look very different. There is a possibility that some workers will never return to the office and will become permanent home workers. Many enterprises will close locations, downsize regional headquarters, and implement remote working practices. Twitter has announced that staff would be allowed to work from home permanently if they so choose, while Facebook expects that half of its staff could work remotely in the next five to 10 years. AI, cloud, collaboration tools, and cybersecurity will be the technologies supporting this transformation. The current crisis has highlighted some of the benefits of moving data and applications to the cloud, and enterprises will likely be more receptive to larger cloud migration projects in the future. Also collaboration tools will offer long-term opportunities for businesses and workers alike, in terms of cost savings, work-life balance, and also reduced environmental impact. They will, however, also introduce significant security challenges.

2.3. Employment polarization is growing as middle-skill tasks decline

The term "employment polarization" refers to the steep decline in middle-skill occupations - involving routine codifiable tasks such as sales, office, and administrative support, production, craft, and repair services - over the last half-century, primarily due to digitalization but also resulting from other macro-economic factors, such as globalization. A study by MIT found that, in 1970, middle-skill occupations accounted for more than a third of employment globally. By 2016, this share had fallen to less than one-quarter. As middle skill employment has declined, manual and service occupations have become an increasingly central job category for those with lower education, alongside a simultaneous growth of high-education and high wage jobs catalyzed by the digital economy. The COVID-19 pandemic is likely to further contribute to this imbalance, and it has exposed the profound employment divide between professional remote workers, who have been able to remain relatively secure during the crisis, and essential workers (from the nurse and truck driver to the police officer and firefighter) who have been on the front line.

2.4. Gig economy has swollen and COVID will likely boost this

The last decade has seen a surge in the number of gig workers. Examples include Uber drivers, Airbnb hosts, and Deliveroo riders. A 2019 OECD study found that the number of gig economy workers in Germany, Italy and UK combined was close to 942 million in 2018. The ADP Research Institute has reported a 15% increase of gig workers in US businesses over the last decade. While various types of non-standard jobs have existed for a long time, current forms of gig work are increasingly mediated by digital platforms, with big societal implications. Social contracts guaranteeing benefits, such as pensions and health insurance, are traditionally based on formal long-term employer-employee relationships. Gig workers typically lack these social provisions, as their self-employed status frees their employer from the requirement to pay benefits or cover the risks of work. A new Californian law, passed in 2019, gives gig economy workers stronger employment rights and, if replicated across the US and other countries, would deliver a significant blow to the gig economy model as it is today.

2.5. Re-shoring movement has been gradually building but the economic crisis building will accelerate it

Wages are steadily rising in emerging economies, reducing the competitive advantage for traditional offshore destinations, such as India. Real average wages in the advanced country constituents of the G20 rose just 9% between 1999 and 2017. In emerging G20 states, meanwhile, they tripled, according to the International Labor Organization. Reshoring practices, which bring back offshored manufacturing and other types of jobs to a country, are likely to increase, due primarily to cost issues but also taking into account environmental concerns and, more recently, supply chain disruptions caused by the COVID-19 emergency. According to the advocacy group The Reshoring Initiative, the number of US companies reporting new reshoring and foreign direct investment (FDI) in 2018 was up 38% from 2017 at 1,389, resulting in the return of more than 145,000 jobs to the US.

2.6. Four-day week policies could become the new normal

Support for a shift to a four-day week is on the rise and may become part of the COVID-19 legacy. The practice is considered particularly beneficial to a good work-life balance, as it gives employees more leisure time without paying them any less. The New Zealand prime minister Jacinda Ardern encouraged businesses that could do so to adopt it as a way to boost a tourism sector badly hit by the crisis. The mental health benefits of a shorter working week are also seen as a way to help economies recover post-COVID-19. There is resistance to implementing a reduction in working days, particularly from those organizations that need to provide customer service beyond standard office hours and for whom a reduction in employee availability would be hugely impactful. Another challenge is the feasibility of compressing the workload to align with a shorter working week. However, advocates of the four-day week point to the fact that workers' overall productivity can suffer if they work long hours. A working paper from the Henley Business School states that 64% of UK employers that are already offering a four-day week say there has been an improvement in productivity.

2.7. Universal basic income is now considered much more seriously as a means of distributing economic wealth

With the global economy likely to face a recession post-COVID-19 only comparable to the Great Depression, the debate around the universal basic income (UBI) - a periodic cash payment unconditionally delivered to all regardless of income - has resurfaced once again. A short-term form of UBI has been proposed in Canada, for example, where the Prime Minister Justin Trudeau pledged CAD\$2,000 a month for four months to workers that had lost income due to the pandemic. In Europe, Spain is planning to introduce a minimum subsistence income (a yet-to-be-determined amount for all families with an average

household income of less than €450 per person per month), while France is discussing the implementation of UBI as part of its post-crisis recovery. COVID-19 aside, some analysts see the UBI as one of the redistributive tools (together with a digital tax, for example) that governments could leverage to address the economic insecurities brought about by rapid social and technological change. The advantages of UBI are that it is unconditional, does not stigmatize recipients, and is easy to manage because it is universal. It also encourages people to consume more and to enjoy more leisure. On the other hand, funding a UBI requires significant tax increases, and higher levels of capital taxes also discourage savings and investment, with negative consequences for labor demand and productivity.

3. Regulatory trends for the new working world are very different

Regulators have a very difficult job on their hands as they try to set a fair balance for handling some of the critical employment changes that are coming. Stopping data being controlled by only a few companies is one of the most serious but how to protect workers from robotic replacements is another huge concern.

3.1. Antitrust and data privacy remains a huge challenge and regulators are watching the data collectors

Technological change and globalization have given rise to big companies with a huge concentration of market power that systematically collect and use personal data, often without the user's knowledge or express permission. As Big Tech companies, including Google, Amazon, and Microsoft, are leaders in many of the technologies enabling the future of work, regulatory oversight has the potential to influence their position in this theme. Competition laws have historically targeted companies whose anti-competitive behavior undermine consumer's rights. In today's digital economy, internet services are provided for free, but customers are required to hand over personal data and suffer other non-material costs, such as reduced security and privacy violations. As such, antitrust regulators are shifting their focus from investigating monopolistic practices in product markets to investigating abuses relating to customer data. This approach has already resulted in increased oversight and fines for antitrust as well as data privacy violations. Arguments advocating the break-up of companies are gaining momentum, but regulators will mainly intervene to address the unfair control of data.

3.2. Regulating the gig economy remains difficult but will set the agenda for future employment law

The gig economy has been shaping work in the absence of traditional forms of trade unionism, like collective bargaining. In addition, regulatory structures around the world were not written with phone-based apps and platform work in mind. This has hindered the ability for gig workers to improve their conditions and wages. However, over the last year we have seen the first attempts by legislators to reign in the gig economy. In 2019, California passed a landmark workers' rights bill, which paves the way for workers in the gig economy to earn the minimum wage, take parental leave, and receive unemployment insurance. Ride-hailing companies like Uber and Lyft have tried to push back, as their entire business model is at stake, but to no avail. In May 2020, California sued Uber and Lyft, alleging that their classification of drivers as independent contractors was in violation of the new law. However, approaches to regulating the gig economy vary across jurisdictions, and there is a general lack of clarity in arbitration rulings. For example, in 2017, the UK's Central Arbitration Committee (CAC) ruled that Deliveroo riders were self-employed and not eligible to worker rights, including the minimum wage. The following year, a UK employment tribunal found that couriers for delivery company Hermes were entitled to receive the national minimum wage and holiday pay.

3.3. Robot tax could become essential to slow the replacement of human workers

Unlike humans, robots don't pay income tax. This means that the funds available for government services diminish when robots are adopted, potentially increasing inequality. Advocates of a robot tax, including Microsoft's co-founder Bill Gates, support the introduction of taxes to slow the adoption of robots in workplaces and suggest the money raised could be used to retrain people put out of work by automation. However, there are issues that could make a robot tax difficult to implement. Firstly, it's hard to define what a robot is, as autonomy is present in almost all technologies this poses challenges when it comes to agreeing when a job has been replaced by a robot. Also, it's not clear whether a robot tax should also include things like open-source code, which can significantly speed up the development of software with a reduced number of engineers. In addition some commentators point to the risk of slowing down capital investment and ultimately, of harming the economy. If companies are less willing to invest in new tech because they fear an extortionate robot tax, those in the tech sector will be less willing or able to develop it.

4. Companies in most competitive positions tend to be technology giants

A number of companies have been preparing for the future of work for some time and unsurprisingly many of the most advanced are the world's leading technology companies. China and the US are home to the most important, but strategies are different between these players. However they all value data control very highly.

4.1. Alibaba has been automating its business model

Jack Ma's company has heavily invested in an automated business model in which most operational decisions are made by machines. In Alibaba's New Retail strategy, offline and online merge into a data-driven network of sellers powered by machine learning. The company has forged partnerships with China's leading companies in AI chips and facial recognition software (Cambricon, Face++, and SenseTime), each of which it has helped fund, and has developed its own AI chip, AliNPU. The company has also heavily invested in the smart supply chain and, in 2018, opened China's biggest robot warehouse with over 700 robots.

4.2. Alphabet leads in machine learning with huge data control

A recognized leader in AI-powered automation, Alphabet sees machine learning as the key to developing robotics for manufacturing, warehouse automation, and transportation. Less well-known is its focus on the mechanics of complex robots. Its Everyday Robot project aims to develop ways for advanced robots to learn skills on their own, like navigating a warehouse filled with unexpected objects. The plan is quite ambitious, considering that robots currently used in warehouses or factory floors can handle only certain specific tasks, and lack the ability to learn. Due to its exceptionally large customer base, Alphabet is also well positioned in enterprise collaboration, not only through its Gmail service but also Meet (video conferencing and team collaboration). The Looker acquisition shows the company's commitment to helping customers manage data in the cloud using data visualization tools.

4.3. Amazon leads in many areas but draws fire over warehouse conditions for workers

From co-bots and CV in warehouses to delivery drones, Amazon is a pioneer of future of work technologies. The company currently uses robots in 26 of its fulfillment centers worldwide. Amazon's machine learning software powers robots in warehouses and transportation execution systems, with its Amazon Web Services cloud business providing the backbone. The company's drone delivery operation is still at the planning stage but, with last mile delivery being the most expensive and time-consuming part of the shipping process, it has the potential to give Amazon an advantage over other logistics companies. Amazon is also regularly criticized for unsafe and unfair working conditions. Spurred by the COVID-19 pandemic, Amazon's warehouse workers are uniting to tackle issues such as the company's failure to provide enough protective equipment and the inadequate compensation given to frontline workers.

4.4. Baidu has an enormous data set to work from and privileged position from Chinese authorities

The search engine giant is transforming into an AI champion. Baidu has developed a big lead in China in the development of operating systems for AVs with its Apollo open source platform. Baidu's technology has been designated as the main platform for autonomous driving by the Chinese authorities, which have granted the search company 50 municipal licenses to test AVs on open roads. Baidu is well-positioned in CV as well. With access to China's more than 700 million internet users (almost twice the US population), Baidu's biggest asset in CV is its visual data set, capable of fueling AI algorithms and constantly improving them.

4.5. Cisco Systems pushing away from hardware

Cisco has been moving its business away from static hardware sales with long lifecycles towards subscription-based, software-centric sales. It is well-positioned to benefit from the increased flexibility required during the pandemic, but the collaboration market is very crowded. As many companies move workloads and data from on-premise to the cloud to support remote work, Cisco can use its strengths as a provider of collaboration, networking, and security services. Cisco has expanded its portfolio of collaboration tools through a series of acquisitions including Voicea, a voice-assistant software tool for work that provides automatic note-taking and post-meeting follow-ups, which is now included in its WebEx platform.

4.6. Facebook pushing VR and AR to enhance working experience

Facebook sees the future of work through the lens of mixed reality, where a VR/AR platform enhances remote work. Facebook imagines a virtual office setup with outward-facing cameras on a Rift or Quest VR headset that take in the room around the user. In this future, floating displays are quickly resized and rearranged, while the world around the user is real. Passthrough - the outward-facing cameras on a Rift or Quest VR headset that see the room around you - is used to create the virtual mesh barrier that confines Oculus software within an area defined by the user using a Touch controller. As yet, the company has only shared a demo where it experiments with prototype hardware and software to create a VR workspace, but it shows its commitment to extending VR and AR technologies well beyond entertainment. In May 2020, Facebook announced that up to half of its employees are expected to permanently embrace remote working even after the COVID-19 lockdown eases.

4.7. Despite tension Huawei is still the dominant global 5G player

Despite the tense geopolitical environment and the US-led warnings of cybersecurity threats, the world's number-one supplier of telecom networking equipment is poised to dominate the 5G era. Shenzhen-based Huawei has the largest share of filings for 5G-related patents (15% according to Nikkei Asian Review). In addition, Huawei has won 91 5G commercial contracts, ahead of the 81 announced by Ericsson, as of February 2020. Huawei is also building on its strong presence across the communication industry with a commitment to AI. Its investment in the Ascend family of AI chips is aimed at providing AI capabilities for public and private clouds, the Industrial Internet, and wearable tech.

4.8. Microsoft cloud platform and existing portfolio make it an essential player

Microsoft's strong cloud offering and extensive collaboration and communication portfolio make it a strong player in the future of work theme. The company's vision for intelligent communications has Teams at its core, with conversations, meetings, files, Office apps, and third-party integrations all available from a central hub. However, the individual components of its portfolio (e.g., SharePoint, Exchange, Skype for Business, and Teams), are under significant competitive pressure. Collaboration tools offered by Slack, Zoom, and Dropbox have become increasingly popular during the pandemic.

4.9. Salesforce has been making acquisitions to bolster its position

Salesforce is rapidly consolidating its position in at least three areas of the future of work, namely data visualization, collaboration tools, and data science. M&A activity has been critical to its strategy. With the MuleSoft acquisition in 2018, Salesforce added an important integration technology, ensuring that enterprise data, apps, and devices are connected across multiple clouds environments. In 2019 it jumped to the forefront of analytics with its acquisition of Tableau, aligning with an overall market push among BI and data visualization vendors. Cloud-based CRM remains central in Salesforce's business. By integrating AI-driven analytics into CRM data via its Einstein portfolio, the company wants to take this part of its business to the next level.

4.10. Slack Technologies is a key innovator but it needs to diversify

Launched in 2014, slack is one of the fastest-growing business applications of the last decade. Total revenue for the three months to the end of April 2020 was \$201.7m, up 50% year-on-year. The company also picked up 12,000 net new customers in in the quarter, taking its total of 122,000. However, this increase pales in comparison to video conferencing platform Zoom, which added 175,000 licenses for new customers in the same quarter. Slack's mission is to make people's working lives simpler, organizing their work around a set of collaborative virtual rooms, which the company calls channels. Its strategy is to position its collaboration tools towards specific departments or teams, rather than entire companies, and rely on a network effect to drive broad adoption. As remote working gathers pace during the pandemic and companies spend more money on collaboration software, Slack will be a central player shaping the future of work. However, despite its early dominance, the company will be under increased pressure to differentiate as more vendors develop similar services.

4.11. Zoom Video Communications received a huge boost and responsibility from COVID-19

In April 2020, Zoom announced that it had reached 200 million daily meeting participants, 20 times more than its record at the end of 2019. The company has been one of the big beneficiaries of the remote working trend caused by COVID-19, with its shares soaring during the pandemic. However, it is not clear how the increased number of customers translates to greater profitability, as the company relies on attracting new users with a limited free service before selling a full version to their employers. It has also taken measures to contain the privacy scandal that has marred its service in March 2020, which has also increased costs.

5. Appendix

5.1. Further reading

Remote working before and after COVID-19: opportunities for business, IT and property (2020) MarketLine Case Study

The Future of 5G: New technology could advance global economy and society after COVID-19 (2020) MarketLine Case Study

COVID-19 Vaccines: Big Pharma and Biotech race to make vaccines available by the end of 2020 (2020) MarketLine Case Study

Banking Industry: Cloud computing helping to deal with severe industry threats (2020) MarketLine Case Study

6. Ask the analyst

We hope that the data and analysis in this case study will help you make informed and imaginative business decisions. If you have any questions or further requirements, MarketLine's research team may be able to help you. The MarketLine Research team can be contacted at ReachUs@MarketLine.com.

7. About MarketLine

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