

Chapter 8: Case Study of Dyson Ltd.

Dyson in Brief:

Founded in 1993

HQ - Malmesbury, UK (moving to Singapore from 2021)

R&D – UK: Malmesbury, Hullavington, Bristol & London; Malaysia: Johor; Singapore: West Park

Main Manufacturing – Malaysia, Singapore

Owner - James Dyson (1993-present)

Revenue - £4.4 billion (2018)

Profit - £1.1 billion (2018)

R&D Expenditure - £550 million (2018)

12,000 employees globally (2018)

4,500 UK-based employees (2018)

About Dyson:

Dyson is a UK-based technology company that prides itself on its engineering expertise to design and manufacture products that work in different and better ways than its competitors. The company was founded in 1993 by James Dyson. Its most well-known products are its upright, cylinder and cordless vacuum cleaners, but it also manufactures hand dryers, fans, heaters, humidifiers and lighting. Washing machine manufacturing ceased in 2005. In 2016, hair dryer manufacturing was added, following a five-year and £50m investment in producing a 'quieter' hair dryer. Diversification is likely to continue in the future, facilitated by the company's growing expertise in battery technology. In September 2017, James Dyson announced that his company would invest £2.5 billion on a "radically different" electric car, with a view to launching it in 2020, however this project was eventually scrapped.

Location and Organisation of Dyson's Global Operations:

Dyson's HQ is located in Malmesbury, Wiltshire, England, however in 2019 the company announced that its HQ would be moving to Singapore from 2021 to better support its manufacturing operations and key markets which are in Southeast Asia. Research and development is also carried out at the Malmesbury site, with an additional campus for R&D at nearby Hullavington since its opening in 2017. Dyson manufactures the motors for its products in Singapore, while assembly work is carried out in both Singapore and Malaysia. In 2017, the firm produced its 100 millionth machine with its manufacturing volume hitting 80,000 machines a day. Dyson had a global workforce in 2018 of approximately 12,000 employees, with around 4,500 based in the UK. One-third of its employees are engineers.

In recent years, Dyson has turned its attention to developing its presence on the high street, through Dyson Demo Stores, as an alternative to selling online or through other electrical retailers. The first wave of Dyson flagship stores were launched in Tokyo, Jakarta and London in

Transnational & Multinational Corporations in the Global Economy: Peter Lowe

2015-2016, and now the company has more than 150 stores worldwide, each enabling consumers to test and experience its portfolio of products, such as the Pure Cool purifying fan, the 360 Eye robot, Supersonic hair dryer, and the Cu-Beam lighting range, at first hand.



The Dyson Demo Store in Oberhausen, Germany. (Image: ID 174473068 © Ralf Liebhold | Dreamstime.com)

Growth of Dyson:

Dyson's revenues reached a record £4.4 billion in 2018, an increase of 33% on 2017, helped by growing demand for its products in Asia. Its profits exceeded £1 billion for the first time in the company's history, but it has been a long road to success for owner and inventor, James Dyson. His first product, the Sea Truck, was launched in 1970 while he was studying at the Royal College of Art in London. This was followed, a few years later, by the award-winning Ballbarrow. This was an improvement on the traditional wheelbarrow design, as the large ball prevented it from sinking into soft ground. Other inventions of James Dyson included the Trolleyball and the Wheelboat.

The story behind the invention of the Dyson cyclonic vacuum cleaner began in 1978, when James Dyson was vacuuming his home with a machine made by Hoover. He realised his vacuum cleaner was constantly losing suction power because of how the collected dust quickly clogged the pores of the cleaner's bag. The outcome of this was the blocking of the airflow, and a rapid reduction in efficiency.

James Dyson set to work to solve this problem. During a chance visit to a local sawmill, he noticed how the sawdust was removed from the air by large industrial cyclones. Research got

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underway on implementing the same principle on a smaller scale. 5 years, and 5,127 prototypes later, the world's first cyclonic bagless vacuum cleaner arrived, using centrifugal force to push dust to the edge of an internal cylinder.

However, James Dyson's invention was not welcomed by the major vacuum cleaner manufacturers, including Hoover, AEG, Vax, Electrolux, Zanussi and Black & Decker. One by one they turned him down, apparently not interested in new technology. They seemed determined to continue selling bags, worth \$500 million every year. Later, Hoover's Vice President for Europe remarked that his company regretted not buying the product technology from Dyson, because they would have seen to it that it never saw the light of day.

In 1985, with no interest from the American or European manufacturers, James Dyson turned his attention to Japan, and managed to license his cyclonic vacuum cleaner design to the Japanese company, Apex. Their G-Force machine sold for around £1,200 at launch in 1986. Using the income from this arrangement, James Dyson was able to set up Dyson Ltd. In January 1993, the company's first dual cyclone vacuum cleaner, the DC-01, rolled off the production line. Initially, the assembly was by the US firm, Phillips Plastics, in Wales, but a dispute over costs led to James Dyson moving production to his own factory in Wiltshire in July 1993. Within two years, the £200 DC-01 had become the UK's best-selling vacuum cleaner.

The original team of 3 Dyson engineers grew to 350 scientists in a new research centre, investigating ways to make their vacuum cleaner and other products work better. In 1999, Hoover tried to imitate a Dyson by launching a similar machine, and James Dyson was forced to use the courts to protect his invention. Dyson eventually won a victory against Hoover for patent infringement.

Impacts of Dyson on its Country of Origin - UK:

For 9 years, all Dyson vacuum cleaners continued to be made at the company's Wiltshire factory. However, in 2002, the company made the decision to move production to Malaysia, prompting criticism from Trade Unions, as well as triggering debate in the media about the effects of globalisation and outsourcing. The immediate outcome for the local economy was that 800 semi-skilled UK assembly workers lost their jobs, although the jobs of 1,200 Head Office and R&D employees remained in the UK. Washing machine manufacturing also moved to Malaysia in 2003. Today, all Dyson products are made in Malaysia or Singapore. One of the company's recent innovations in cleaning, a robot vacuum cleaner known as the Dyson 360 eye, went on sale in early-2015.

James Dyson has justified the offshoring of production by stating that lower costs allow more profit, and therefore more investment in its R&D and administration divisions, so creating more UK jobs in the long term. This has been borne out by the company's growth and research spending to date, with around 4,500 UK workers being employed by Dyson in 2018, half of whom are highly-skilled engineers. Its UK-based workforce has increased by 2.5 times in the last 5 years, and now far exceeds the size of the company's workforce at the time that vacuum cleaner production was moved abroad.

R&D spending was £80 million in 2013, but jumped to £206 million in 2015, and continued to increase in subsequent years, reaching £550 million in 2018. The company's ambitious expansion plans began in early-2014 with the beginning of a £250 million expansion of the Malmesbury R&D campus to create 3,000 jobs. Later in 2014, Dyson set out plans for a £1.5 billion investment in R&D towards 100 new machines and 4 new product lines over the

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following four years. Despite the company's product diversification moves, vacuum cleaners still remain the biggest source of profit, although research and development has changed from mains-powered vacuum cleaners to battery-powered vacuum cleaners.

In 2017, James Dyson announced his long-held ambition to "find a solution to the global problem of air pollution". His plan was to add an electric vehicle (EV) by 2020 to the catalogue of pricey vacuum cleaners, fans and hairdryers already manufactured by the company that he owns. An investment of £2.5 billion was announced in 2018, to be split evenly between battery technology (solid-state batteries) and vehicle development, including plans for a two-storey advanced manufacturing plant in Singapore dedicated to producing electric vehicles from 2020 (later pushed back to 2021).

The EV project was eventually scrapped in October 2019, with James Dyson revealing that it was not "commercially viable". Dyson's concept car resembled a sporty high-end SUV, capable of being driven for 600 miles on a single charge, but its break-even cost was estimated to be around £150,000. The project had cost the company £500 million by the time the decision was made to end it. Nevertheless, the investment in the car's solid-state battery technology will continue and the results should be implemented in future products. The division employs around 500 workers in the UK.

This and other developments in Dyson's research division have enabled the company to innovate more rapidly, and the funding for this would not have been possible had the company continued to manufacture from its sub-optimal UK base. Despite the failure of the EV project, James Dyson (with family) came top of the Sunday Times Rich List for 2020, with an estimated wealth of £16.2 billion.

The company's international research and development team now has more than 5,800 engineers and scientists (UK and overseas-based), and its technology investments includes energy storage, robotics, machine learning and motors. In early-2020, staff in the UK and abroad were redeployed to develop ventilators for the NHS as part of the response to the coronavirus outbreak. Although a fully-functioning new ventilator was designed and manufactured in just 30 days, the potential order for 10,000 units was ultimately not required.

The UK has also benefited from the corporate taxes paid by Dyson. The family-owned company paid around £95 million in taxes to the UK government in the 2017-2018 tax year, with the Dyson family paying an additional £32 million on their dividends. These figures made the Dyson family the third-largest taxpayer in the UK.

Attractions for Dyson of Host Countries – Malaysia and Singapore:

Malaysia offers a number of advantages to Dyson as a manufacturing location. Wages are lower than in the UK, while labour is relatively more skilled compared with other emerging economies, allowing the company to maintain production of its high-quality products. Geographically, it is well-positioned to the other countries in Southeast Asia where many of the components are manufactured. Although Malaysian labour is more expensive than in rivals, such as Vietnam and China, overall production costs are still believed to be at least 30% lower than in the UK.

Malaysia is also conveniently situated for the efficient distribution of Dyson products to the large Japanese, Chinese and US markets. The company saw its sales explode in the US, following the relocation to Malaysia, with it grabbing 30% market share by 2006. From 2007, Dyson began selling in Hong Kong, before launching into the potentially lucrative Chinese market. Mainland China was Dyson's fastest growing major market in 2015, with revenues there increasing by

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222%. The popularity of Dyson's products in China has continued since. The company now sells 90% of its products outside the UK. James Dyson has made it clear that the company's centre of gravity now lies in Asia, where it sees the biggest opportunities for growth.

Singapore offers access to high-growth markets as well as an extensive supply chain and a highly skilled workforce. Despite having a comparatively high cost base, the country has the high-tech expertise to produce the ground-breaking new products arising from the work of Dyson's R&D teams.

In January 2014, James Dyson announced the launch of a new vacuum cleaner, the Dyson Cinetic, which does not require any filter cleaning for at least 10 years. The machine is manufactured on a high-tech production line in Singapore using robots. James Dyson claims that the UK can't make the product due to a lack of skills to support the high-tech equipment. This is not a problem in Singapore, where 40% of the country's graduates are engineers, providing the expertise to support the robots and other high-tech automated machinery.

Furthermore, Dyson's tech appeals to Asia's fast-growing middle classes who appreciate products such as its premium-priced hairdryers. The company has also been lucky to ride the crest of a wave of concern about pollution in the home with its air purifiers. Shanghai has more of its environmental control products than anywhere else in the world.

Dyson could have chosen China for its overseas manufacturing facilities, as wages there are lower than in Singapore and Malaysia. In addition, China would easily be able to fulfil the company's requirements for engineers and assembly-line workers. However, the transfer of technology can bring the danger of 'copycat' manufacturing, and Dyson may have considered Singapore and Malaysia as places where the company's technology is less likely to be reverse-engineered.

Yet, James Dyson has still been forced to spend millions protecting the patents that Dyson holds from 'copycat' Chinese companies. He has publicly accused them of "lacking moral standards" for stealing the intellectual property rights to his products, such as the bladeless fan. Despite this, Dyson has opened a Technology Lab in China.

Impacts of Dyson on Host Countries – Malaysia and Singapore:

Dyson's considerable investment in manufacturing and research facilities for its vacuum cleaners, fans and hand dryers has brought considerable benefits to Malaysia. The first manufacturing plant was opened in the town of Senai, Johor state in 2002. This became a joint venture with Singapore-based Meiban Group from 2004. Since 2007, Dyson has also been in partnership with the Malaysian manufacturer, VS Industry (VSI), who have taken on a major role in Dyson's supply chain, including raw material and component sourcing, production at their Malaysia facility and distribution of Dyson products globally. The use of contract manufacturers in the region means that at least 12,000 people are involved in the production of the company's products.

In addition, Dyson employs over 1,00 people at its Malaysia Technology Centre, a 50,000m² facility in Johor focusing on research, design, IT, finance and creative work. Two-thirds of employees are engineers, showing the positive impacts of Dyson on the Malaysian economy through the provision of high-skilled and well-paid jobs. The research centre is Dyson's second largest worldwide, and bears little resemblance to the tiny labs employing 10 people that marked Dyson's first investment in the area in 2002.

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Dyson began working with Meiban in Singapore to produce the motors for its products in 2007. It also works with other contract manufacturers, including the Singapore-based electronics manufacturer, Flex, which produces the 360 Eye robot vacuum cleaner. In 2013, Dyson announced plans to invest £50 million in a highly-automated new manufacturing plant in West Park, Singapore, aimed at doubling production of its patented digital micro-motors to four million units a year. This second plant is Dyson-owned, in order to give the company greater control over its intellectual property and production processes.

The new digital motors plant at West Park initially employed 210 people, mostly engineers. Its highly-automated production line, which uses 50 robots to build and assemble each motor out of 22 small components, only requires 13 front-line operators at any one time. Despite the relatively low job creation due to the high-tech nature of the factory, employment has steadily risen as a result of surging demand. In 2014, Dyson announced that it would be spending a further £250 million on manufacturing expansion in Southeast Asia, much of it at the West Park factory site in Singapore. Four additional production lines have now been built, increasing its digital motor manufacturing capacity to 11 million motors per year. Its Singapore-based workforce, employed at its Technology Centre in the Singapore Science Park and at its nearby West Park manufacturing plant, has increased in size to more than 1,100 as a result. The majority of the jobs are skilled and highly prized.



The former St James Power Station in Singapore is expected to be transformed into Dyson's new global headquarters from 2021. (Image: Wikimedia Commons, CC)

In 2019, Dyson announced plans to double the size of its Singapore Technology Centre, and to move its global HQ from the UK to Singapore from 2021 in order to better support both

Transnational & Multinational Corporations in the Global Economy: Peter Lowe

manufacturing and sales in the Asia region. The new HQ will occupy Singapore's historic St James Power Station, built in 1927 as the country's first coal-fired power plant. Although the electric car project, that would have seen a new manufacturing facility built in Singapore, was scrapped in late-2019, the investment setback for Singapore is likely to be short-lived given the new HQ and the continued growth of Dyson's other operations in the country.

Tasks & Discussion:

- Outline the history of the Dyson vacuum cleaner.
 - Why was Dyson in the news in 2002, and why did this upset people?
 - What have been the benefits for Dyson arising from this decision?
 - How has Dyson impacted on the country of origin (the UK)?
 - How has Dyson impacted on the host countries (Malaysia and Singapore)?
 - In what ways has Dyson's decision-making been good for its customers worldwide?
 - State the evidence that shows Dyson is a successful British company.
 - Discuss how closely the story of Dyson illustrates the process of globalisation.
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Quick Test

1 Which of these companies was the only one interested in licensing James Dyson's cyclonic bagless vacuum cleaner?

- a Hoover
- b AEG
- c Apex
- d Electrolux

2 In what year was Dyson Ltd formed to start manufacturing its own designs?

- a 1993
- b 1985
- c 1999
- d 2008

3 In 2002, the manufacturing of Dyson's vacuum cleaners moved to which country?

- a China
- b Malaysia
- c Thailand
- d Singapore

4 How many UK assembly workers lost their jobs when Dyson's manufacturing moved abroad?

- a 8,000
- b 800
- c 2,000
- d 400

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5 Which of these product ranges are not currently produced and sold by Dyson?

- a Humidifiers
- b Lighting
- c Washing machines
- d Fans

6 Which of these was not an important factor in Dyson's choice of Singapore for the manufacturing of digital motors?

- a Expertise in engineering and robotics
- b Extensive supply chain in the region
- c Proximity to high-growth markets
- d Cheap and plentiful labour

7 What was Dyson's revenue for the 2018 financial year?

- a £1.1 billion
- b £4.4 billion
- c £9.6 billion
- d £15.8 billion

8 The location of what Dyson facility is expected to change in 2021?

- a Assembly plants
- b Research
- c Online store
- d Headquarters

9 What was an important consideration for Dyson in choosing Malaysia over China for manufacturing?

- a Cheaper cost of labour
- b Protection of intellectual property rights
- c Proximity to supply chains
- d English-speaking workforce

10 How significant was the amount of tax paid by James Dyson (and family) in the 2017-2018 tax year?

- a Largest UK taxpayer
- b Sixth-largest UK taxpayer
- c Third-largest UK taxpayer
- d Tenth-largest UK taxpayer

11 How many prototypes did James Dyson produce of his first cyclonic bagless vacuum cleaner?

- a 5,127
- b 985
- c 68
- d 1,431