

# Digital Transformation Drives Operational Excellence: *What's Next?*

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**20,000** years of progress on innovation could be crowded into the 21st century alone, predicted Ray Kurzweil, Futurist and Chief Engineer of Google. While the outlook seemed ambitious when it was made, the astonishing pace of progress thanks to the 4IR has surpassed all expectations. Ray's comments now seem almost prophetic. Endless opportunities await, but they must be managed correctly.



The effectiveness of the digital transformation is not just in the application of tools – from artificial intelligence (AI), predictive analytics, advanced robotics and many more – but also how processes and people must evolve to seamlessly use and integrate the tools. The human side of digital transformation must keep pace with the technological perspective – a unique and demanding goal. Therein lies the importance of creating, nurturing and spurring a culture of innovation in industry, government, academia and society. In turn, this creates a competitive and inspired 21st century workforce in Saudi Arabia.

Oil and gas operators can accelerate from average to top quartile performance and capture up to \$7 billion in profits annually, through advanced automation technologies and new processes, studies by Emerson revealed. Overall, digitalization has the potential to unlock up to

**\$77.6bn**  
The International Data Corporation (IDC) said spending on cognitive and AI systems will reach \$77.6 billion in 2022, more than three times the \$24 billion forecast for 2018.

**\$12bn**  
Wood Mackenzie said a better use of technology could save the industry \$12 billion a year on drilling, mostly in onshore and shallow waters, and \$24 billion a year overall on operating oil producing assets.

**2,000**  
Increased automation and digitization could lower the number of days of rig usage for offshore drilling by 2,000 and accelerate drilling rates by 15%-20%, Wood Mackenzie detailed. Another solution is using seismic imaging instead of the traditional 3D imaging, so that operators can measure and predict fluid changes in reservoirs, typically increasing recovery rates by 40% and boosting upstream revenue by up to 5%.

\$2.5 trillion in industry and societal value for the global oil and gas markets in the medium-term, according to the World Economic Forum (WEF). SAP and Oxford Economics Digital Transformation Executive said 58% of the region's digital leading organizations cite digital skills investment as the most important profit growth driver in 2018 and beyond. A digitally naive and creativity stumped workforce means falling behind.

**Stay Sharp**

If managed correctly, the 4IR is a job creator – not a job destroyer. A study of nearly 1,000 organizations worldwide with revenues over \$500 million by Capgemini, a leader in consulting and technology services, found that 83% of

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**\$50bn**  
Interconnected emerging technologies can unlock \$50 billion in savings in the global oil and gas sector. AI, blockchain, robotics, sensor technology, machine learning, deep learning and edge computing can cut capital expenditure by 20%, operating costs in upstream by 3%-5% and 1%-3% in downstream, detailed McKinsey.

**\$11trn**  
The value that could be generated by combining the physical and digital worlds by 2025, McKinsey has estimated.



**Let's Talk**

Energy companies must increasingly build partnerships to bolster cross-sector knowledge exchange. Emerson's memorandum of understanding (MoU) with Saudi Aramco focuses on bridging advanced digitization and automation technologies. This includes a \$25 million technology and innovation center in the Saudi city of Dammam's Dhahran Techno Valley,

which provides technology expertise to stakeholders in the kingdom. Looking further afield, ExxonMobil is partnering with Microsoft to crunch trillions of bits of data into readable information as the oil major seeks to more than triple shale-oil production in the Permian Basin in less than a decade. Plus, seven global petroleum corporations, including ExxonMobil, have created the Oil and Gas

Blockchain Consortium with one aim being a pilot project to identify applications for industry. As tech giants like Amazon and Microsoft become more eager to work with energy stakeholders – data dissemination, for example – how best to thread cross-sector talent together? One route is tech-sponsored centers of excellence in energy hubs and secondments so staff from both 'worlds' can

gain hands on experience. Creating an ecosystem is vital to giving energy companies much-needed guidance on what they can – and sometimes should – do. Many cannot hire 50 data scientists on a whim to restructure their digital management. Their capacity is already stretched navigating the great energy transition, unpredictable oil prices, geopolitics and economic trends.

**Speeds Matters**

Saudi Arabia's public investment fund has made external investment commitments worth \$95 billion since 2016, with a high concentration on technology, according to the International Monetary Fund (IMF). The kingdom's economic intent is clear (and building), but the pace of progress needs to accelerate. More than three quarters (76%) of respondents to a GIQ Industry Survey in Saudi Arabia agree that speed is the defining factor for success in the 4IR. So, it is perhaps a wake-up call that 82% don't believe the Saudi industry is doing enough to be ahead of the digital transformation curve. The seemingly endless opportunities of the digital revolution also have a global dark side: the rise of cyberattacks, the world's fastest growing mafia. Cybercrime cost the world almost \$600 billion, or 0.8% of global GDP, in 2017, estimated McAfee. 'Digital sheriffs' in house, or hired via third parties, will be integral to reinforce the digital brick walls protecting operations, sensitive data and intellectual property (IP). Ignore their importance on your payroll at your peril.



**2.1%**  
Global energy demand grew by 2.1% in 2017 and CO2 emissions rose for the first time since 2014, according to the IEA. The message? Meeting rising energy demand and increasingly ambitious low-carbon targets is very, very demanding. Digital tools to boost efficiencies and cut costs are indispensable.

respondents have created new jobs because of AI. Three-quarters of firms have seen a 10% uplift in sales directly tied to AI implementation and 63% said that AI has not destroyed any jobs in their organization. But this transition must be properly managed to ensure employees' skills are upgraded – the pace of change is faster than ever. For example, inspection engineers are increasingly having their jobs replaced by drones, so are there enough drone pilots?

**Energy companies**, regardless of their size, must embrace a start-up culture. In part, this means hiring youngsters with an entrepreneurial mentality (the sort who could be working on the 'next' Careem) that can be nurtured in a corporate environment. Many professionals today, including some 'aged millennials' who think

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they are digitally orientated will be amazed – and easily outpaced – by the digital fluency of younger generations. Hiring such talent is a competitive business that the energy industry still isn't winning. Equally, the focus on the human side shouldn't be on millennials only. It should also be on retraining the existing workforce and upskilling their digital knowledge and introducing change management programs that can keep pace with rapidly changing tools and skills