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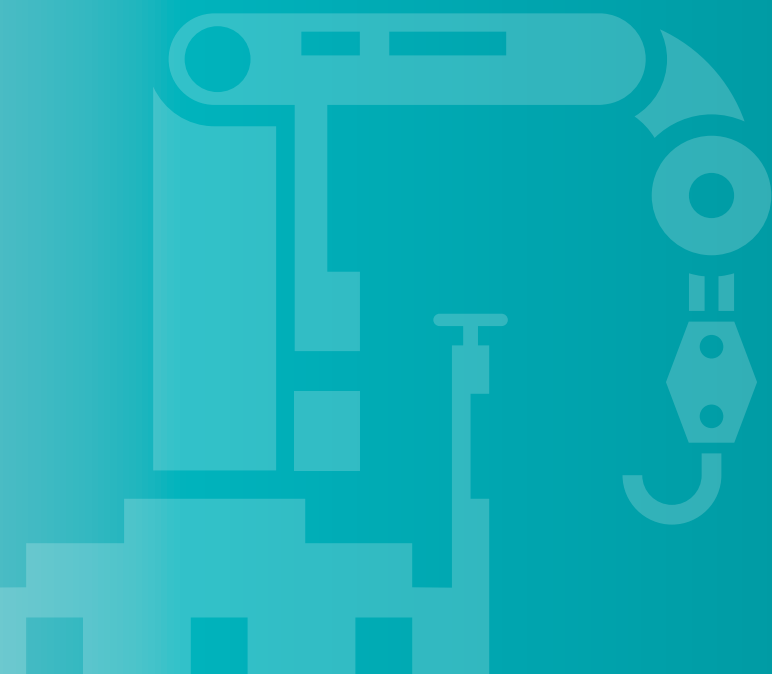
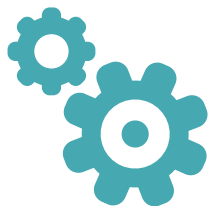


The Digitalisation Productivity Bonus: Manufacturing in Wales

What value does digitalisation
offer manufacturers in Wales?

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Management Summary

- It is widely accepted that the economic impact of the global Covid-19 pandemic is expected to be significant and prolonged, fundamentally affecting patterns of supply and demand as well as working and labour practices
- Meanwhile, manufacturers still recognise that they must implement Industry 4.0 technology in order to remain competitive and react to shifting market demands with optimum agility and flexibility. However, manufacturers need to be able to demonstrate measurable outcomes to support the business case for digital transformation
- Measurable improvements in manufacturing productivity are an obvious and reliable starting point for demonstrating the value of digitalised equipment and technology
- Research from Siemens Financial Services has conservatively estimated the productivity gains from digitalisation and automation – known as the *Digitalisation Productivity Bonus* – for the manufacturing sector in Wales
- Funding investment in digitalised technology and equipment is a major challenge for manufacturers – particularly during this period of economic volatility. However, expert financiers are developing smart financing tools to help manufacturers digitally transform their operations in an affordable and sustainable manner
- Smart finance tools continue to evolve, but some widely used techniques include:
 - Machinery & Technology Financing
 - Retrofit Finance
 - Software finance
 - Outcomes Finance
 - Digital Enterprise Finance
 - Working capital solutions



Automation and digitalisation: When not if

Debate within the manufacturing community has moved on from whether investment in Industry 4.0 technology is worthwhile. That fact is now assumed. Instead, the questions facing manufacturers are *when* and *how* to digitally transform their operations, during what is expected to be a prolonged and significant economic crisis.

Now, more than ever, businesses need to be able to adapt to rapidly changing patterns of supply and demand. Industry 4.0 technology can facilitate levels of operating flexibility that can cope with uncertain and volatile markets – a flexibility that is becoming an increasingly important competitive advantage, both now and in the future.

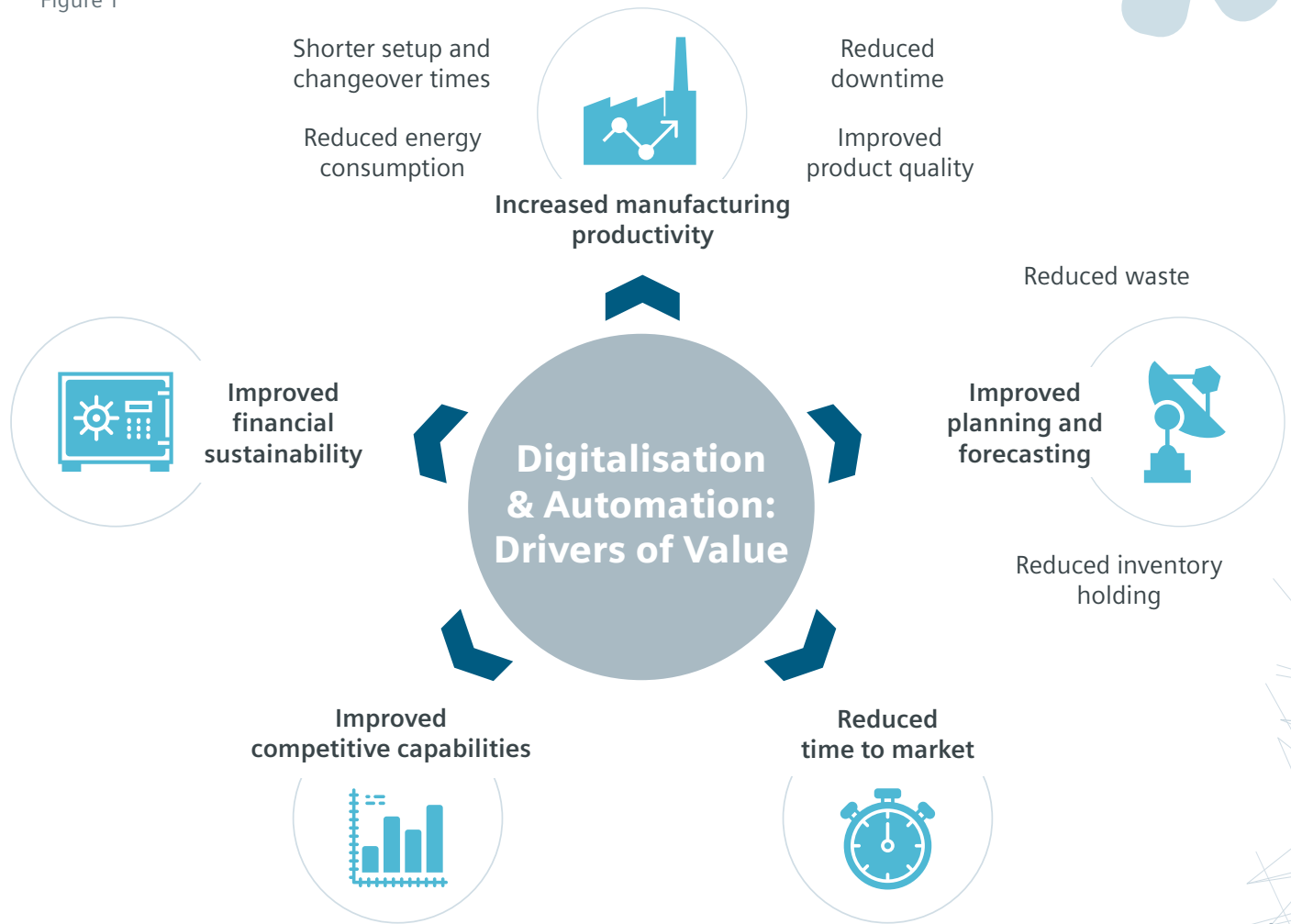
Industry 4.0 within the manufacturing environment is built upon digitalisation of processes. The pace of adoption and implementation of digitalised technology varies from country to country, region to region, sector to sector, business to business. In some instances, the main focus is on making manual processes automated, by controlling them through digital systems. For processes that are already automated, the focus is on further digitalisation through the Internet of Things (Iot). Here, sensors installed within the physical environment provide real-time data which can be used to enhance processes. This is achieved in

a number of ways, such as increasing production capacity, achieving faster job setup and completion, maximising equipment 'uptime', enabling predictive maintenance and enhancing supply-chain logistics with just-in-time distribution. Some manufacturers are also improving their competitiveness with mass-customisation; by tailoring products on a large scale while achieving the same economies of mass production.¹

Manufacturers recognise that in order to endure and grow in increasingly international, competitive and volatile markets, investment in Industry 4.0 technology and solutions is essential. Nevertheless, this substantial investment needs a business case to support it so that it can be justified to stakeholders and shareholders. This will include clear evidence of the outcomes of digitalisation – including expected revenue and growth benefits.

However, the commercial gain from digitalisation is often difficult to evaluate. Siemens Financial Services commissioned research to understand which of the benefits of digitalisation (see fig.1) could be most reliably calculated and used as evidence by manufacturers seeking to make a business case for investing in Industry 4.0 technology.

Figure 1



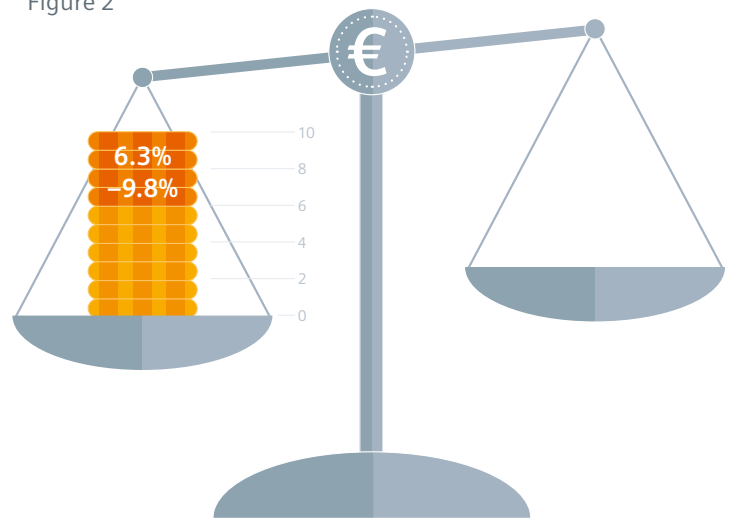
The Digitalisation Productivity Bonus

The vast majority of manufacturers and expert consultants interviewed for the research² signalled that the ability to **increase manufacturing productivity** as the most valuable starting point for measuring the potential value from digitalisation. Manufacturers can clearly see that manufacturing the same product at less cost, or increasing production with little or no cost increase improves their competitiveness. The research indicates that this is true for both manufacturers just starting their digital transformation journey and those that are further down the road and are now looking to install the latest sensor-based technology and further digitalise their processes.

The research found that manufacturers can make production productivity gains equivalent to between 6.3% and 9.8% of their annual revenues by automating and digitalising their production systems. Named the **Digitalisation Productivity Bonus**, respondents identified this gain as the most reliable starting point for building a business case to demonstrate the benefits of investing in Industry 4.0 technology and equipment.

Digitalisation Productivity Bonus: reduced production costs with digitalised technology

Figure 2





“The research found that manufacturers can make production productivity gains equivalent to between 6.3% and 9.8% of their annual revenues by automating and digitalising their production systems.”





Region Focus – Wales

Wales is renowned for its coal mining heritage and has since developed a strong manufacturing presence. The sector produces around 17.5% of Wales' manufacturing output, the largest proportion of the UK regions.³ The region also contributes a healthy performance to UK exports representing 5.1% of total goods exports; while nearly two thirds are sent to the EU, Wales also exports a significant amount to North America (16.6%) and Asia (10.5%).⁴ Although uncertainties around the UK's relationship with the EU remain, global companies from sectors including food and drinks and chemicals have all invested in the region.⁵

The food and beverage sector accounts for 15% of total manufacturing output in 2019 – up from 14.4% the previous year.⁶ The sector achieved a record turnover figure of £7.473 billion in 2019, effectively surpassing the target set by the government in 2014 to achieve 30% growth by 2020.⁷

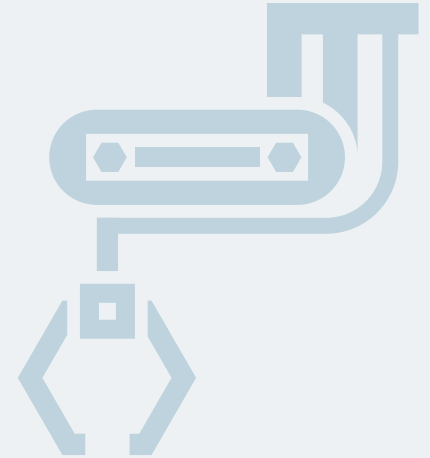
In addition to the dozens of vineyards, distilleries, breweries, bottled water producers and meat and dairy

farms, Wales is at the forefront of scientific academic research in the food and beverage industry. This research extends to all aspects of the sector with analyses centred on production technology, manufacturing processes, packaging and markets.⁸

The chemicals industry accounts for almost 11% of manufacturing output in the region.⁹ In South Wales, chemicals is among a number of manufacturing subsectors to recently receive a significant grant for cost-effective and sustainable decarbonisation of industry in the area.¹⁰

Businesses in the region continue to adapt in the face of adversity with one international military and police outfitter using its Llanelli-based factory to produce high strength hand sanitiser instead of its usual bio-ethanol fuel products.¹¹ Such flexibility in the realm of production is typically facilitated by digitalised technology that is enabling manufacturers to help meet urgent demands efficiently and effectively.





Digitalisation Productivity Bonus

Siemens Financial Services has applied its **Digitalisation Productivity Bonus** model to the manufacturing sector in Wales to demonstrate the potential gain from Industry 4.0 for manufacturers in the region. The average 'Bonus' percentage range was applied to the total annual revenue of the manufacturing sector in Wales (revenue data derived from official third party sources). The resulting financial sums in the table below estimate how much Welsh manufacturers could gain from digital transformation and the resulting improvements in manufacturing productivity. These efficiencies, although not estimated here, can also be realised throughout the supply chain.

Estimated **Digitalisation Productivity Bonus** – reduced production costs resulting from conversion to digitalized technology in Wales

Region	Baseline Bonus (production cost reduction)
WALES	£2.1bn

This figure equates to around 6% of total revenue for manufacturers in the region.

The **Digitalisation Productivity Bonus** is only one aspect of value that digitalisation is delivering to manufacturers in Wales. Nevertheless, it provides manufacturers with a reliable starting point from which to build a digital transformation business case – even through the current economic difficulties.



Smart finance

Despite the clear benefits of the technology, manufacturers still face the significant challenge of making a major initial investment in Industry 4.0 automation and/or digitalisation technology. To help manufacturers overcome this hurdle, specialist financiers have developed smart finance, a set of financing tools which enable the transition to new-generation digital technology. These tools are designed to make Industry 4.0 investment affordable and sustainable, while helping to ease pressure on manufacturers' cash-flow and working-capital.

Financing digitalisation:

Machinery & Technology Financing

This tool enables manufacturers to acquire a piece of technology, machinery or a system from OEMs without the need to use up their own capital – whether accrued profits or bank loans. Financial solutions will usually be based on a range of options: finance lease, operating lease, rental or hire purchase arrangement. This type of financing can also cover associated costs of ownership, such as maintenance, into a “bundled” monthly payment.

Retrofit Finance

For manufacturers already well on the path to becoming a fully digital enterprise, integrated equipment and technology finance options allow them to upgrade during the financing period and offer protection against technological obsolescence. Upgrades might involve replacing with a newer model or retro-fitting enhancements onto the main technology platform.

Software Finance

The journey to digital transformation requires deploying combined hardware and software solutions that can deliver digital data streams of performance data. This is recognised by specialist financiers that can offer manufacturers integrated arrangements for financing requirements.

Outcomes Finance

Financing agreements in which payments are predicated on the expected business benefits, or “outcomes”, that the technology makes possible are being offered with increasing frequency. Savings or gains from access to the technology are used to fund monthly payments, making the technology cost-neutral for the manufacturer. In some cases, this means that solutions can be adopted at low or zero-net cost, because the benefits pay for the technology upgrade over the life of the financing plan.

Digital Enterprise Finance

Recognising the challenges of transition, financing arrangements are available that defer payment for a new system or scaled setup until it is reliably up and running. This removes the financial challenge of having to pay for the new system while the old one is still running.

Working Capital Solutions

Digitalisation may increase production capacity and productivity, while improving price competitiveness, to the extent that a manufacturer's order book experiences a sudden, significant upswing. Yet the momentum that is built through digitalisation brings its own challenges – such as suddenly having to buy raw materials or components in greater quantities. Added-value financing services offered in partnership with a specialist financier – usually based on some form of invoice finance – are available to help manage the cash-flow challenges brought on by success through digitalisation.

Key references

- ¹ See, for instance: IBM, A framework for Industry 4.0, 10 Feb 2017; PwC, Industry 4.0 – Building the Digital Enterprise, 2016; McKinsey, Industry 4.0 (2015); Strategy&, Industry 4.0 (2014); McKinsey, “Manufacturing’s next act” (2015); Control Engineering Asia, “The dawn of the new industrial era with the Smart Factory” (January 2017); ABB, “The new age of industrial production” (2016); Assembly Magazine, Industry 4.0 (2016); Accenture, “The Growth Game-Changer: How the Industrial Internet of Things can drive progress and prosperity” (2015); Roland Berger, Industry 4.0 (2016); VDMA and McKinsey, “The future of German mechanical engineering” (2014); Oliver Wyman, “Digital Industry” (2015); Manufacturing Technology Center, Industry 4.0 (2016).
- ² Methodology: Over 60 international manufacturers, international management consultants and specialist academics were interviewed in January and February 2017. Respondents gave their expert estimate of financial gain from increased manufacturing productivity resulting from implementation of the new generation of digitalised and/or automated manufacturing technology and equipment classified under the title of Industry 4.0 or The Fourth Industrial Revolution. Respondents expressed their estimates of this financial gain as a percentage of total revenues, using their knowledge of gains calculated as a proportion of total operating costs (total operating costs for manufacturing companies varies between 75% of revenues in Europe to 85%+ in China, according to official statistics). This model was then applied to total revenue data of the manufacturing sector in different countries and manufacturing subsegments around the world to estimate the financial gain from increased manufacturing productivity resulting from implementation of digitalisation and automation in each of these geographies and segments.
- ³ Make UK, Regional Manufacturing Outlook 2019, 2019: <https://www.makeuk.org/-/media/eeff/files/reports/industry-reports/make-uk-bdo-regional-manufacturing-outlook-2019.pdf>
- ⁴ Business News Wales, Record Turnover of Over £7.4bn for Wales’ Food and Drink Sector, 6th February 2020: <https://businessnewswales.com/record-turnover-of-7-473-billion-for-wales-food-and-drink-sector/>
- ⁵ Make UK, Regional Manufacturing Outlook 2019, 2019: <https://www.makeuk.org/-/media/eeff/files/reports/industry-reports/make-uk-bdo-regional-manufacturing-outlook-2019.pdf>
- ⁶ The Grocer, Welsh food and drink sector turns over record amount, 24th Jan 2020: <https://www.thegrocer.co.uk/sourcing/welsh-food-and-drink-sector-turns-over-record-amount/601332.article>
- ⁷ Business News Wales, Record Turnover of Over £7.4bn for Wales’ Food and Drink Sector, 6th February 2020: <https://businessnewswales.com/record-turnover-of-7-473-billion-for-wales-food-and-drink-sector/>
- ⁸ Food and Drink Wales, The Food and Drink Industry in Wales (2016) <https://www.foodvisionasia.com/wp-content/uploads/2016/02/F2F2643-FoodDrink-Sell-Sheet-PRINT-No-Bleed.pdf>
- ⁹ Business News Wales, Record Turnover of Over £7.4bn for Wales’ Food and Drink Sector, 6th February 2020: <https://businessnewswales.com/record-turnover-of-7-473-billion-for-wales-food-and-drink-sector/>
- ¹⁰ RWE, ‘South Wales Industrial Cluster wins funding’ (30 April 2020) <https://www.group.rwe/en/press/rwe-generation/2020-04-30-south-wales-industrial-cluster-wins-funding>
- ¹¹ Business News Wales, ‘160-year Innovation Legacy Sees Manufacturer Return to the Frontline’ (19 May 2020) <https://businessnewswales.com/160-year-innovation-legacy-sees-manufacturer-return-to-the-frontline/>

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