



Strategic Gears
Management Consultancy

Digital Transformation in the Oil & Gas Industry

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Forward

Technology has become one of the main pillars of developing societies, and a force that is reshaping every industry, transforming companies' cultures and business models. A global survey by Tech-Pro found that 70% of companies either have a digital transformation strategy in place or are working on creating one. Executives believe digital transformation adoption had key benefits in improving efficiency of operations (40%), improved time to market (36%), and meeting customers' expectations (35%), according to a study conducted by Forbes.

The oil and gas industry is no stranger to this tectonic shift towards digital transformation; especially with the rise of the fourth industrial revolution (4IR). In the oil and gas industry, digital transformation could result not only in increasing operational efficiency, but also in making jobs safer and contributing to a cleaner environment. The topic has been the center stage at global forums and the driving momentum for policy planners and industry executives. This report provides insights on the current state of the industry in pursuing digital transformation.

This report addresses three key objectives:

- Developing a clear understanding of what digital transformation means for the oil and gas industry.
- Exploring the latest digital transformation trends in the industry.
- Presenting the potential of digital transformation for oil and gas companies, and the key areas for investment.

The insights discussed in the report are derived from our market research, and our network of partnerships with leading digital transformation companies. We also present case studies of how digital transformation has contributed to improving operational excellence in the oil & gas industry.





In a rapidly evolving professional environment, digital transformation is becoming imperative for advancements. Organizations around the world had taken up the challenge of moving their operations to digitized systems in order to improve productivity, reduce costs and increase efficiency. In 2020, six out of the ten largest companies globally were tech companies¹; these companies, including Apple, Microsoft and Amazon, are key drivers of digital transformation and are the first innovators of the digitization wave.

The reliance on technology to prosper and advance nations has become increasingly imperative, and the ability of industries and companies to adopt digital transformation to increase efficiency, growth and the substantiality of their businesses is one of the biggest challenges they are facing.

Companies in the oil and gas industry are major contributors to both global and local economic transformations as they fuel other industries. Oil & Gas is facing critical challenges, such as the rising call for climate change accountability, crude oil price swings, and difficulty in attracting and retaining talent. This presents a great opportunity for the industry to find practical solutions to such challenges through adopting digital transformation. In that regard, the report explores the digital transformation trends in the oil and gas industry, its potential and key investment opportunities.

The potential impact of digital initiatives on the oil & gas industry²

945 (\$ billion)

Is the forecasted cumulative value to the industry between the years 2016-2025

The digital transformation index in the oil & gas industry³

58%

Of the oil and gas companies are digital evaluators, followers or laggards in the year 2020

On the importance of digital transformation⁴

23%

Higher profitability is observed for digitally matured companies compared to less mature companies

1,284 (million tones)

Is the forecasted reduction in CO2 emissions between the years 2016-2025

42%

Of the oil and gas companies are digital leaders and adopters in the year 2020

39%

Of outperforming companies have a fully integrated digital-physical strategy

Digital Transformation Overview

A Brief History



Digital Transformation

Digital transformation has become a force that is radically reshaping businesses and sectors. This new prevailing shift that the globe is witnessing is affecting business models, cultures, processes and hence how humans live and interact. All of this is happening with an unprecedented speed.

A Leap of Faith - The industries that took the first step

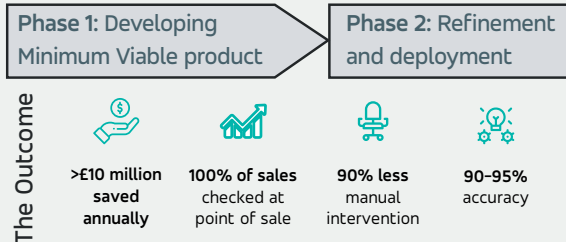
Industries such as mass communication, hospitality management, banking and finance, information technology, manufacturing, and transportation and logistics are among the first adopters to digitally transform their operations and business models. These industries faced many challenges at the initial stages of adopting digital transformation due to the lack of organizational change management and a defined strategy to execute. Nowadays, however, with these challenges behind - the aforementioned sectors enjoy improved efficiency, more reliant outputs and reduced manual interventions to their operations (increase in automation).

Case in Point: AI in Banking & Finance



The Challenge: A large global bank spends millions and uses a large headcount to manually check 10% of all sales for compliance issues.

The Intervention: The bank worked with Strategic Gears' partner, Nexus Frontier Tech, to automate the manual process, integrate it with existing system, and deploy it on site.



Digital Transformation at the Center of your Strategy

To achieve the highest yield from digital transformation efforts, companies ought to integrate their business strategies and digital transformation. This translates into bringing in multiple perspectives and setting different goals pertinent to Value, People, Optimization and Capability to swiftly adapt when needed. Having a clear mindset about the kind of digital strategy to be implemented will enable companies to achieve their intended digital maturity.

Spending on Digital Transformation over the Last Years⁵

36.5%

Is the increase in spending on digital transformation efforts in the last four years

82.4%

Is the forecasted increase on the spending on digital transformation in the coming four years

Digital Transformation Overview

Leading Industries



While technology and its current enablers have been growing at an exponential rate, certain industries have managed to keep up with digital transformation. These industries stand out not just because of the digital transformation initiatives they have undertaken, but also because they have managed to remain innovative and true to what their goods or services need in order to be transformed.

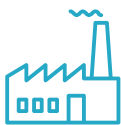
Four Industries Leading the Way



Financial Services: The financial sector is one of the leading industries in digital transformation. All their clients can access their banking transactions through mobile applications. They can apply for a loan, view their account statements, transfer money and have access to stock and bond markets around the world.



Transportation: In the transportation sector, data plays an important role. Data is used to optimize operations and deliver cost-efficient outstanding services. Ride hailing and food delivery applications are revolutionizing this industry at an exponential rate and creating a whole new economy.

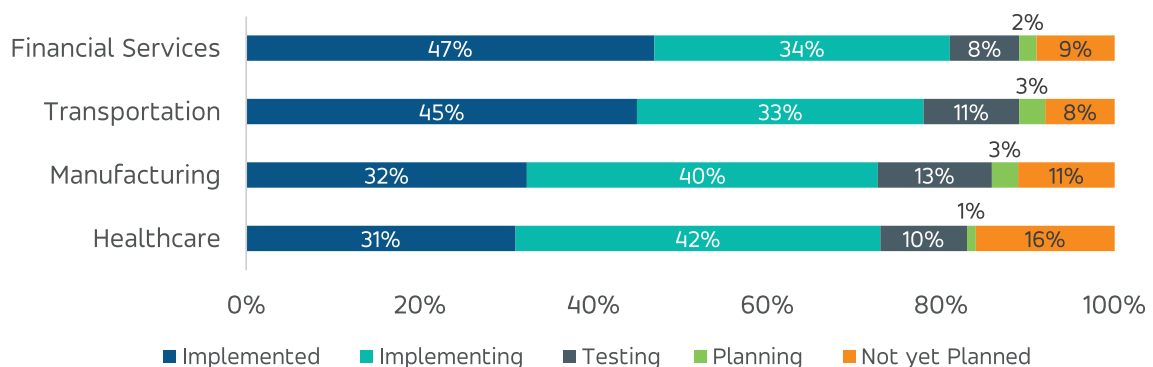


Manufacturing: The manufacturing industry has gone through multiple transformations. Nowadays, we have “smart factories” where AI (artificial intelligence) and robotics are heavily relied on to sustain quality and productivity.



Healthcare: Healthcare is one of the fast-moving industries when it comes to digital transformation. The COVID-19 pandemic has even accelerated the pace of the sector. Today, appointments can be made via applications, online consultations can take place via video call and medical file access is being incorporated with blockchain technology.

Progress in Implementing Digital Transformation by Industry⁶



Digital Transformation in the Oil & Gas Industry

The Imperative To Adopt

Why the Oil & Gas Industry is Ripe for Digital Transformation?

The oil and gas industry is a matured and stable industry with long life assets. The Middle East, in particular, has a high potential for transformation as 35% of all oil and gas production comes from legacy fields that have been operating for over five decades. As old assets are being replaced, leaders find themselves at crossroads - they must decide which technology to adopt and which will impact their organizations for decades to come.

Why Now?

The majority believe that digital transformation is a necessity to stay competitive. COVID-19 has amplified the need for digital transformation. Companies found themselves forced to increasingly rely on technologies including remote monitoring and robotics, as people mobility has been restricted.

What is the Benefit?

Whether upstream, downstream, or midstream, digital transformation promises to increase revenues and profits, raise efficiency and productivity, and improve sustainability.

Case in Point: Big Data

- Oil and gas companies using Big Data were found to be twice more likely to be on the very top of financial performances in the industry.
- These companies were found to be five times more likely to have faster decision-making capabilities than their competition.
- Lastly, they were also found to be three times more likely to execute their planned decision on time.

Digital Transformation in Numbers

85%

of top leaders say that their digital transformation has increased their companies' market share.⁷

80%

of top leaders say that their digital transformation has increased their companies' profitability.⁷

85%

of decision makers say they have **two years to act**, or they will fall behind their competition.⁸

Digital Transformation in the Oil & Gas Industry

The Industry's Stance on Digital Transformation

Are Oil & Gas Companies Embracing the Fourth Industrial Revolution?

According to the Harvard Business Review, the oil and gas industry has low spending on digital transformation when compared to other industries. The situation is even grimmer when looking at digital assets where the oil and gas industry ranks near the bottom. Despite all the potential benefits, the oil and gas companies are not yet rushing to embrace digital transformation.

The Race for Second

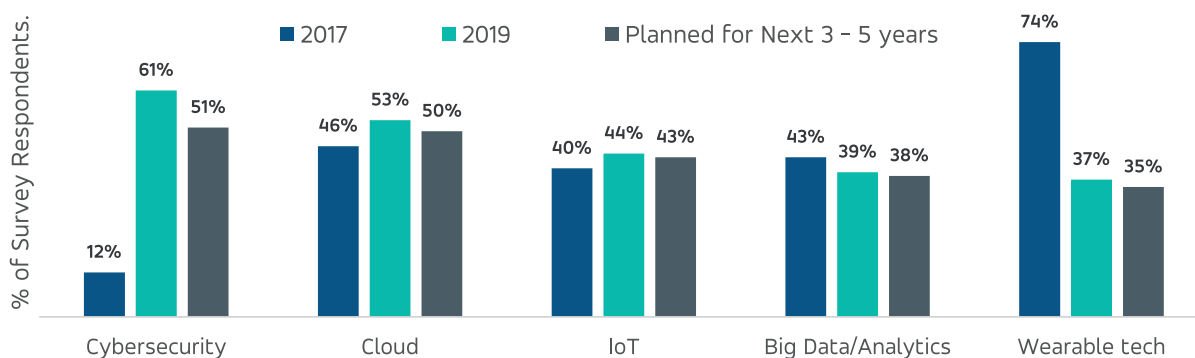
The oil and gas industries exhibit an interesting phenomenon -- they prefer to be second in every change. Companies in the industry do not have a 'right to fail' culture. Assets and maintenance are both highly expensive in the industry and companies are naturally averse to undertaking risks. Moreover, some level of automation and sensors have existed in the industry for decades and many leaders feel they are well prepared.

They have large and complex organizations, and they deal with many contractors, engineering firms and consultants. This complex ecosystem of interdependencies makes reaching an agreement on any change very challenging. Thus, there has been a humble track record of digital transformations in the oil and gas industry. It has been estimated that for traditional sectors, such as oil and gas, success rates for digital transformation are between 4 and 11%.

Four Reasons Why Companies Fail their Transformations

1. **Not setting clear goals:** Companies do not define what they want from the transformation.
2. **Lack of expertise:** Companies may not have the technological or planning capabilities to successfully execute the transformation.
3. **Focusing only on the technology:** Companies are focusing on upgrading the technologies, but not investing in training and preparing their employees.
4. **Not enough buy in:** The company leadership might not be fully committed.

What are Upstream Companies Investing in?



Digital Transformation in the Oil & Gas Industry

Latest Trends within the Industry

Where is the Industry Focused in Utilizing Digital Technologies?

The focus in the Oil & Gas industry has been concentrated in Exploration, Production, Processing and Refining, Corporate and Back office, Safety, and Compliance.



Exploration: Exploration can be dramatically enhanced through leveraging the use of advanced data analytics and AI technologies. This minimizes risks from an investment standpoint as well as optimizing the acquisition of hydrocarbons.



Production: In production, several techniques in AI are being utilized to maximize wells' production while maintaining low costs. Moreover, technologies such as computer-vision based anomaly detection sensors are used to minimize productions risks and increase the safety of the operations.



Processing and Refining Maintenance: Artificial intelligence is utilized to predict machinery and equipment future events to optimize maintenance operations and minimize risks of costly maintenance.



Corporate and Back Office: Advanced data analytics is used to forecast supply/demand behaviors for planning production, inventory management and logistics. The use of advance data analytics is also extended to drilling, reservoir engineering, refining as well as health and safety.

Determining where the focus could be

Depending on their digital maturity, companies can extend their focus to domains other than the ones mentioned above. This will be reliant on a digital strategy that clearly sets out priorities for maturity and answer the questions of what kind of investment needs to happen and where. Choosing whether to focus on one domain or more will ultimately determine the digital maturity of a company. Companies in the O&G sector can navigate their position on the spectrum below, find out which bucket they belong in, and what steps they need to take to complete their digital maturity journey.



Utilize existing technologies to automate tasks/activities



Utilize digital technologies to encompass automating capabilities other than the existing ones



Utilize digital technologies to weather extreme changes to the current way of doing business



Business, operating and human capital models are all geared towards digital and are drastically different from the legacy systems



Low Digital Maturity

High Digital Maturity

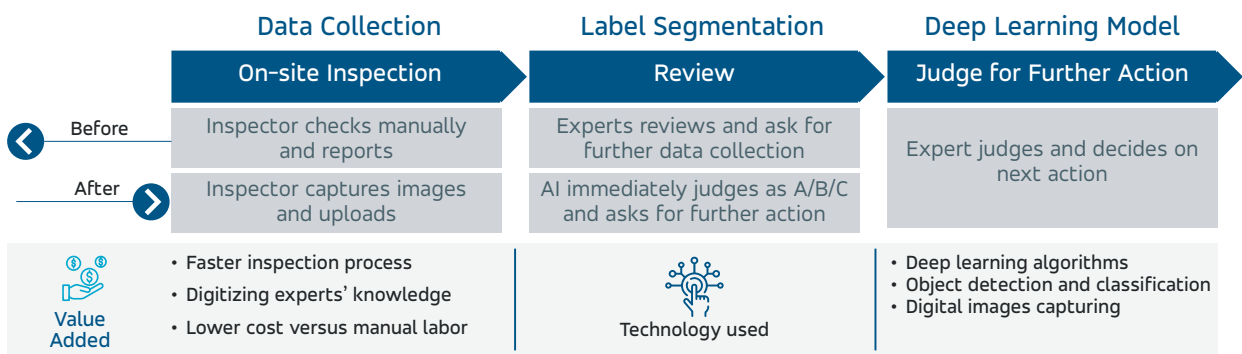
Digital Transformation in the Oil & Gas Industry

Case Studies in Processing & Refinery Maintenance

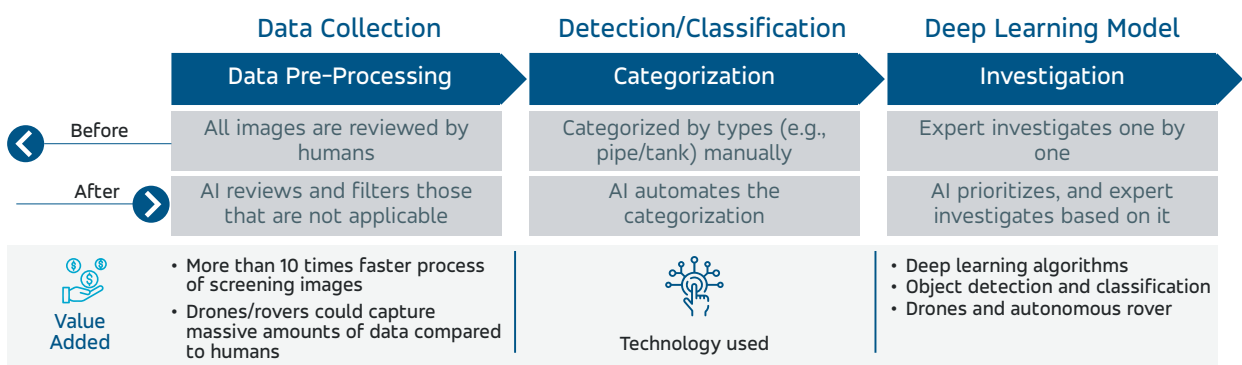
What Technologies are being Used in Processing & Refining Maintenance?

Advanced analytics and AI are the primary technologies that have been employed in processing and refining maintenance. Below are case study references from Strategic Gears' partner, Nexus Frontier Tech.

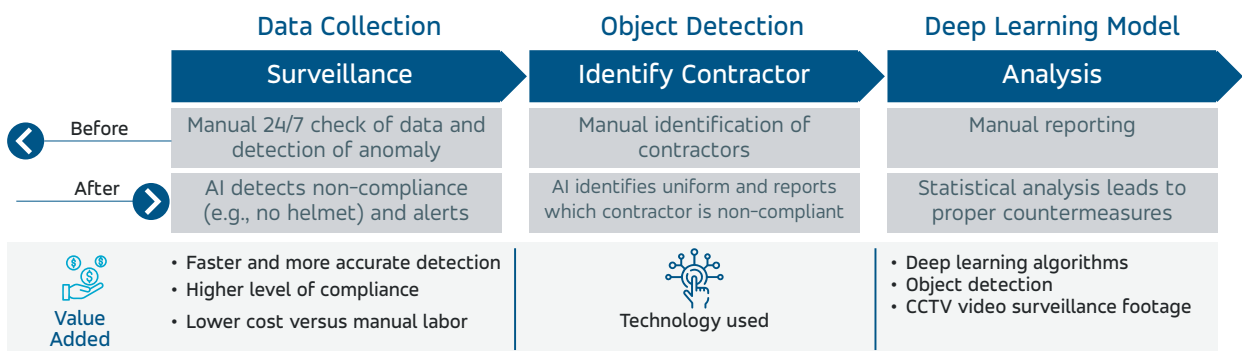
Case in Point: AI-assisted Corrosion Detection (Operations Excellence)



Case in Point: AI-assisted Image Screening (Operations Excellence)



Case in Point: AI-assisted Safety Compliance (Operations Excellence)



Where to Invest?

Where to Invest?

The answer to where to invest can be viewed from two perspectives -- one that is specific to the Oil & Gas industry where companies can adopt other successful examples from within the industry; the other is by adopting technologies utilized in other industries that are leaders in digital transformation. Hybridizing what to bring into your company in terms of best practices from both within the industry and/or without will lead to a mix of technologies whereby the intended digital maturity can be achieved.

Company Comparison

Despite the difference in the nature of the oil and gas industry across the countries that were researched, there are certain overarching themes of transformation that were identified.

What has been mostly seen is that a successful digital transformation remains an important objective for the oil and gas industry in each country. Due to the incredible economic size of this industry, companies are not willing to leave out any opportunity for increased profitability. This leads to the phenomenon where practically all top companies are investing in all emerging technologies.

The true differentiating factor, where companies gain an edge, is how they incorporate these technologies into solutions. For example, ExxonMobil utilized several emerging technologies such as robotics, data analytics, artificial intelligence, and advanced sensors to develop fully autonomous, underwater drilling capabilities. On the other hand, there is "BIKE", the Petrobras' robot that traverses into pipes and tunnels for inspection. SMEs, on the other hand, have more limited resources, leading them to be more cautious with the utilization of technologies and focusing on the largest value added opportunities.

Industry Comparison

There is much to be gained by understanding what the top digitally enabled industries are doing. We find that certain industries, such as financial services, manufacturing, healthcare, and transformation are at the forefront of digital transformation. Automation and robotics are highly prevalent in the financial sector. On the other hand, manufacturing techniques such as 3D printing are revolutionizing the manufacturing sector. The health sector has benefited immensely from increased connectivity and the Internet of things. Body sensors may continuously relay vital signs and symptoms, allowing doctors to remotely diagnose and track them. Lastly, the transportation sector has seen increased efficiency through the utilization of cloud logistics. While these applications might not be directly used in the O&G sector, we observe that each case mentioned shows the potential to be translated to an effective application in the O&G sector.

To Understand Where to Invest, Strategic Gears Shares:

3

Benchmarks of global leaders in the oil and gas sector.

3

Expert/SME owner interviews.

4

Relevant industries analyzed.

Where to Invest?

Country Comparison: Saudi Arabia (ARAMCO)



Aramco is one of the world's leading companies in digital transformation in the oil and gas sector. Aramco has a clear digital vision, which says: "In 2022, Saudi Aramco is the world's leading digitalized energy corporation, maximizing shareholder value and spearheading digital innovation in energy globally". They also established a center for digital transformation, "4IR Center", which is a center for innovation and exploration of modern technologies.

10 key Technologies from the 4 th Industrial Revolution	Robotics & UAVs	3D printing
	Modeling	Artificial Intelligence
	Analytics	Blockchain
	Augmented/Virtual Reality	Mobility
	Cloud	Intelligent Sensing

Aramco is investing/using all 10 technologies.

Sample of Aramco Tech Solutions

- 1 Robotics & UAVs:** This technology allows safer and more efficient inspection abilities, as well as early detection of leaks. It also supports aerial mapping, underwater welding and environmental monitoring, as well as the inspection of assets in difficult to access locations.
- 2 3D Printing:** 3D Printing simplifies the production of complex components or prototypes, reducing the equipment downtime, cutting costs and reducing long waits for parts.

Case in Point: Uthmaniyah Gas Plant

Uthmaniyah Gas plant is one of the largest gas processing plants in the world, it has been recognized by the World Economic Forum as a "Lighthouse" manufacturing facility.

This plant uses advanced analytics and AI solutions to increase productivity while enhancing safety, reliability and efficiency of its operating facilities.

The use of drones and wearable technologies to inspect pipelines and machinery has helped cut inspection time by 90% in this industrial facility.

Where to Invest?

Country Comparison: USA (Exxon)

ExxonMobil ExxonMobil is one of the largest oil and gas companies in the world. ExxonMobil has a track record of innovating and developing new technologies. The company's Vice President for digital transformation summed up ExxonMobil's digital strategy as "Success in the digital space is about enabling the business to be more profitable". The company is utilizing new technologies to increase its operational efficiency, make smarter decisions, and improve customer interactions.

10 key Technologies from the 4 th Industrial Revolution	Robotics & UAVs	3D printing
	Modeling	Artificial Intelligence
	Analytics	Blockchain
	Augmented/Virtual Reality	Mobility
	Cloud	Intelligent Sensing

ExxonMobil is investing/using all 10 technologies.

Sample of ExxonMobil Tech Solutions

- 1 Artificial Intelligence:** Artificial intelligence is being used to increase efficiency by automating processes and activities that were traditionally reserved for the human mind.
- 2 Blockchain:** The OOC Consortium, which includes ExxonMobil, Shell, Chevron, among others, is working on utilizing blockchain technology to reduce costs in multi-stakeholder projects. Distributed ledgers significantly cut down on time and cost in Authorization for Balloting (AFE). Blockchain has been able to reduce a 90 – 120 day process to a 7 day process.

Case in Point: Autonomous Drilling

ExxonMobil was the first in the industry to utilize autonomous drilling in deep water. The proprietary drilling system is currently deployed in Guyana.

The system leverages artificial intelligence to determine the ideal parameters for drilling. It also uses a close loop automation which controls the drilling process without human intervention.

ExxonMobil states that this technology improves drilling safety and efficiency through consistent, repeatable operations.

Where to Invest?

Country Comparison: Malaysia (Petronas)



Petroleum Nasional Berhad (PETRONAS) is a global energy and solutions company. They are known for being one of the leading digital transformation companies in the region. In mid-2021, PETRONAS Digital Sdn Bhd (PDSB), the digital arm of PETRONAS, won three awards at the Malaysia Technology Excellence Awards. The company won in the AI in Oil & Gas, Analytics in Oil & Gas and Digital in Oil & Gas categories.

10 key Technologies from the 4th Industrial Revolution	Robotics & UAVs	3D Printing
	Modeling	Artificial Intelligence
	Analytics	Blockchain
	Augmented/Virtual Reality	Mobility
	Cloud	Intelligent Sensing

Petronas is investing/using 8 out of the 10 technologies.

Sample of Petronas Tech Solutions

- 1 Intelligent Sensing:** Petronas uses intelligent and smart sensors that allows predictive maintenance elevating efficiency, productivity, and reducing the downtime of their machines.
- 2 Augmented/Virtual Reality:** INSTEP (Institut Teknologi Petroleum PETRONAS) and UTP University signed an agreement to develop an augmented reality module app together. The app will help engineers and technicians to train on the heavy machines through real plant experiential learning

Case in Point: Bike

Bike is an operation robot designed by Petronas using robotics technology. Bike has magnetic legs to enable crawling and climbing on internal and external surfaces.

Bike can perform periodic inspections on the tanks, tunnels, vessels and pipelines without compromising quality. This eliminates the need for human inspectors to work on high places or enter confined spaces, reducing their exposure to risks.

Where to Invest?

Country Comparison: Summary

	Global Leaders			SMEs		
	  					
Robotics & UAVs	●	●	●	●	○	○
3D Printing	●	●	●	○	○	○
Modeling	●	●	○	○	○	○
Artificial Intelligence	●	●	●	●	○	●
Analytics	●	●	●	○	●	●
Blockchain	●	●	○	○	○	○
AR/VR	●	●	●	○	○	○
Mobility	●	●	●	○	○	●
Cloud	●	●	●	○	○	●
Intelligent Sensing	●	●	●	●	●	●

Adoption by Global Leaders

- All major companies are investing into practically every technology.
- The Oil & Gas is a solution-focused industry, rather than tech-focused. Therefore, leading companies are focusing on a wide range of technologies that contribute to achieving solutions as efficiently as possible.
- Those solutions help companies to reduce costs, increase efficiency, improve training programs and create a safe and attractive work environment.

Adoption by SMEs

- Due to the high capital costs associated with upgrades and technology adoption, SMEs are more cautious and conservative with digital transformation
- The progress in sensors and the development of the internet of things (IoT) has been capitalized on by SMEs.¹⁰
- We also find that big data analytics has permeated into companies of all sizes and in all stages of the industry.
- Both upstream service providers felt that robotics had a large potential impact in the future.

¹⁰ - SME owner interviews conducted by Strategic Gears in different countries.

Where to Invest?

Industry Comparison



There are four leading sectors in the field of digital transformation, we shed light on the most prominent solutions and key technologies used in these sectors and look at the applicable technologies to be adopted in the Oil and Gas industry.



Financial Services

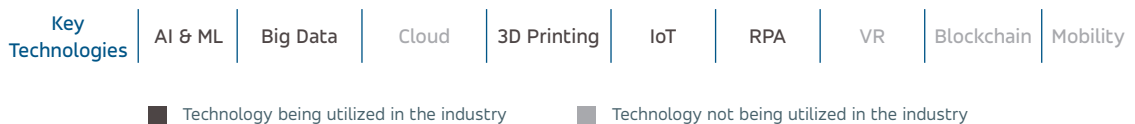
Robotic Process Automation (RPA): RPA is an application of technology that aims to automate business processes by defining a set of instructions for a 'bot' to perform tasks. The top benefits of RPA are cutting costs, enhancing operational efficiency, reducing risks and improving internal processes.



Manufacturing

Predictive Maintenance Innovation: Manufacturers used to schedule routine maintenance on equipment. However, the equipment downtime was very expensive. However, with Predictive Maintenance Innovation, machines are instrumented with sensors that notify workers if maintenance is required. This technology also predicts mechanical problems even before they happen.

3D Printing Technology: The use of 3D Printing Technology helps companies make faster and cheaper prototypes. Moreover, innovations in this field have almost halved the costs, while delivering twice the performance. The aerospace and automotive manufacturing are the leading industries using this technology.





Healthcare

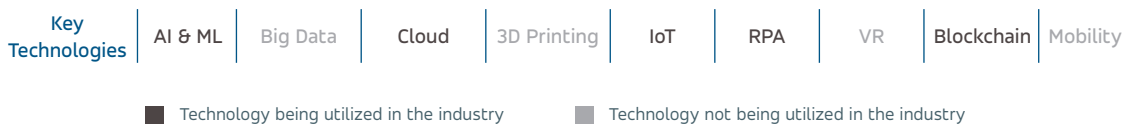
Patient Portals: One of the leading technologies in healthcare is patient portals, which are platforms where patients can manage their medical services e.g., access their health records, make appointments, communicate with their doctors, etc. A survey of health systems found that 82% consider patient portals one of their primary technologies for engaging patients.



Transportation

The electronic Air Waybill (e-AWB): e-AWB is a standardized digital version of the prevailing paper Air Waybill which is a critical air cargo document that constitutes the contract of carriage between the "shipper" and the "carrier". The e-AWB reduces the cost due to the removal of paper AWB. It also improves accuracy and visibility of AWB data, and reduces the handling delays due to missing or illegible paper AWB.

Cloud-Based Logistics: By including cloud-based logistics technology in transportation and logistics management, organizations can achieve operational efficiency. Cloud logistics help companies in real-time vehicle tracking, logistics space planning, and management of online ticketing.



Where to Invest?

Industry Comparison











The leading industries are utilizing most of the digital transformation technologies. However, each industry is heavily focusing on what is significantly transforming and placing them at the forefront of the digital wave:

- In **financial services**, the focus is on improving financial business processes by using Robotic Process Automation (RPA).
- In **manufacturing**, the focus is on big data to enhance fault detections and predictive maintenance.
- In **healthcare**, the focus is on blockchain and cloud to automate processes and enable patients' journey through digital platforms.
- In **transportation**, the focus is on IoT and cloud systems for tracking and tracing purposes.

	AI & ML	Big Data	Cloud	3D Printing	IoT	RPA	VR	Blockch-ain	Mobility
Leading Industries	●	●	●	○	○	●	○	●	○
Financial Services	●	●	●	○	○	●	○	●	○
Manufacturing	●	●	●	●	●	●	○	○	○
Healthcare	●	●	●	●	●	○	●	●	●
Transportation	●	○	●	○	●	○	○	●	○

What to Replicate in Oil & Gas

Given the heavy investments that large O&G corporations are making in digital transformation, this limits to an extent what can be replicated from leading industries. However, the case for small and medium enterprises is largely different as there is much to be learned.

Large Corporations	Small and Medium Enterprises
 Robotic Process Automation	 AI & ML
 Blockchain	 Big Data
	 IoT
	 Robotic Process Automation
	 Cloud
	 Blockchain

Addressing the Changing Environment

The Oil & Gas industry faces a future of a rapidly evolving world. The environmental challenges due to climate change dictates that the industry should be equipped at all times with the necessary tools to weather such pressing challenges.

Digital transformation can be adopted early on as part of a wider toolkit to address the ever-changing environmental requirements. As digital transformation helps organizations cut their costs, the incremental increase in return can be reinvested in solving what could be one of the industry's biggest challenge on the horizon.

A New Kind of Oil

Data mining is the new oil of the future. Harnessing the huge amounts of data in the Oil & Gas industry will advance engineering models and improve AI and machine learning algorithms across the whole value chain. Decision-making will be based on live data streaming through an executive's smart phone.

The industry is taking large leaps in this direction; just around 1% of that data is being mined. There is massive room for growth here; the industry needs to invest in systems and talent to pursue this new domain of knowledge.

The New Wave of Specialists

One of the industry's biggest challenges is retaining talent. A big role in this dilemma is played by the cyclicity of the industry and its sensitivity to price swings (especially if those swings are big). This was particularly felt during the year COVID-19 broke out.

On top of its cyclicity, the industry is under fierce competition from other industries offering better attractive packages, more flexible workplace options and higher safety working environments.

Companies can start solving this problem through the typical approach of revisiting their talent lifecycle in order to hire, develop, grow and engage their employees. On top of that, digitalizing early on becomes even more important as it will ease out the reliance on manual labor through automating operations.

The Focus in the Future Should be on



Climate Change



Advanced Analytics & AI



Retaining Talent & Specialists

Concluding Remarks



The sweeping changes of the Fourth Industrial Revolution are commanding executives in the oil and gas industry to take action. The decisions made today will have an impact for decades to come. Decision makers need to be prepared to embrace change and take critical decisions.

Through our benchmarking, and our expert interviews, it was identified that larger multinationals, and smaller SMEs have different needs and must have different approaches to digital transformation.

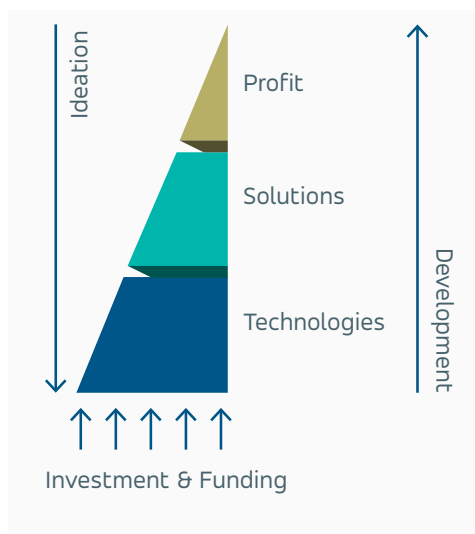
Global Leaders: Focus on Solutions

“Success in the digital space is about enabling the business to be more profitable”

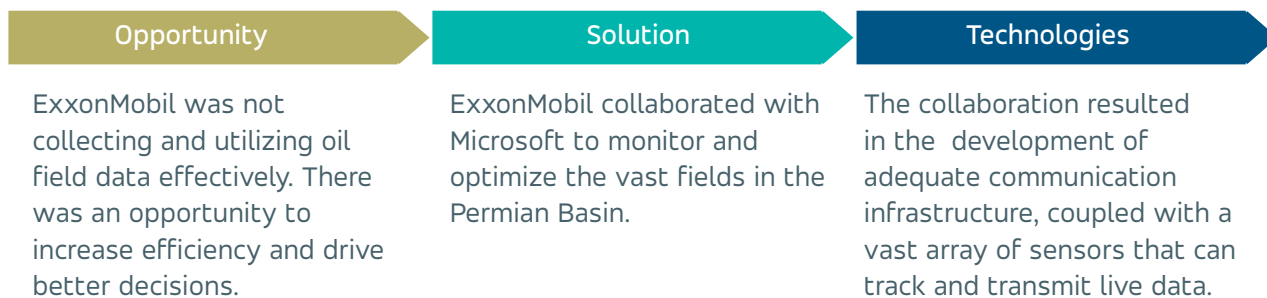
ExxonMobil VP for digital transformation.

Large companies are often stuck in a race for second place. Global leaders are often waiting for another player to test a technology, to find out whether it is profitable. This has led to the industry becoming one of the least digitized. Instead, global leaders must pave the way in developing profitable solutions through analyzing their own operations.

- Rather than transformation for transformations' sake, we believe transformation must occur to realize the profitability gains at stake.
- Companies should start by asking themselves: what can be done to be more profitable? What solution will enable this? Which technologies does the company need?
- The development on the other hand must start from investment into the technology, which enables the solution, that drives profitability.
- Companies also need to evaluate where they stand on the maturity of the required technologies, as this will determine the focus areas for investment.



Global Leaders: Focus on Solutions



Concluding Remarks

SMEs (Upstream): Focus on Technologies

“The main barrier to digital transformation is the mindset, the common belief of (If it isn’t broken, don’t fix it) must change”

Upstream Oil and gas owner/expert

The Oil and Gas sector has very high capital costs associated with upgrades. SMEs cannot afford to experiment and gamble with technologies. Instead, SMEs need to focus on technologies that are proven to either: increase efficiency, production, and safety. Through the benchmarking and expert interviews, the following technologies were identified as areas to focus on:



Robotics: From pipe inspection to underwater surveying to autonomous drilling, the use cases of robotics are vast and more importantly, feasible.

“Safety is the most important driver for digital revolution and robotics has a lot of potential in this field” Upstream Oil & Gas owner/expert.



Advanced Sensors: Advanced sensors are leading the race for understanding productivity, tracking losses, and overall increasing efficiency.

“The biggest change I have seen in my career is the increased utilization of sensors” Oil & Gas procurement expert/owner.



Connectivity: Connectivity serves as the backbone of digital transformation. It enables the proper utilization of sensors.

“Lack of proper connectivity in off-shore rigs is the biggest challenge to digital transformation” Upstream Oil & Gas owner/expert.



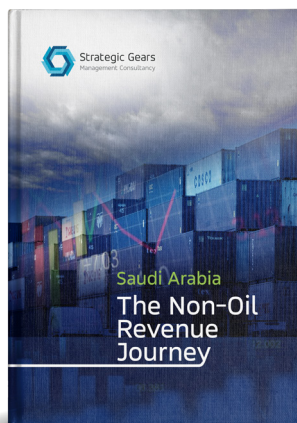
Big Data Analytics: Companies are now receiving a vast array of data every second. Without proper use this data is going to waste. With proper utilization, it leads to better and more informed decisions.

“The amount of data we are receiving from sensors is incredible” Oil & Gas upstream services company owner.

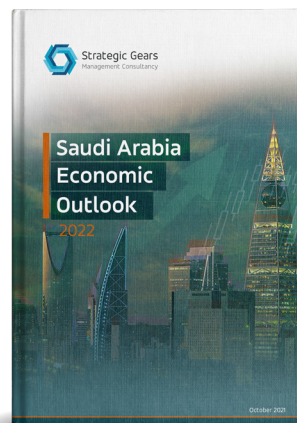
This recommendation certainly does not mean that SMEs in the upstream sub sector should limit their exposure to the aforementioned. However, these technologies are beginning to mature and are the most important focus areas for SMEs given their direct impact on their productivities and bottom-lines.

Other Publications

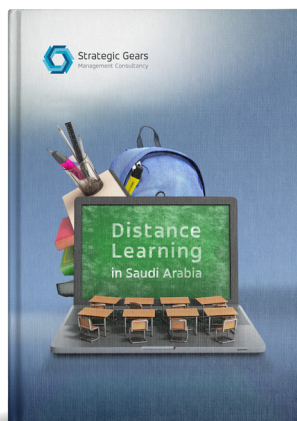
Strategic Gears prides itself in its ability to be a knowledge hub for the Saudi market. We release a range of reports on the current state of the Kingdom's economy as well as hot topics in both the public and private sectors. Below is a sample of our latest publications.



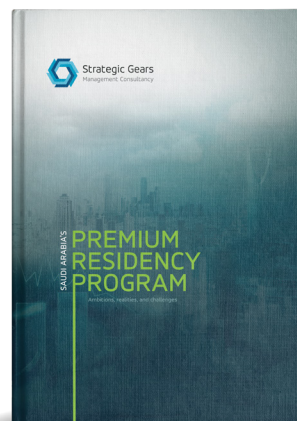
**Saudi Arabia
The Non-Oil Revenue Journey**



**Saudi Arabia Economic
Outlook 2022**



**Distance Learning in
Saudi Arabia**



**Saudi Arabia's Premium
Residency Program**



Strategic Gears
Management Consultancy

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Strategic Gears is a leading Management Consultancy based in Saudi Arabia, serving clients across the country. Strategic Gears's clients include the largest public and private sector organizations, including a number of ministries, authorities, financial institutions, and companies. The company utilizes its top notch local consultants, and global network of experts to offer strategic solutions in the fields of Strategy, Operations & Organizational Excellence, Marketing & Digital, and have a proven track record with multiple clients in each.

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