

Title:

To understand what impacts the UK's Business Sophistication ranking, has on their ability to apply value-based production in the UK. and to consider innovative methodologies that can support improvement.

Abstract

The purpose of conducting this research has been to understand, more fully, the implications of the underdeveloped business sophistication criteria in the UK and how these impacts upon SMEs in their ability to transfer to value-based production in an increasingly competitive world.

The report will consider value-based production and any correlations found within the fifth pillar and explore, more broadly any factors that are mitigating business growth in the UK. The research will make a comparison to Sweden versus the UK and consider, the differences that support Sweden's Global position as world ranked 1st position for business sophistication. Finally, the report, having considered factors and initiatives, will offer recommendations, and form a conclusion.

Acknowledgements: 'I would like to thank Antur Cymru for supporting my study, through study hours provided annually and WG for funding such a value course, through the MADE provision.

I would like to thank the people who have supported my International Innovation Journey. Nick my study partner and my ever patient daughter Evan (when mamma is too busy to offer her full attention. I wish to thank: Alan Mumby the course lead and mentor and to all the tutors who have offered their expertise and insight. Finally, I would like to thank the back office, team at UWTSD who make our lives, just a little easier through their expertise'. Lowri Roberts

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Throughout the Report there will be reference to Appendices. Appendices will be referred to as:

Appendix A, B etc. (A list of the Full Titles, are listed here for reference and ease of use). Where the report is used frequently e.g., WIPO 2022 (It will be highlighted once at the outset in BOLD).

Appendix	Title
Appendix A	360° Business Model Innovation
Appendix B	WIPO Report 2022
Appendix C	WIPO Pillar Conceptual Framework
Appendix D	The Future of Jobs Report
Appendix E	ILO Global Employment Outlook Trends
Appendix F	Digital Progress Europe
Appendix G	University and Business Cooperation (Sweden)
Appendix H	GII Extraction Data
Appendix I	Innovation skills Development in SMEs
Appendix J	Sweden GII In depth
Appendix K	OECD Gender Gap extraction Data

Justification

This project is a dissertation, that completes the study of an MSc in International Innovation Management, completed via remote learning. The Course duration was 24 months, completed alongside the authors daily work role.

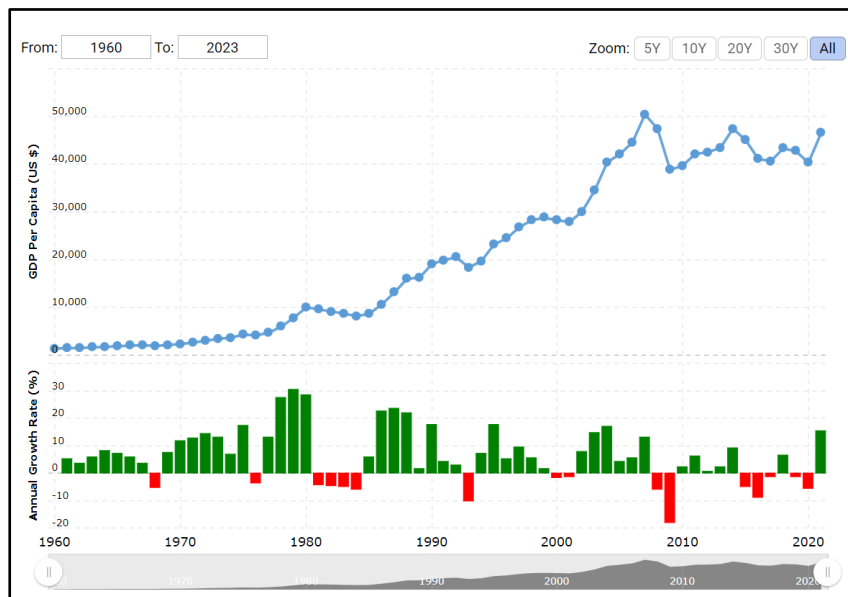
This topic was chosen due to the authors work and interest in entrepreneurship and innovation. The author has a desire to understand more fully the potential impacts upon SMEs in the UK who have had to respond to the economic impacts of Covid 19, only to be thrown into further economic challenges through a cost-of-living crisis. This has been happening, while they are trying to navigate the changing demands of digitization and sustainability, but survival is actually their main purpose.

This is a topic of interest for the author, who works as business advisor/consultant currently employed to support SME's and collaborate with stakeholders to develop business growth, the author has 25 plus years of broad multi-division, corporate and secondment experience: including: Finance, operations, strategy, sales and marketing, NPD, and HR management.

Curiosity has more recently guided the author to study International Innovation Management, as an ongoing process of CPD.

This is a relevant topic for research, due to the destabilizing factors of Brexit, Covid, Political instability, inflation, and the current cost of living crisis, and decreased productivity. All of these factors, cause, serious recovery challenges for the UK and SME's.

Chart 1: GDP



(macrorends.net, 2023)

The wind has changed and ‘doing what we have always done’ won’t be a solution to modern productivity challenges.

A report by WIPO in 2022 (**Appendix B**) that asks:

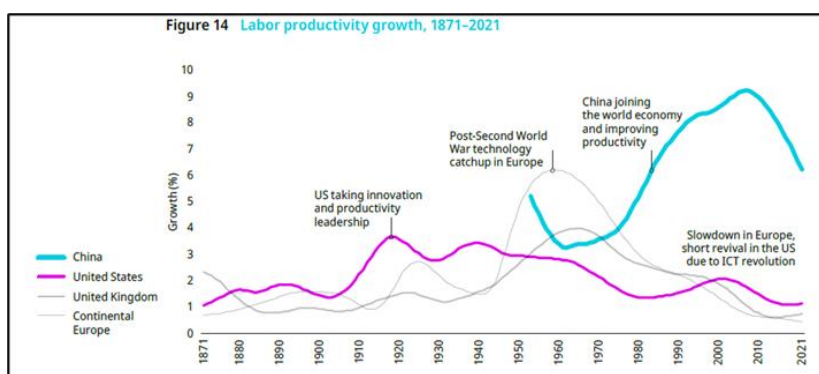
‘What is the future of innovation-driven growth: Productivity stagnation or revival?’: (World Intellectual Property Organisation (WIPO), 2022)

Summarizes, that whilst industry innovation, revolutions, (E.g. Coal, Gas, Electronic and Nuclear and the most recent revolution from the Internet of Things and Industry 4.0) have previously, caused an increase in productivity, increasing GDP (Gross Domestic Product). That despite continued investment in innovation, there has been a contradiction to the norms, with stagnation becoming apparent and GDP suffering a prolonged slowdown of productivity, since the 1970’s. (WIPO.int, 2022).

Chart 2: Labour Productivity (1871-2021)

Summarizing from: The 2022 WIPO report regarding periods of productivity.

The first productivity slowdown occurred in the 1970’s, with small surges occurring, for higher



income countries and only emerging economies.

This figure illustrates China showing growth from a catch-up position and the European slowdown.

(WIPO.int, 2022)

Discussion regarding productivity and innovation measurement, is rife and many argue that accuracy is an issue with the current measurement and metrics used, this is due to the world becoming more service led.

According to Nakamura (2020) “We are simply not ‘seeing’ innovation-driven productivity growth, since, the changes are too fast for our statistical systems to keep up with.”

The WIPO report also alludes to productivity, and GDP not being a sustainable measurement. As GDP metrics don’t support the capture of standards of welfare, poverty, and the environment.

WIPO suggests ‘Value-based production’ is the key to driving innovation. (WIPO.int, 2022)

In this latest report WIPO (WIPO.int, 2022) are referring to ‘value-based’ production, in context to: Technology and environmental impacts, inclusive of human factors.

‘Innovation driven’ production is referred to in the context of productivity growth, (GDP).

WIPO – reference to ‘Value-based’ production for reference.

“Technology growth and environmental impacts such as well-being, humanity and the circular economy are areas of consideration for Governments, Institutions, and businesses.

Importantly, this raises the possibility that the drivers of innovation might also have radically, changed.

Productivity used to be a paramount concern; nowadays, climate change issues, and more generally “value-based production,” are key elements of innovation. This direction suggests that the linkage between innovation and productivity gains will inevitably become weaker. (World Intellectual Property Organisation (WIPO), 2022)”

Futures and Foresight

Future and foresight considerations have led the author to assess the current financial, technological and sustainability challenges that are beginning to impact economies, businesses, and people more noticeably and to review the pillars of innovation from the GII (Global Innovation Index), to identify any areas of weakness that may contribute to:

Not being able to deliver value-led production in the UK.

The 5th pillar Business Sophistication that includes areas of Knowledge, skills, and people development, plus areas of institutional collaboration has stimulated further interest, with reference to value-based production and what is required for application.

(Business Sophistication is the 5th Pillar in the GII report – Details of Pillars can be found in: Appendix C – WIPO Conceptual Framework). Referred to as an enabler.

Sweden has been identified as a country with a better rank in the GII and will be analysed and referenced where relevant, for the purpose of discussion and recommendation, with regards to best practice.

International research and Government policies, strategies and incentives will be reviewed for the purpose of identifying gaps. **The Future of Jobs report (Appendix D)** will be, considered in the literature, and referenced throughout, for the purpose of future insight into the world of work.

Declaration of Competing Interest

The author recognises that her day-to-day work, could provide a bias and will therefore not utilise specific business relationships or observations, within the paper, but may offer some personal observation and reflections, in the recommendations and conclusion. The paper will concentrate on literature from research and institutions recognised as reliable national and international resources. Books may be, drawn upon with Journals and Research from other authors. Observations and news will be considered when relevant.

Scope and limitations

The project will include international research, reports, literature, data, and books that can be identified as recognized and respected resources and where possible these will be added to the Appendices.

Appendices will be listed as a table under the index. (Set out as Appendix A – Title).

Data are extracted and simplified for ease of use when feasible.

Methodology

As far as the author is aware this is the first direct mention of “**value-based production**,” (WIPO, 2022) in the annual WIPO reports, in the context of ‘Values’, to date. (A key word search, for relevance, of the WIPO website was conducted, to confirm this). (WIPO, 2022)

Production value; Value chain production; Market based production are terms that arise in the search. (WIPO, 2022)

Innovation driven production is referred to in the context of productivity growth. (A key word search, for relevance, of the WIPO website was conducted, to confirm this). (WIPO, 2022)

This recognizes the terms ‘value-based’ production and ‘innovation led’ production, as having different implications in terms of innovation and production strategies.

The author first conducted research to discover if a value-based model or framework had been developed by an international institute to date and found no evidence of this, which was supported by another authors literature review in the same area. Also, a review of **Appendix A – 360’ Business Model Innovation**, that considers An integrated view of Business Models was conducted to cement the authors view of that value

terms are typically used in other business models (e.g. Business Model Canvas) but not with the same direct meaning, as found in the WIPO report.

The research has considered literature relating to 'value-based' production and will include 'values' as a search term, which more accurately reflects how value-based production is defined by WIPO. The author has considered Value Proposition Design as a possible construct for including sustainability and circularity, but found its use to be limited to production and not expansive enough as a model for consideration of the other factors.

This meant that the author had to conduct research more broadly relating to the factors that influence value-based production, as cited by WIPO 2022. Inclusive of the terms Sustainability, Technology and Human Factors. As the research was specific to SMEs and their ability to transfer to value-based production. The factors were included alongside SME searches. The UK was the primary area of study, but with a reflection against the Global economy and therefore International and European research was conducted for reflection and best practice.

Chapter 1:

Introduction

1.1 What is value-based production?

(Value-based production is considered, in the context, of its reference in the WIPO 2022 report).

Value-based production includes an ethics framework, which cannot be entirely measured by GDP. This report will:

- Discuss GDP

Contain a literature review that includes:

- Drivers and Barriers to Innovation
- Discuss the WIPO 2022 report and What is the Future of Innovation Growth.
- Consider the differences between value-based production and innovation led production.
- Contain a Global Business and Economic Outlook.
- Discuss changes to the Top 5 economies.
- Discuss the UK history of inflation.
- Consider why SMEs are important.
- Discuss the potential impact of a recession upon SMEs and people.
- Consider if there are correlations between value-based production and business sophistication.
- Discuss the GII 2022 analysis and specifically the 5th Pillar of Business Sophistication.
- Contain a Data analysis extraction, comparison of the UK and Sweden in sub-pillars of Knowledge workers, Innovation Linkages and Knowledge absorption.
- A cross reference comparison of WIPO, Covid challenges, resulting in SME challenges and Business sophistication, as a means of understanding similarities.
- Discuss factors that potentially, will impact the UK's SMEs transition to value-based production.
- Discuss Sustainability, digital adoption.
- Consider differences in the schemes and incentives for European and UK digital transition.
- Discuss Knowledge workers and The Future of Jobs
- Discuss how AI, Digitisation is challenging work patterns.
- Discuss different perspectives regarding training and development.
- Complete a review of data from WEFORUM regarding Gender gaps and discuss differences in Sweden and the UK.
- Consider Key Findings, Discussion and Recommendations.
- Offer a conclusion.

1.2 Gross Domestic Product (GDP)

GDP a formula created by 1937: Simon Kuznets, has been the measure of production since 1944.

‘1944: Following the **Bretton Woods conference** that established international financial institutions such as the World Bank and the International Monetary Fund, GDP becomes the standard tool for sizing up a country’s economy’. (Elizabeth, 2011)

For over 50 years GDP has been the ultimate respected measure of a country’s welfare.

“Productivity isn't everything, but in the long run it is almost everything,” said Paul Krugman in his book “The Age of Diminished Expectations”. The more productive an economy is—the more effectively it uses capital and labor—the greater its prosperity. (The Economist, 2008)

And whilst Innovation led productivity could still catch trailing sectors globally and, in the U.K., Education, health, transport, and utilities. (World Intellectual Property Organisation (WIPO), 2022)

Clayton Christensen has previously, warned of the dangers of a linear approach to innovation:

‘Clayton Christensen in his theory of disruptive innovation warned against a blinkered approach to innovation suggesting that focusing purely on profit, margins and revenue, and producing product with just the mindset of the demands of sophisticated customers, omits everything else’. (Harvard Business Review, 2020)

Ethically considered value-based production has potentially been highlighted due to the impacts of Covid19, digital surges and the deterioration of the environment and the impacts upon humanity, caused by our continually changing world.

Chapter 2:

Literature Review

2.1 Drivers and Barriers to Innovation

Harnessed with this information it is possible to begin to consider the Drivers and Barriers to innovation and research important literature to provide insights into the future of innovation and the implications upon SMEs, as a substantial contributor to business in the UK.

Table 13 Innovation diffusion, adoption and international catch-up: drivers and barriers	
Drivers	Barriers
What is the state of innovation diffusion and adoption? 1. Generally, new technologies diffuse into households and firms faster today than in the past (Comin and Hobijn, 2010) 2. Novel second ICT wave technologies such as AI are embedded in services readily purchased off-the-shelf from external providers 3. Generally, technology transfer from public labs to the marketplace – including via spin-offs and start-ups – is getting more efficient 4. COVID-19 and emergencies in the fields of health, climate change and food may have accelerated the diffusion and adoption of new technologies, including by increasing their social acceptance	What is the state of innovation diffusion and adoption? 1. Technology adoption – as opposed to simple diffusion – is still arduous and long, particularly with respect to the second ICT surge and the Deep Science wave 2. Achieving widespread technology diffusion and adoption, and hence overcoming the firm, sectoral and regional level gaps (see the Techno-pessimist or techno-optimist? section) is challenging 3. The dominance of “superstar” firms – winner-takes-all – might slow innovation adoption (the productivity slowdown’s “dirty secret,” according to Andrews, 2016) 4. Severe skills shortages slow the adoption of novel technologies 5. Current economic uncertainty and the rise in capital costs might limit private technology and complementary innovation investments 6. Innovations in the fields of health (genetic engineering), robots and AI, transport (autonomous vehicles) and bio-engineered food are radical and require societal acceptance, a complementary infrastructure and substantial new regulatory frameworks long in the making
What drives international innovation catch-up? 1. Recent setbacks aside, knowledge and technology spreads much faster internationally than in the past, with globalized production and innovation networks leading to unseen, unconditional catch-up and convergence with the frontier (Patel <i>et al.</i>, 2021) 2. Generally, the competency of middle- and lower-income economies in integrating and adapting leading technologies is on the rise 3. Only a very few emerging economies themselves drive frontier innovations (essentially China and a few others), thus facilitating diffusion and adoption in these same middle-income economies, and possibly the production of more cost-effective technologies fit for other emerging economies	What slows international innovation catch-up? 1. COVID-19 and recent geopolitical conflicts invite a scenario where de-globalization or reduced international knowledge flows slow catch-up 2. Reduced corporate income and lower government revenues in middle- and low-income economies, together with reduced access to financial markets, depress technology investment 4. A few economies, especially in East Asia, have managed to catch-up through technology adoption. Yet, most developing country firms are far behind the technological frontier and find it difficult to adopt technologies, particularly micro-enterprises and informal enterprises 3. Since COVID-19, many developing countries have experienced setbacks to their education and human capital base, accentuating existing skills shortages 4. Many of the novel breakthrough innovations – including of the Digital Age and Deep Science waves – are mis-aligned with developing country circumstances

(World Intellectual Property Organisation (WIPO), 2022)

2.2 Insight: Drivers and Barriers

Interesting observations from within the report identify: Barrier’s header (Point 1) Technology diffusion and adoption – as opposed to simple diffusion, as arduous and long. Whilst (Point 3) identifies dominance of ‘Superstar, winner takes all firms’ as restrictors of innovation adoption. (Point 4) Identifies: Severe skills shortages slow the adoption of novel technologies.

What slows international catch-up header: (Point 2) Identifies corporate income and lower government revenues as depressors of technology catch up.

So, what is the future of innovation growth?

2.3 WIPO – What is the Future of Innovation growth?

In the 2022 report WIPO consider the question ‘What is the Future of Innovation growth?’
(WIPO.int, 2022)

The WIPO 2022 has suggested that the traditional GDP measurement is outdated, and metrics are not sophisticated or accurate enough, as a measure, in a world that is driven by service and digital technology. (WIPO.int, 2022)

Value-based production, has been cited as an alternative to Innovation led production in the WIPO report 2022. (WIPO.int, 2022)

This concerns areas of humanity, technology, and environmental impacts in relation to production and innovation. (WIPO.int, 2022)

This paper considers, how this conceptual change, impacts upon the U.K. economy against their current economic position and reflects upon factors that could impede or accelerate change, using the GII Pillars as a basis for evaluating whether factors of Business Sophistication will inhibit value-based production through knowledge, skills, Innovation linkage and institutional collaboration and knowledge absorption, through research talent in businesses. This report will not discuss all sub-pillars in pillar 5, due to capacity.

The research will consider how governments and organizations can support change.

2.4 What is the difference between value-based production and innovation led production?

Chart 3: Value-based Production vs Innovation Driven/Led Production

<u>Value-based Production</u>	<u>VS</u>	<u>Innovation Driven/Led Production</u>
“Technology growth and environmental impacts such as well-being, humanity and the circular economy are areas of consideration for Governments, Institutions, and businesses. Importantly, this raises the possibility that the drivers of innovation might also have radically, changed. Productivity used to be a paramount concern; nowadays, climate change issues, and more generally “value-based production,” are key elements of innovation. This direction suggests that the linkage between innovation and productivity gains will inevitably become weaker. (World Intellectual Property Organisation (WIPO), 2022)”		‘Innovation driven production is measured as its contribution to economic growth. Simply put, innovation can lead to higher productivity, meaning that the same input generates a greater output. As productivity rises, more goods and services are produced – in other words, the economy grows’. (European Central Bank, 2017)

Traditional overviews of innovation are that the purpose of innovation is productivity and that this productivity, in turn supports, improved economic outcomes, which are linked, directly to GDP, with human outcomes as a by-product of economic growth.

The latest WIPO report suggests that by purposing value-based production, that innovation, can be used directly to support a values-based system, to improve human well-being and to manage environmental impacts, supporting economic growth as a by-product, offering a more circular approach to productivity.

2.5 Factors that affect value-based production.

What are the factors that affect value-based production? and why should this be considered as an alternative to Innovation led production?

The WIPO 2022 report identifies technology and environmental/sustainability as key components of value-led production.

This is because our world has evolved from a world purely reliant on productivity gains, to a world that has been impacted by this drive for voluminous production, into a world that has climate, poverty, and welfare as substantial concerns. Mass production methods began 'In 1881, at the Midvale Steel Company in the United States, Frederick W. Taylor began studies of the organization of manufacturing operations that subsequently formed the foundation of modern production planning'. (William K. Holstein, 2023)

Human values, production and innovation are factors subject to change. As values change, so do human demands. Using value proposition design offers one methodology to create products consumers want through, using tools to 'manage the messy and nonlinear process of value proposition design, to reduce risk through systematic application of adequate tools and processes' (Osterwalder, 2014)

Potentially, this could include tools for technology and circularity, but could it support skills development?

Major factors that have accelerate by the Covid pandemic are an upsurge in technology and the awareness of the lack of digital skills, plus financial challenges.

According to WIPO the COVID-19 pandemic accelerated three things:

- (i) The accumulation of ICT-related capital.
- (ii) an increase of associated skills; and
- (iii) a spurring of organizational and behavioural changes – remote work being one of them, but also spilling into new, digital ways of delivering services previously subject to low productivity. (WIPO.int, 2022)

Prior to considering any change in production methodology, in the UK, it is important to understand the UK's competitive position. For this a global and UK economic evaluation, is necessary.

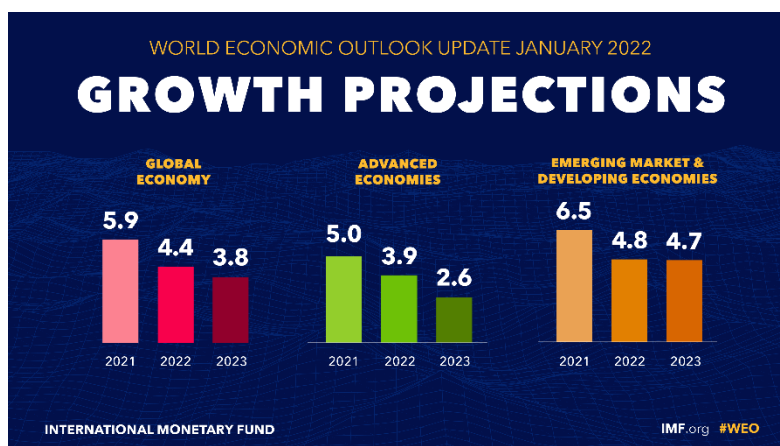
2.6 Global Business and Economic Outlook.

According to a report by the IMF World economic growth will continue to struggle, beyond 2022. (ILO.org, 2022)

Curbing inflation is imperative for recovery, however it is much harder to implement in higher income, westernized economies, that have reached their production peak and where the population has a higher standard of living.

This is different for emerging economies. When an emerging economy changes/diversifies from being primarily agricultural and farming, moving towards manufacturing and production, the workforce, naturally requires upskilling, but the workforce has a lower expectation, as they already have a lower standard of living.

Chart 4: Growth Projections



(Imf.org, 2022)

According to the IMF, emerging markets and developing economies have higher GDP projections, than higher income, westernized cultures, through to 2023, as they haven't yet maximized their outputs and their living standards are lower. (Oecd, 2022)

An argument can be made that emerging economies are significant to financial recovery, due to their desire for growth that can impact the living standards of their population.

In summary their desire for growth means they are coming from a position of having been primarily agricultural and moving towards industrialization, often through manufacturing. Labor is low cost and productivity high, which makes them an attractive proposition for outsourcing manufacturing requirements, allowing the emerging economies to improve their international presence. (ILO.org, 2022)

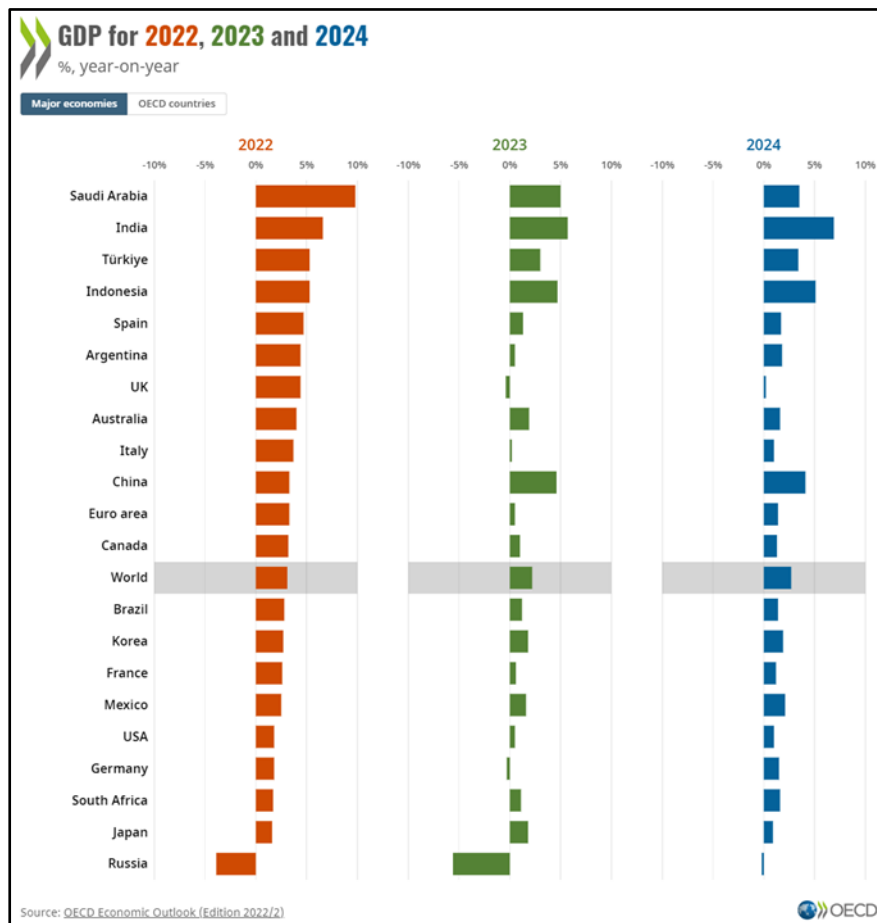
However, this desire by western cultures to outsource to emerging economies, due to lower costs, stops them investing in the workforce and technology in their own country, meaning required skills are not being developed and people are wasted, as opposed to retrained, re-used or redistributed.

In the U.K. evidence of protests against the 'cost of living' crisis can be seen through strike action, currently occurring in unionized industries:

Railways, Postal Services, Schools and Hospitals are among the current sectors affected. (The Week, 2022)

The Government response is to attempt to legislate against strike action through anti strike measures. 'Ministers are to announce a package of new anti-strike measures in the new year, reports The Times. Among other things, this would increase the threshold for strike action from 40% of all eligible members to 50%; and double the minimum notice period for industrial action from the current 14 days'. (The Week, 2022)

Chart 5: GDP 2022-2024

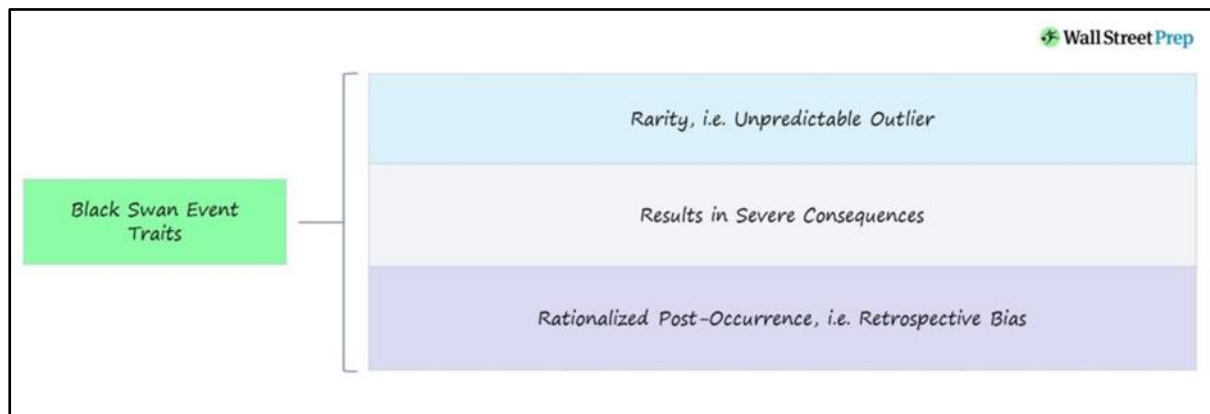


(Oecd, 2022)

The U.K. recovery has lower predictors for GDP growth than their European counterparts, for 2023/24. (See GDP chart above: Major Economies: Euro area, Germany, Spain, France, and Italy). With Emerging Economies India and Mexico, showing predictors for stronger, recovery and growth by 2024.

In the U.K. whilst it could be said Brexit was an expected event, that had been prepared for. The addition of 'Black Swan events' and the political instability, afterwards are resulting in severe economic consequences.

Chart 6: Traits of Black Swan Events



(Wall street prep, 2022)

2.7 Changes to the Top 5 Economies.

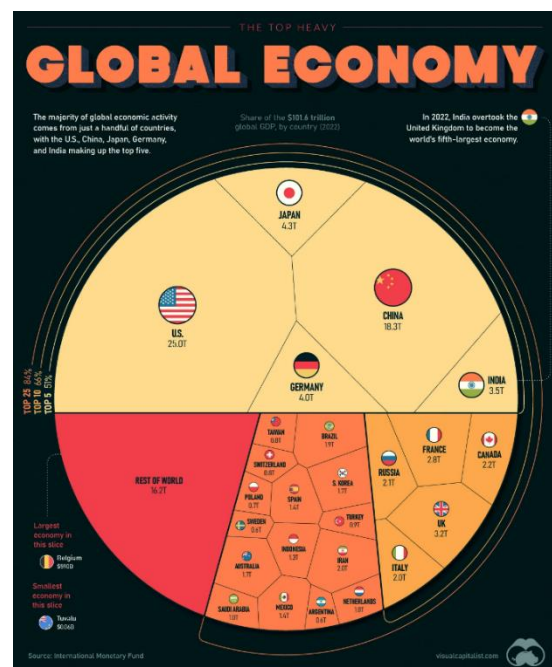
GDP is important for improving living standards in a country and this drives competition and the desire for Innovation and economic growth.

Just five countries made up more than **half** of the world's entire GDP in 2022: the U.S., China, Japan, India, and Germany. Interestingly, India replaced the UK this year as a top five economy. (Visual Capitalist - Avery Koop, 2022). This illustrates the growing capabilities in emerging economies.

The U.K. has previously been a serious competitor, but the impacts of Brexit coinciding with Covid 19 and the war In Ukraine, has had a serious economic impact that will be hard to recover from.

The U.K. does not have a strong history of recovery from inflation impacts, suggesting a different tact may be timely.

Chart 7: The Global Economy



(Visual Capitalist - Avery Koop, 2022)

2.8 UK History of Inflation

To critically analyze the UK business and economic position, it is important to understand the UK's historic relationship with inflation and its ability to recover.

Chart 8: Cost Push Inflation

Cost push inflation of 2008/12 and 2022
Since 2008, periods of inflation have been mainly due to cost-push factors.
2008 – due to rising oil prices.
2012 – Higher taxes, rising import prices from devaluation.
2022 – Rising oil and gas prices, rising food prices. Effect of devaluation, Covid supply chain issues, Brexit cost issues. Supply side constraints.

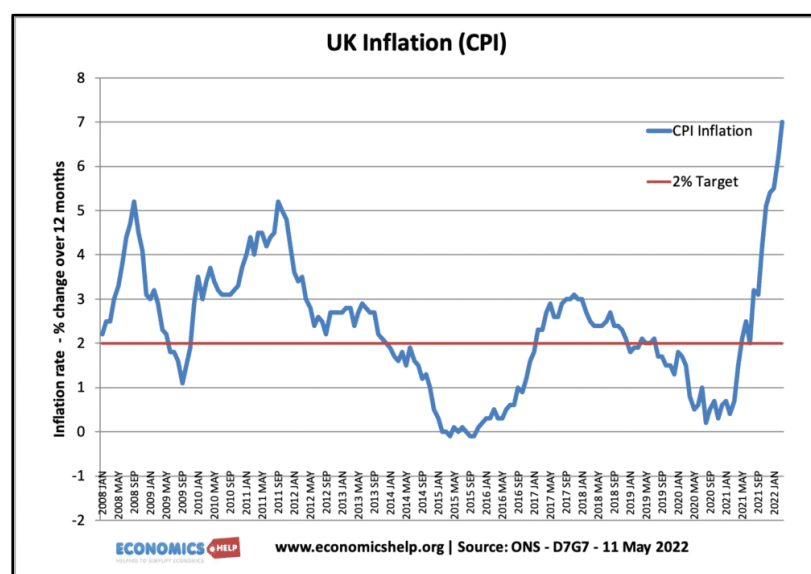
Previously, inflation increases, in the UK have been directly linked to oil prices (see 2008), and cost push factors. (Economics Help, 2022)

‘The UK relies on energy to fuel its transport, heat its buildings, generate electricity, and power industry and businesses. At present 78% of this energy comes from fossil fuels—oil, gas, and a small amount of coal’. (Committee, 2023)

This is relevant as the UK is dependent upon fossil fuel for heating homes (Amongst other things), this is due the age and poor insulation of housing. According to a briefing paper by the BRE Trust ‘The United Kingdom has the oldest housing of EU Member States, with nearly 38% of its homes dating from before 1946’. (Simon Nicol, 2016)

Government does have an action plan to support the net zero transition, but these are long term plans and cannot alleviate the current strains on the economy.

Chart 9: UK Inflation 2008 – 22



(Economics Help, 2022)

In 2023 the aftermath of Brexit, Covid19, plus global political instability and the multiple changes of prime minister in the UK are forming the perfect storm, for devaluation of the pound. Leaving the UK in an uncertain position. According to the IMF: 'The UK is expected to be the only G7 country to fall into recession in 2023'. (Fleck, 2023)

Previously, the UK has been a leader of change. After colonial dominance, the U.K. benefitted from the Industrial Revolution which took place in the 18th century and author Robert Allen of 'The British Industrial Revolution in Global Perspective' argues that it was Britain's creative response to the challenges and opportunities created by the Global economy after 1500, that made Britain a success. (Allen, 2009) Is Britain capable of a creative response in 2023?

Britain is once again struggling to reduce inflation and OECD predictions, forecast Britain as having a lower recovery than European counterparts.

The UK tends to harp back to history, regarding Britain being Great, a campaign used by politicians in the Brexit campaign (A big red bus comes to mind).

Despite this positive vocal position of the various Brexit supporting PM's (3 in the last year: Johnson, Truss and Sunak).

As recently as 8th February 2023. Ex-Prime minister, John Major told the Northern Ireland Affairs Committee, that Brexit was a colossal mistake. (The Evening Standard, 2023)

Considering the UK history of inflation for recovery and economic trends, plus global predictions for a compressed, recovery make it apparent that the UK position is less than positive and how the UK responds to the challenges ahead will be important to their overall economic global position and the living standards of the residents, in the future.

Chapter 3:

SMEs – Why are they important?

3.1 SMEs. Why are they important?

SMEs are Significant contributors to UK business economy and as an employer.

SME's represent 90% of business and 70% of GDP and Jobs globally. (World Economic Forum, 2022)

In the UK, SME's account for 99.9% of the business population. (Gov.uk, 2022)

There were, estimated, to be 5.5 million UK private sector businesses. (Gov.uk, 2022)

Chart 10: SME Statistics

Table A: Estimated number of businesses in the UK private sector and their associated employment and turnover, by size of business, start of 2022

	Business	Employment (thousands)	Turnover (millions)
All businesses	5,508,935	27,054	4,156,773
SMEs (0-249 employees)	5,501,260	16,432	2,124,439
Small businesses (0-49 employees)	5,465,320	12,935	1,416,907
With no employees	4,061,035	4,399	277,599
All employers	1,477,900	22,655	3,879,174
of which:			
1 to 9 employees	1,187,045	4,308	530,456
10 to 49 employees	217,240	4,228	608,852
50 to 249 employees	35,940	3,497	707,532
250 or more employees	7,675	10,622	2,032,334

1.4 million of these had employees and 4.1 million had no employees. (74% of businesses did not employ anyone aside from the owner(s). (Gov.uk, 2022)

There were 5.47 million small businesses (with 0 to 49 employees), 99.2% of the total business population. (Gov.uk, 2022)

There were 35,900 medium-sized businesses (with 50 to 249 employees), 0.7% of the total business population. (Gov.uk, 2022)

(Gov.uk, 2022)

There were an estimated 5.77 million employees in the public sector in September 2022.

(Ons.gov.uk, 2022)

- A further 7,700 businesses were large businesses (with 250 or more employees), 0.1% of the total business population. (Gov.uk, 2017)
- The number total employment in SMEs was 16.4 million (61% of the total), whilst turnover was estimated at £2.1 trillion (51%) (Gov.uk, 2022)

3.2 The Potential Impact of a Recession on SMEs and people.

The impact of a recession will naturally have a knock-on effect to people employed by SMEs.

In simple terms the impact of inflation management (Through, the Bank of England, pushing up interest rates), is a fine line, between controlling, public spending, and radically cutting public spending when people feel the pinch. When this happens people in an economy to spend less, which waterfalls into private businesses, cutting employee hours or laying them off, this creates a decrease in production and the country can fall into a recession. There is a tight rope to be walked between

controlling inflation through increased interest rates, to control spending, before a country spirals into the abyss of a recession and UK history of recovery, suggests once in, it is difficult to get out. SME's that may have previously survived, doing what they have always done, who have not updated their products, people, and processes to the more sophisticated methods, may fall foul of an evolving world that has strong emerging competition.

SME's hold a majority stake in the UK business sector, with a significant number of them having survived for over 10 years. Corporate lifespans are undergoing a concerning trend:

Chart 11: SME (Age of Business)

						
	employment_size_band_sme					
	50-249 Medium		250+ Large		Total	
	age_of_business		age_of_business		age_of_business	
	10 or more years	Total	10 or more years	Total	10 or more years	Total
Agriculture, forestry & fishing	365	410	60	65	122,395	147,795
Production	5,890	6,395	1,325	1,380	74,120	148,870
Construction	1,720	1,920	285	300	126,750	319,860
Motor trades	715	765	180	185	38,290	75,075
Wholesale	2,405	2,570	420	435	56,825	103,415
Retail	1,325	1,630	450	480	84,925	196,800
Transport & Storage (inc. postal)	1,335	1,540	355	375	31,985	109,290
Accommodation & food services	1,990	3,110	500	595	56,340	150,290
Information & communication	1,405	1,740	355	385	56,175	217,025
Finance & insurance	750	920	340	365	20,790	55,715
Property	485	585	210	230	43,300	93,180
Professional, scientific & technical	2,855	3,545	645	755	135,350	478,825
Business administration & support services	2,605	3,940	875	1,065	66,380	228,185
Public administration & defence	135	165	355	370	3,125	7,150
Education	2,240	4,165	1,010	1,250	16,690	48,300
Health	4,200	5,135	990	1,110	47,895	120,105
Arts, entertainment, recreation & other services	1,670	1,995	435	485	87,505	168,930
Total	32,090	40,530	8,790	9,830	1,068,840	2,668,810

(Gov.uk, 2017)

'Corporate longevity remains in long-term decline, according to Innosight's, biennial corporate longevity reports. Our latest analysis shows the 30 to 35 year average tenure of S&P 500 companies in the late 1970s is forecast to shrink to 15-20 years this decade' (S. Patrick Viguerie, 2021)

narrative within the report offers a further concern for the more traditional industries as it was noted in 'long-term trends, in 1969, industrial companies represented a third of the index. A half-century later, 68 firms are industrials'. (S. Patrick Viguerie, 2021)

This trend could potentially reverberate through the SME community, if value-based factors of technology and skills aren't addressed. How then does this information relate to the factors of Business Sophistication: Knowledge workers; Innovation Linkages; Knowledge Absorption?

and is there a link between value-based production and factors of Business Sophistication upon the SME community?

4.1 The Business Sophistication Pillar (GII) and Value-based production

Is there a correlation between value-led production and business Sophistication?

In a study about Disruptive Innovation and Emerging Technologies for Business Excellence in the Service Sector: Rodrigues, Francisco Xavier Pedro and Ricardo Gouveia discuss:

‘The Impact of Business Sophistication on Marketing Knowledge’ in Chapter 34.

He argued that:

‘Business sophistication and knowledge marketing is a matter of concern for business excellence in the service sector because business sophistication supports competitiveness in order for it to reach the advanced level requirements needed for global competitiveness’. (Rodrigues, 2022)

‘Business sophistication and innovation have bilateral impacts as they are seen as central pillars of competitiveness, especially if an economy is innovation-driven’ (Kirikkaleli & Ozuna, 2019, p. 352).

This stands out as relevant due to the difference in WEFORUM gender gap index that shows a significant difference in the service attainment percentage between the UK and Sweden. Sweden has a metric of education and skills percentage for services of 1.08% and the UK percentage is .55% a difference in attainment by .53% (WEFORUM, 2021)

When considering whether business sophistication has a direct impact upon value-based criteria, it can be identified that factors of value-based production, technology growth, environmental and well-being, humanity and the circular economy, are intrinsically linked to the sophistication of governments, institutions and businesses and their ability for governance and supporting initiatives. Technology growth can’t occur without formal education and organizational development, and for this to occur, research and collaboration between institutions and businesses is paramount. In addition, the ability of employees to use technology to create efficiency in their processes is key. This correlates to the linkage between GII pillars and value-based production.

A research paper into Production efficiency measurement and its determinants across OECD countries: The role of business sophistication and innovation found:

‘Business sophistication concerns two elements that are intricately linked: the quality of a country’s overall business networks and the quality of individual firms’ operations and strategies’ (Sala-i Martin et al., 2011). (Salas-Velasco, 2018) and Technological innovation is, in fact, the source of both incremental improvements and transformational step changes in efficiency and productivity. And, in the long run, standards of living can be largely enhanced by technological innovation. (Salas-Velasco,

2018) And that talent is necessary to capture the full potential of innovation processes. (Salas-Velasco, 2018)

4.2 The Global Innovation Index – GII 2022

The GII is considered a relevant aspect of literature for this study, as it is recognised globally, as an insightful toolkit for governments seeking to improve their innovation performance.

‘A survey carried out by WIPO in early 2022 shows that 70 percent of WIPO member states. use the Global Innovation Index (GII). Out of the 110 responses received (one response per country), 68 countries had used the GII during the period 2020–2021 to improve their innovation ecosystems and policymaking, while 37 went so far as to use the GII as a specific reference in economic plans or policies.’ (WIPO.int, 2022)

Through a review of the GII 2022 rankings, it can be observed that out of the Top 5 (Overall GII), that for Pillar 5 (Business Sophistication) the UK stands out to have a weaker ranking than any country in the top 5 or for that matter the top 10. (WIPO.int, 2022) This warrants further investigation for cause.

Details of Pillar ratios and sub-headings relating to inputs and outputs can be found in the WIPO Conceptual Framework. (WIPO.Int, 2017)

Chart 12: GII Heatmap 2022

When reviewing the information: **1= the strongest/ most positive position.**

Table 4 Heatmap: GII 2022 rankings overall and by innovation pillar

Country/economy	Overall GII	Institutions	Human capital and research	Infrastructure	Market sophistication	Business sophistication	Knowledge and technology outputs	Creative outputs
Switzerland	1	2	4	4	8	7	1	1
United States	2	13	9	19	1	3	3	12
Sweden	3	19	3	1	13	1	2	8
United Kingdom	4	24	6	8	5	22	8	3
Netherlands	5	4	14	14	18	10	5	10
Republic of Korea	6	31	1	13	21	9	10	4
Singapore	7	1	7	11	4	2	13	21
Germany	8	20	2	23	14	19	9	7
Finland	9	11	8	3	17	5	4	18
Denmark	10	9	10	5	15	15	12	14
China	11	42	20	25	12	12	6	11
France	12	18	15	17	10	17	15	6
Japan	13	21	21	12	9	8	11	19
Hong Kong, China	14	10	13	6	2	27	60	5
Canada	15	15	12	30	6	20	24	20
Israel	16	41	24	42	7	6	7	36
Austria	17	8	11	9	38	18	19	26
Estonia	18	12	34	10	3	25	21	24
Luxembourg	19	5	32	40	31	4	33	9
Iceland	20	14	29	22	41	14	22	13
Malta	21	28	42	27	33	16	32	2
Norway	22	3	19	2	28	21	25	30

(World Intellectual Property Organisation (WIPO), 2022)

The pillars and sub pillars function as a measure for countries to identify gaps in their innovation ecosystem, which can act as a guide to support initiatives for change, further investigation allows interested parties to identify sources from which the data has been collected and reflect on the content.

4.3 GII 5th Pillar – Business Sophistication

The ‘Framework of the Global Innovation Index 2017’ uses quantitative data to assess Business Sophistication in the categories of: Knowledge workers, Innovation linkage and knowledge absorption.

The 5th enabler pillar captures, the level of measures business sophistication to assess how conducive firms are to innovation activity. (Global Innovation Index, 2022)

Chart 13: Comparison example analysis: UK vs Sweden

1= the strongest/ most positive position.

BUSINESS SOPHISTICATION		United Kingdom		Sweden	
The fifth enabler pillar tries to capture the level of business sophistication to assess how conducive firms are to innovation activity.					
	Rank	Score	Rank	Score	
Overall	22	51.7	1	69.8	● ◆
Knowledge workers	18	62.6	2	77.1	● ◆
Knowledge-intensive employment, %	8	78.7	3	88.7	● ◆
Firms offering formal training, %	0	0.0	8	76.4	
GERD performed by business, % GDP	17	25.5	5	52.0	
GERD financed by business, %	23	66.4	12	77.2	
Females employed w/advanced degrees, %	22	79.8	9	91.4	
Innovation linkages	14	52.0	2	68.3	● ◆
University-industry R&D collaboration†	22	61.4	10	67.4	
State of cluster development and depth†	28	59.4	15	64.9	
GERD financed by abroad, % GDP	13	42.7	9	51.7	
Joint venture/strategic alliance deals/bn PPP\$ GDP	13	56.3	4	81.4	● ◆
Patent families/bn PPP\$ GDP	18	39.9	4	76.2	● ◆
Knowledge absorption	34	40.6	◇ 3	64.0	● ◆
Intellectual property payments, % total trade	15	45.5	7	72.0	
High-tech imports, % total trade	28	31.3	62	23.5	○
ICT services imports, % total trade	54	29.9	○ 5	86.5	● ◆
FDI net inflows, % GDP	119	45.5	○ 52	50.4	○
Research talent, % in businesses	32	50.9	○ ◇ 5	87.8	◆

(Global Innovation Index, 2022)

4.4 Observations - Data Analysis

Through extracting the data and making comparisons to competitors, it is possible to analyze the data further, and to consider this criteria against the UK's ability to apply value-led production, through knowledge intensive employment, formal training research talent and collaborations.

Other areas of interest, that are more directly based to investment, imports, finance and patents are highly relevant, but are omitted from this research, due to capacity of this paper.

In the above illustration/comparison areas that are ranked weaker than Sweden that will be considered further are:

- Knowledge Workers.
- Firms offering formal training.
- Females employed with advanced degrees.
- University-Industry R & D collaboration.
- State Cluster development.
- Research talent, % in business.

Further detail of each title can be found on the [Economy Comparison | Global Innovation Index](#) (Global Innovation Index, 2022)

These areas directly relate to skills in the workforce and institutional ability and desire to support SME's.

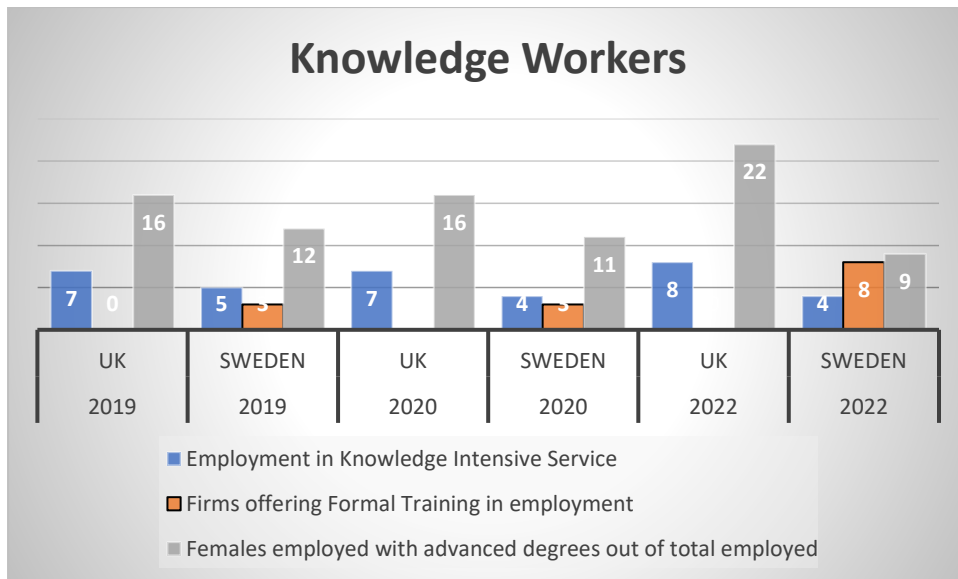
4.5 Data Analysis UK vs Sweden

As Sweden is ranked no. 3 overall and is ranked 1st for Business Sophistication. With the UK sitting 4th overall and 22nd for Business Sophistication. (WIPO.int, 2022)

Extrapolation of the data, using excel, allows a broader comparison pre Covid 19 and after Covid.

Breaking the data down into specific areas, permits the author to research specific initiatives conducted by Sweden, that is providing them with a more positive score than the UK.

Chart 14: Knowledge Workers: Zero = most positive rank. (Appendix H)



4.5.1 Knowledge Intensive Services

The data shows employment in knowledge intensive services, as consistent in the UK with a rank of 7 - 8th from 2019 to 2022. Sweden was 5th in 2019 and has improved their position to 4th in 2022.

4.5.2 Females Employed with Advanced Degrees

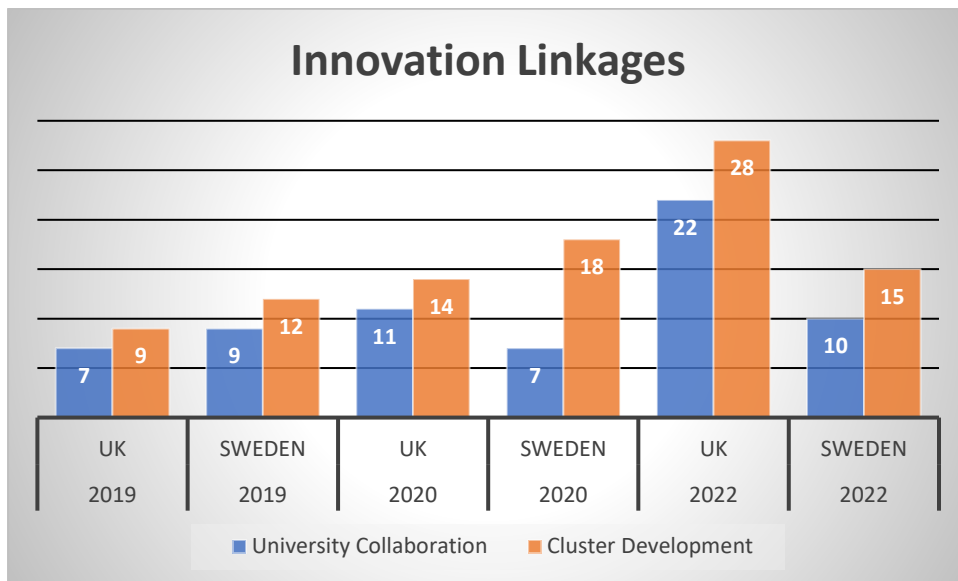
The data highlights how in the UK knowledge females employed with advanced degrees, ranked of 16th in 2019, but by 2022 the rank has declined to 22nd. By comparison, Sweden is ranked 12th in 2019 but has improved their position to 9th by 2022.

4.5.3 Firms offering Formal Training

The UK metric (0) stood out and suggested further investigation. The measurement is (0) because the UK does not take part in the World Bank's Enterprise Survey. (The World Bank, 2022) this was discovered, after further research.

Sweden's position has declined from 3rd in 2019 to 8th by 2022. Suggesting a contraction in formal training.

Chart 15: Innovation Linkages: Zero = most positive rank. (Appendix H)



4.5.4 Innovation Linkages

The data shows the deterioration of university collaboration in the UK ranking from 7th in 2019 to 22nd by 2020. With a similar situation for Cluster development, from 9th in 2019 to 28th by 2022.

Sweden evidenced a position of 9th for university collaborations, in 2019 and has maintained consistency in this area.

For Sweden, Cluster development evidences, a decline from 12th in 2019 to 18th in 2020, with improvement to 15th by 2022. An assumption might be the impact of Covid lockdowns, during 2020.

Chart 16: Knowledge Absorption: Zero = most positive rank. (Appendix H)



4.5.5 Knowledge Absorption

Knowledge Absorption data for Research and talent in business shows consistency for both the UK and Sweden in their respective ranks of 33, 2019 UK to 32, in 2022. For Sweden 4th in 2019 and 5th by 2022. The differential between the UK and Sweden is different for this sub-pillar and worthy of further investigation.

What is Sweden doing to achieve these more positive rankings that the UK is not?

To understand more it is possible to compare Covid challenges for SME challenges in the UK and Business sophistication sub pillars.

Chart 17: WIPO, Covid Challenges and GII Business Sophistication Pillar.

The COVID-19 pandemic accelerated three things:	Challenges facing UK SME's (Summary of above reports)	Areas of weakness for Business Sophistication in the U.K. in comparison to top 5 overall GII performers
• (i)The accumulation of ICT-related capital. • (ii) an increase of associated skills; and • a spurring of organizational and behavioural changes – remote work being one of them, but also spilling into new, digital ways of delivering services previously subject to low productivity. (WIPO.int, 2022)	• Technology and digital adoption. • Sustainability and Quality standards. • Employing and retaining key skills. • Poor Products and Processes. • Finance and Legislation. (Information drawn from 3 reports below). (Willnet, 2019) (Young, 2022) (Gov.UK, 2019)	• Knowledge workers Knowledge intensive employment Firms offering formal training. Women employed with advanced degrees. • Innovation Linkages Institutional & Business collaboration • Knowledge Absorption Research talent in business. (only skills references drawn from pillar displayed here- for more in depth view consult: (WIPO.Int, 2017) or GII index: (GII.org, 2022)

Critically analyzing the reports that are referenced in the table above allows the author to conclude that specific subjects relate to each other.

- Technology and digitization cannot be developed without knowledge.
- Knowledge development requires education, collaboration, and governance.
- Skills are directly related to training and education, policy, and initiatives.
- Attracting and retaining talent, is dependance upon pay, policy, training, collaboration, and social factors.

This supports the thought that there is a correlation between business sophistication and value-based production, but that a more intricate analysis is required to understand how the business sophistication ranking and factors relating to value-based production, can impact application of value-based production in SMEs.

Chapter 5.0

Factors effecting SMEs in the UK

5.1 Factors effecting SME's

WIPO 2022 report identifies technology and environmental/sustainability as key components of value-based production, some of these areas correlate to an acceleration that has occurred globally since the Covid 19 pandemic.

In a world that used to be reliant purely upon productivity gains, but now has climate, poverty, and welfare as substantial concerns.

Human values, production and innovation are factors subject to change.

Currently there are several, articles and reports appearing in the UK National Press, Business Journals, and government reports. These all highlight the challenges that are impacting, UK SMEs and they are all relevant to being able to implement value-based production, resilience, and growth:

See some examples below:

[7 biggest challenges SMEs face - and how to overcome them - Small Business UK](#); (Willnet, 2019)

Small Business Statistics 2022: An Overview of the Market. (Young, 2022)

BEIS small and medium sized enterprises (SME) action plan.(Gov.UK, 2019)

Financial resilience is important for countries, business and the people that abide within.

Finance and legislation are also key areas that challenge SME's.

But for the purpose of this study, only the specific factors relating to 'Value-based production' and 'Business sophistication' will be discussed.

For insight into the complexity and challenges of the UK tax system and business incentives and their impact upon SME's, see the below research paper: https://www.researchgate.net/profile/Judith-Freedman/publication/265066747_SMALL_BUSINESS_TAXATION_POLICY_ISSUES_AND_THE_UK/links/5442d7880cf2a76a3ccb0848/SMALL-BUSINESS-TAXATION-POLICY-ISSUES-AND-THE-UK.pdf (Freedman, 2003)

Business survival depends upon productivity, creativity, and innovation to remain competitive and profitable.

A study by (Hana, 2006) that discusses:

Competitive Advantage Achievement through Innovation and Knowledge.

Concludes that:

'The importance of innovations and necessary knowledge is generally identical for all organizations, regardless of their size and economic sector.

The study conducted secondary research and a survey was conducted, to collect primary data targeted at innovation, innovation culture and knowledge. The survey method, was quantitative, completed through a questionnaire technique.

The survey has shown that the majority, of large and small organizations place emphasis on innovations and establishing a suitable innovative culture. And that if organizations wish to survive and grow in today's turbulent environment, they must make every effort to introduce an innovative approach and that creativity, leadership, knowledge, and people are essential factors. (Hana, 2006) The study was limited to the Czech Republic.

Despite this it is fair to say from reading general innovation literature that there is a common theme, that resides across countries relating to creativity, leadership knowledge and people and skills.

Value-based production directly relates to Sustainability, Technology and Skills.

Business Sophistication includes: knowledge workers (Skills that enable a business); Innovation Linkages (Institutions and collaborations that support development in business) and Knowledge absorption (Knowledge and skills that enable growth).

5.2 Sustainability

Value-based production more than innovation led production, suggests a difference through ethics. Ethical production has previously been at the discretion of a business and to a degree still is.

Big businesses are more recently, being held to public account, whilst SMEs in general fly under the radar, due to lower public profiles.

Boohoo offer a good example of how supply chain malpractice and underpayment of employees despite a legal minimum, can impact business performance and clearly, for this to be able to happen, threat of legal governance from UK government, has a limited affect or control.

Boohoo faced backlash from both consumers and investors following the controversy. As of July 16, shares in the company had dropped by 46%. The share price fell to 210p, but it had been 410p in June.

(McRay, 2020)

The UK the Government is making sustainable commitments to Net Zero by 2050, through their Net Zero Strategy. (UK Government, 2022) which requires businesses to commit to net zero by 2050 before they can bid for major government contracts. (U.K. Government, 2021). This is stick as opposed to carrot mentality. Despite this:

'A survey by recycling group [Suez](#) and the [British Chambers of Commerce](#) found that 64% of around 1,000 businesses surveyed said they had no such plan.' (Independent.co.uk - Austin Graham, 2021)

The UK government operates a climate hub. That encourages businesses to sign up and use the resource. According to the sign-up figure on the website only 3894 businesses, are signed up at the date: 18.02.2023. This miniscule compared to the number of SMEs in the UK. The site is a resource and is not incentivised, other than the offer of the attainment of a free: BS ISO 50005 (UK Government, 2023)

The author would not have been aware of this if she wasn't undergoing specific research.

This raises the questions:

How many UK SMEs are aware of this initiative? (A press release was made in support of this on 28 May 2021). (UK Government, 2023)

Alternately, why are UK SMEs disengaged?

According to an article by Matt Mace 'Lloyds Bank Business has released the findings of YouGov survey of more than 1,000 UK SMEs at the start of the year, which found:

- 50% of respondents did not know what was meant by the term "net-zero".
- 77% were unsure or did not have strategies in place to reduce carbon emissions over the next three years.
- 12% of respondents had calculated their carbon footprint (Mace, 22)

In the U.K. Education, Health and Transport are an example of sectors subjects, to procured contracts.

These contracts are regulated by governments and institutions, whose public commitment to carbon zero targets, are set out through policies and international agreements.

International governments, also have their own specific action plans, policies and quality standards that support trade, which suggests that for SME's in the UK to secure any growth from international trade the bare minimum attainment will be the insertion of internal sustainable standards and policies, but to invest in this an SME first needs to understand the cost versus the benefit.

5.3 Digital adoption

The change in digital use has happened over a period of 37 years, which should be adequate time to prepare. Yet despite evidence from a UK digital survey of 1000 businesses, that showed digital capabilities boost revenue by 4.4% and reduce costs by 4.3% (UK Government, 2017).

The U.K. is still behind its European counterparts, regarding back-office operations and processes.

A report by the ONS shows: How the rapid growth in digital use by households and consumers impacts upon businesses, through increased individual use.

Between 2005 (The first year for which consistently comparable data are available) and 2020, [the number of households in Great Britain with internet access increased from 55% to 96%](#). (Office of National Statistics UK Government, 2022)

5.4 SMEs – Application and Incentives

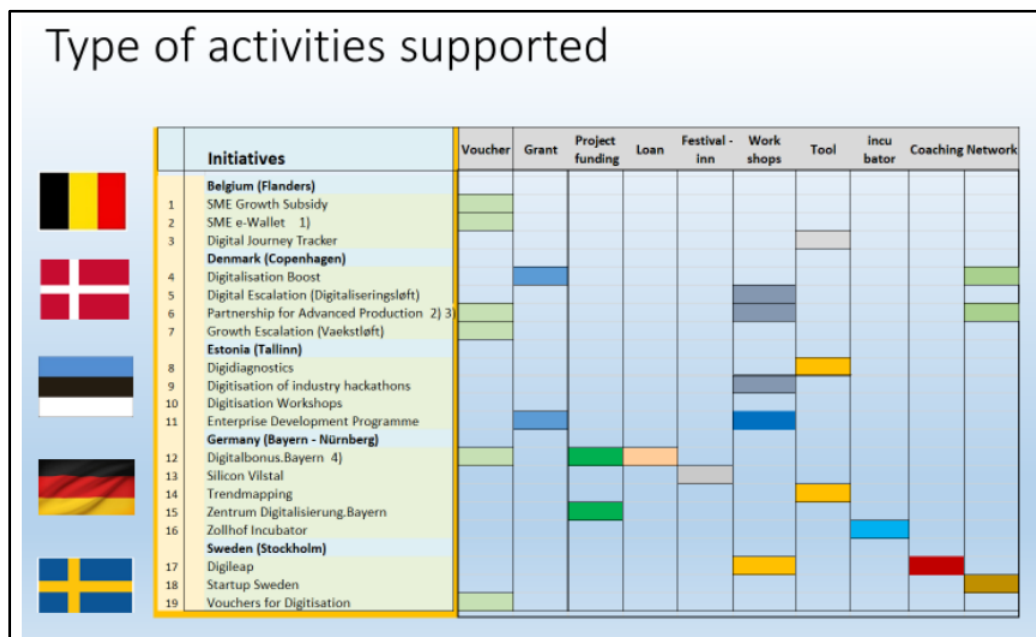
UK and Europe Digital transition comparison.

Research found that:

Fewer than 20% of UK enterprises use software to share information across the organization, compared to 40% in France and more than 55% in Germany and only 22% of SMEs in the UK use any form of e-commerce. (UK Government, 2017)

A paper by the European innovation council, that studied multiple initiatives, with aims, to improve the awareness and ability of SMEs, regarding insertion of digital technology in their administrative, manufacturing or sales and marketing processes. Which was conducted by five business and innovation development centers, in Belgium, Denmark, Estonia, Germany and Sweden, found a variety of activities offered to support improved digitization, after studies were conducted with SME's to assess barriers to digitization.

Chart 18: Initiatives supported



(eic.ec.europa.eu, 2021)

Most of the initiatives operate with a grant or voucher size of 10000 - 15000 Euro, some with a substantial number of recipients. (eic.ec.europa.eu, 2021)

This paper is included in the appendices (**Appendix F**), as it discusses, SME digital support and investment in Europe and the studies conducted first to assess need.

By comparison in the UK a 'Help to Grow scheme' designed to give 100,000 SMEs free and impartial advice on how technology can help their business and vouchers worth up to £5,000 to cover up to 50% of the costs of buying pre-approved software.' (UK Government, 2022) was closed due to poor uptake, in 2023. (UK Government, 2022) Despite a 'marketing campaign, less than 1,000 vouchers were redeemed by SMEs'. (UK Government, 2022)

An interesting differentiator when evaluating the UK scheme and the Eu schemes, was the number of service supplier options. Could this supplier limitation be an indicator for why the scheme had minimal uptake?

Further questions arise:

What digital software do SME's need to improve their processes?

Should a government be dictating this?

Does this damage success criteria for initiative uptake?

**EU. Scheme had 1800
accredited service providers.**

(eic.ec.europa.eu, 2021)

UK Scheme had 8 approved service providers.

‘The approved technology suppliers on the Help to Grow: Digital online platform for wave 1 are:

Chart 19: UK Incentive Scheme

Customer Relationship Management (CRM) software	Digital Accounting software
• Capsule CRM • Zymplify • Livepoint Software Solutions Ltd • Gold-Vision CRM • Deskpro Ltd	• Sage • Intuit Ltd • Crunch’ (UK Government, 2022)

This raises questions about government and SME’s consultation and collaboration in the UK. If SMEs are not engaging with incentives, why not?

Further research found that for the creation of the ‘Small to medium sized enterprise (SME) action plan’ UK Government asked for SME feedback across their supply chain asking:

‘What it is like to work with FCDO today and what additional measures can take to support them further.’

Overall, 108 SMEs took the opportunity to give feedback, with 77 agreeing to discuss their responses further with FFigital ICDO. (Gov.uk, 2022)

Location of suppliers: UK 37%. Rest of world: 63% (Gov.uk, 2022)

This appears to be a very small sample, in comparison to the quantity of UK SME’s, even if the comparison was restricted to only SMEs, which are medium-sized businesses (with 50 to 249 employees) QTY: 35,900, who had perhaps, a greater capacity to get involved with FCDO.

Further in-depth studies that consulted SME’s, directly, regarding their barriers to digitization, access to international trade, procurement and sustainability, would be worthy of further research, though there is not the capacity in this paper.

Digital growth has occurred in waves and has accelerated again, globally since the onset of Covid 19. Global economic recovery and more specifically UK recovery will be dependent upon the ability to pivot rapidly to create products and services that are designed for the end user, which supports the

demand for digital technologies and the desire for value-based production through circular concepts, that align to global goals. This will depend upon skills in the UK workforce.

5.5 Technology

History has shown that through each industrial revolution, Businesses and the workforce have been required to change and adapt skillsets.

Knowledge in the workforce has been an important factor of each industrial revolution.

The 5th industrial revolution doesn't look any different in these requirements and will rely upon humans and technology working together, a natural step after the 4th revolution. This highlights that since the onset of Industry 4.0 human skills, knowledge adoption and digitization are intricately linked.

5.5.1 The Fourth Industrial Revolution.

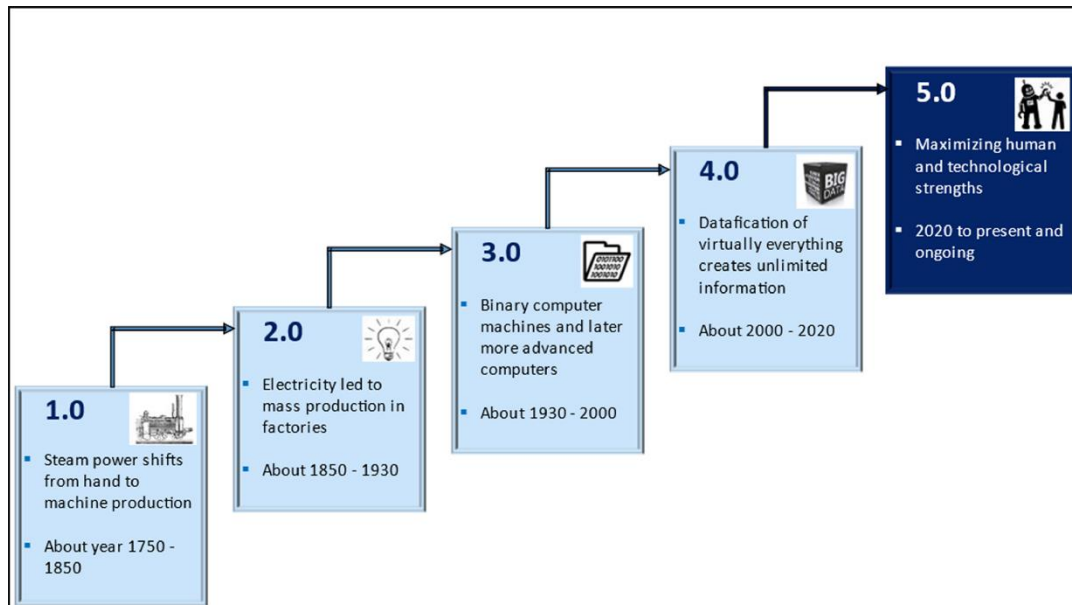
'The Fourth Industrial Revolution's technologies, such as artificial intelligence, genome editing, augmented reality, robotics, and 3-D printing, are rapidly changing the way [humans](#) create, exchange, and distribute value. Technology surges of the 4th industrial revolution are profoundly transforming institutions, industries, and individuals. More importantly, this revolution will be guided by the choices that people make today: the world in 50 to 100 years from now will owe a lot of its character to, how we think about, invest in, and deploy these powerful new technologies.'

(Britannica.com, 2022)

5.5.2 The Fifth Industrial Revolution.

The Fifth Industrial Revolution is already being discussed and focuses on creating harmony between humans and technology, working to strengths, of humans and technology.

Chart 20: Industrial Revolutions



(Sciencedirect.com, 2022)

This harmony or collaborative working is, as important, as the investment in the actual technology hardware, software, and systems.

Example:

CHATGPT – A paper ChatGpt: Open Possibilities discusses the opportunities further. An illustration of this appears in the 'Journal for Computer Science and Mathematics' 'ChatGpt: Open Possibilities pp.62-64' which discusses the potential for how we interact with technology going forwards.

(Aljanabi, 2023)

However, the use of this is already causing much consternation in the academic arena, regarding feasibility and integrity. This is an interesting topic for academics, innovators, and business, for discussion another day. Despite some negativity it makes the point that technology isn't slowing down and that humans, that can't keep up, may well become redundant in the workforce, again this is a direct reflection to the human capital and well-being referred to by WIPO in consideration of value-based production, and relates directly, to the knowledge capability and formal training in the workforce.

5.6 Knowledge workers (Skills and Employment)

Employment and skills are not a simple area of investigation or discussion, as many future skills are intrinsically linked to having knowledge skills or digital skills and unemployment is linked to education.

‘By 2025, 85 million jobs may be displaced by a shift in the division of labour between humans and machines’ (World Economic Forum, 2020)

Ability to transition to value-based production in the UK is intrinsically linked to capability in the workforce.

5.6.1 The Future of Jobs (Appendix D)

Makes a valid reference point for this study, as it offers projections for job roles that will be required going forward and considers those that will become redundant. It also illustrates the changes to sectors, and skills that will directly impact UK SME's. The report maps the jobs and skills of the future. (World Economic Forum, 2020)

Through understanding of the changes to come Governments, Institutions and Businesses have time to clearly set the objectives and initiatives that can support transformation.

Chart 21: Top 20 Job Roles . (World Economic Forum, 2020)

Increasing demand		Decreasing demand	
1	Data Analysts and Scientists	1	Data Entry Clerks
2	AI and Machine Learning Specialists	2	Administrative and Executive Secretaries
3	Big Data Specialists	3	Accounting, Bookkeeping and Payroll Clerks
4	Digital Marketing and Strategy Specialists	4	Accountants and Auditors
5	Process Automation Specialists	5	Assembly and Factory Workers
6	Business Development Professionals	6	Business Services and Administration Managers
7	Digital Transformation Specialists	7	Client Information and Customer Service Workers
8	Information Security Analysts	8	General and Operations Managers
9	Software and Applications Developers	9	Mechanics and Machinery Repairers
10	Internet of Things Specialists	10	Material-Recording and Stock-Keeping Clerks
11	Project Managers	11	Financial Analysts
12	Business Services and Administration Managers	12	Postal Service Clerks
13	Database and Network Professionals	13	Sales Rep., Wholesale and Manuf., Tech. and Sci.Products
14	Robotics Engineers	14	Relationship Managers
15	Strategic Advisors	15	Bank Tellers and Related Clerks
16	Management and Organization Analysts	16	Door-To-Door Sales, News and Street Vendors
17	FinTech Engineers	17	Electronics and Telecoms Installers and Repairers
18	Mechanics and Machinery Repairers	18	Human Resources Specialists
19	Organizational Development Specialists	19	Training and Development Specialists
20	Risk Management Specialists	20	Construction Laborers

(World Economic Forum, 2020)

Key findings from a review of 'The Future of Jobs' report. (World Economic Forum, 2020)
Relevant to value-led production capability.

Technology acceleration

- The adoption of cloud computing, big data and e-commerce remain high priorities for business leaders. (World Economic Forum, 2020)
- A rise in interest, for encryption, non-humanoid robots, and artificial intelligence. (World Economic Forum, 2020)
- Forty-three percent of businesses surveyed indicate that they are set to reduce their workforce due to technology integration, 41% plan to expand their use of contractors for task-specialized work, and 34% plan to expand their workforce due to technology integration. (World Economic Forum, 2020)

Digitization of Work processes.

- Eighty-four percent of employers are set to rapidly digitalize working processes, including a significant expansion of remote work—with the potential to move 44% of their workforce to operate remotely. (World Economic Forum, 2020)

Knowledge skills required skills by 2025 according to employers:

- In demand skills, will be, critical thinking and analysis as well as problem-solving, and skills in self-management such as active learning, resilience, stress tolerance and flexibility. (World Economic Forum, 2020)

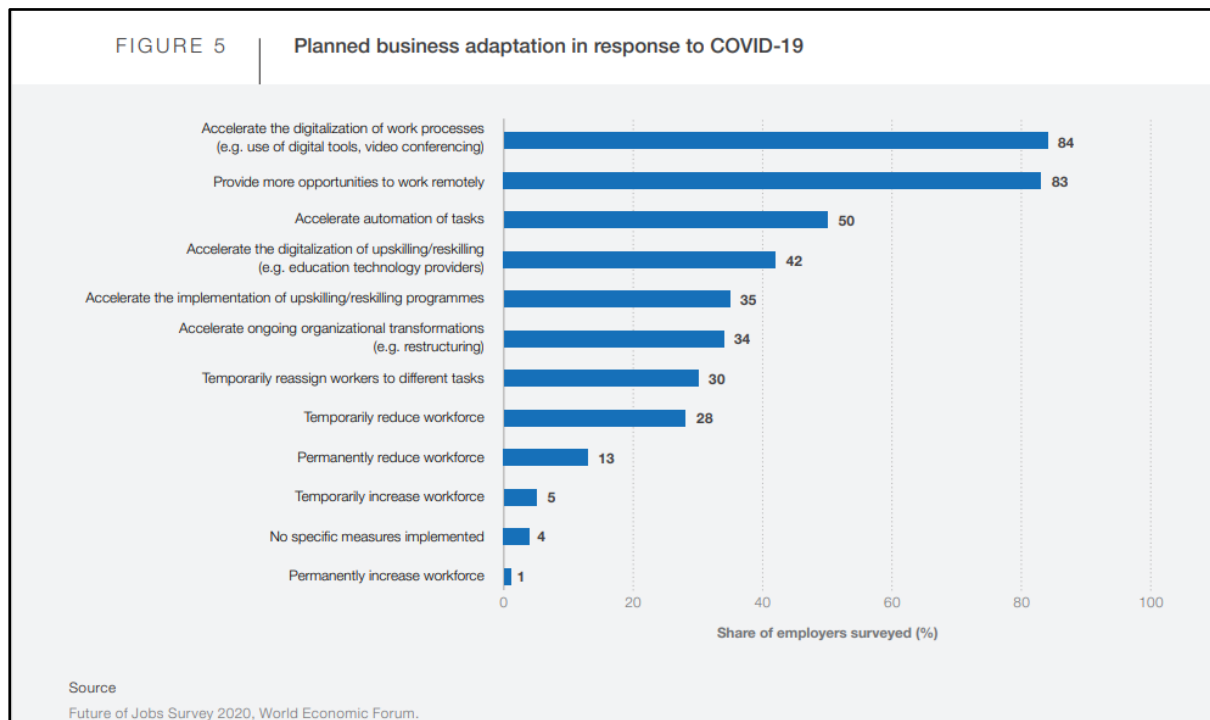
Human Factors, training, well-being, poverty.

- Comparing the impact of the Global Financial Crisis of 2008 on individuals with lower education levels to the impact of the COVID-19 crisis, the impact today is far more significant and more likely to deepen existing inequalities. (World Economic Forum, 2020)

5.6.2 Automation, Digitization and changing work patterns.

Business and employers are having to accelerate their job automation and augmentation agenda, raising the possibility of a jobless recovery. (World Economic Forum, 2020) to remain competitive. The onset of Covid 19, triggered, the requirement to change to Automation, Digitization, and remote working, earlier than had been expected. (World Economic Forum, 2020).

Chart 22: Planned Business Adaption – Covid Response



(World Economic Forum, 2020)

(Chart 22 - Above) shows the: Planned Business adaption in response to Covid-19

- The expected acceleration of automation of tasks at 50% and an expected acceleration of upskilling/reskilling programs to be 35%. (World Economic Forum, 2020)
- On average, companies estimate that around 40% of workers will require reskilling of six months or less and 94% of business leaders report that they expect employees to pick up new skills on the job, a sharp uptake from 65% in 2018. (World Economic Forum, 2020)
- Currently, only 21% of businesses report being able to make use of public funds to support their employees through reskilling and upskilling. (World Economic Forum, 2020)

And that

- There has been a four-fold increase in the numbers of individuals seeking out opportunities for learning online through their own initiative. (World Economic Forum, 2020)

The report raises the point that:

‘Companies need to invest in better metrics of human and social capital through adoption of environmental, social and governance (ESG) metrics and matched with renewed measures of human capital accounting’. (World Economic Forum, 2020)

To date, as reported earlier in the GII comparison between UK and Sweden, it was noticeable that the UK do not measure in work training through the world enterprise survey and after further research, an ONS report identified the first data collated regarding in-work training in the UK:

Published in 2019:

‘The first analysis looking at the characteristics of those who take part in training at work and the benefits they receive from it, in the UK.’ (gov.uk, 2019)

2017 is the first official consolidated reporting of in-work training.

A summary of findings from the report identified:

- In 2017, 26% of employees in the UK said they had taken part in in-work training or education in the previous three months. (gov.uk, 2019)
- Participation in in-work training varies by occupation group, with employees in professional occupations most likely (37.3%) to undertake in-work training in 2017. (gov.uk, 2019)

Another interesting statistic evidenced in ‘The Future of Jobs report’ In (Fig.26) was that:

- ‘The inability to attract the right talent was the greatest barrier to the adoption of new technologies’ A finding consistent across 20/26 countries surveyed. (World Economic Forum, 2018)
- and
- Of the employers surveyed 62% offered access to reskilling and upskilling, but engagement of employees willing to undertake the training is 42%. (World Economic Forum, 2018)

Both reports offer inciteful piece of information from both the perspective of lack of knowledge collation and the limited amount of in work development **26%** being provided by employers, in the UK. Compared to the percentage of those employers surveyed for ‘The Future of Jobs Report’

Also, the percentage of employees willing to undertake training from the, WEFORUM report is inciteful. Although, to be truly relevant the sample size per country, would have to be more exacting as a direct comparison to the UK.

This leads the author to consider the question:

What to employees think about in work training and development?

5.6.3 Employee Perspective

In 2022 a survey of 112,312 business units in 96 countries, showed:

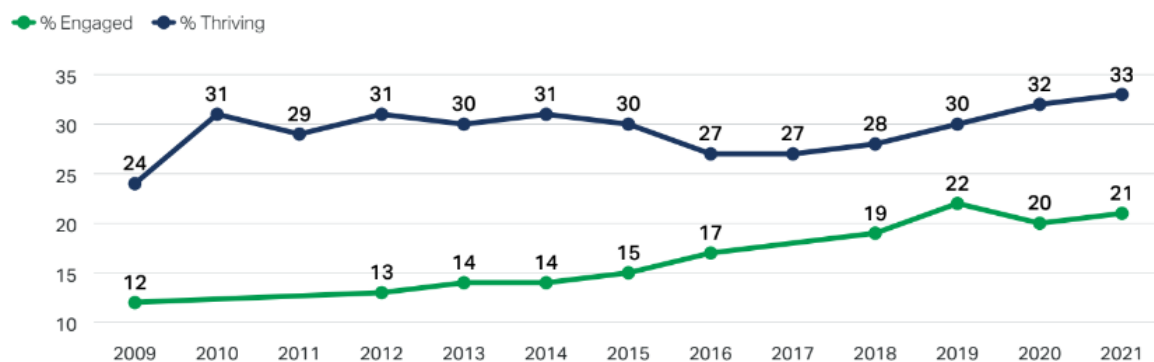
Employee engagement had stalled from its gradual increase, during the pandemic. (Gallup.com, 2022)

This matters for global economic dynamism.

Gallup estimates that low engagement costs the global economy US\$7.8 trillion and accounts for 11% of GDP globally. (Gallup.com, 2022)

Chart 22: Employee engagement and Life Evaluation

Employee Engagement and Life Evaluation



(Gallup.com, 2022)

Another Survey conducted by LinkedIn in 2018 found that of 4,000 professionals interviewed that 94% said that:

‘They would stay in a company longer if it invested in their career development’. (LinkedIn, 2018)

Yet, the number one reason employees say that they feel held back from learning is because they do not have time to learn the skills they need. (LinkedIn, 2018)

Of the 4,000 professionals surveyed, globally on LinkedIn. 1,200 L&D or HR professionals who either influence or are decision makers for their companies’ L&D budgets, 400 people managers, 200 execs, and 2,200 learners from North America, Europe, and Asia. These survey respondents are LinkedIn members who were selected based on information in their LinkedIn profile and were contacted via email between July 2017 and September 2017. (LinkedIn, 2018)

Observations:

There appears to be a disparity between:

What employers think they offer and some evidence that suggests employees are disengaged with the training on offer. A question that arises is:

Could the time and space in which employers want employees to engage with training be a barrier?

This is worthy of further investigation, in another study.

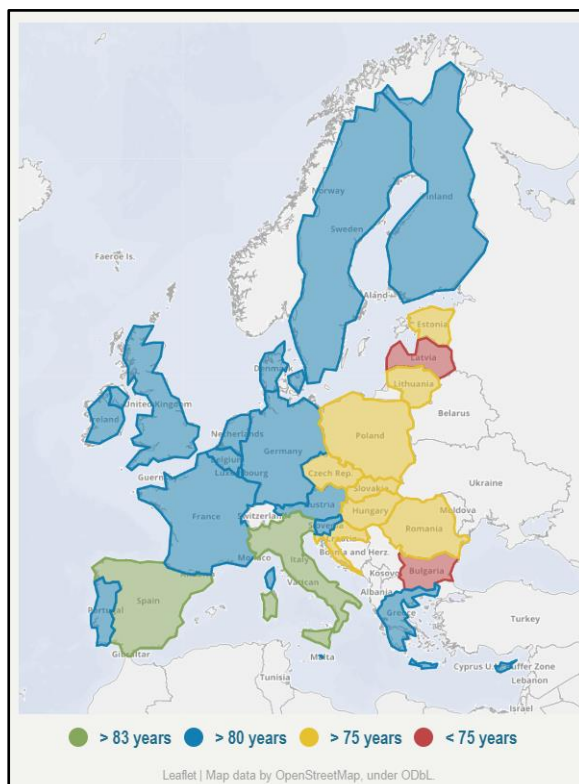
The literature reviewed supports the thought process that the lack of business sophistication, through the development of knowledge and skills can impact SME ability to transition to value-based production. As the knowledge and skills of employees is crucial to the ability of businesses to evolve into technology enabled businesses.

5.6.4 Factors affecting employment.

Research from the learning and work institute to the house of lords affairs committee shows: 'The UK has suffered the largest fall in employment since the start of the pandemic, and that other G7 countries have not seen falls in economic inactivity for the over 50s'. (Policy Commons, 2022)

(ons.gov.uk, 2022) A question that would be worthy of further investigation in the future, as the UK is a higher income economy is what percentage of workers are leaving the workforce by choice?

Chart 23: Life Expectancy Europe



Life expectancy in Europe has an average age of 81yrs. euronews.net, 2020)

Governments are expanding pension attainment age, due to the demands being placed upon the state pension fund.

The [median age of the EU](#) should rise up to almost 4 years, to reach nearly 47 years old in 2050. euronews.net, 2020)

(euronews.net, 2020)

According to: Nobel Prize-Winning Economist Christopher Pissarides: There are demographic imbalances between north and south. “For example, if you look at various studies that were done on how ready European countries are to take on the new technology, there is a huge gap between the north and the south. The "Scandinavians and Germany being more than prepared to take on any kind of new technologies that we have, they are doing a lot on R&D.

5.6.5 Women in the Workforce

Women with higher degrees in the workforce is a factor raised as part of the sub pillar (Knowledge Workers). When considering the ranking differences, it is possible to identify the UK’s declining position from: 19th to 22nd versus Sweden’s improving position from 12th to 9th. And ask what factors are impacting this?

5.5.6 The Gender Gap report

Chart 24: Gender Gaps



[Global Gender Gap Report 2021 | World Economic Forum \(weforum.org\)](https://www.weforum.org/publications/global-gender-gap-report-2021/)

The gender gap index offer insight into the best ranked countries overall with:

Ranking 2021 overall (Males/Females) UK = 23 Sweden = 5

(WEFORUM, 2021)

A notable insight is Ireland ranked 9th. Why?

This raises questions regarding Brexit, potentially for further research, but is outside of the scope of this study.

Through extracting data from the full report, it is possible to run a side-by-side analysis, for the purpose of considering disparity between the UK and Sweden. **(Appendix K)**

Data extracted from: (WEFORUM, 2021) **Note: See WEFORUM for the full data.**

From this extraction, the figures that stand out due to substantial differences are:

Chart 25: Gender Gaps Extraction of data (Appendix K)

Notes for reading extraction (% is more positive when higher).

Education and skills overall (Males/Females)	UK - Value	Sweden - Value	
STEMS, attainment %	0.46	0.33	- 0.13
Engineering, Manuf. & Construction, attainment %	0.23	0.3	0.07
Information & Comm. Technologies, attainment %	0.18	0.26	0.08
Natural Sci., Mathematics & Statistics, attainment %	0.84	0.66	- 0.18
Services, attainment %	0.55	1.08	0.53
Vocational training, attainment %	0.88	0.82	- 0.06
PhD graduates, attainment %	0.69	0.63	- 0.06

Overall quantity of PHD graduates is stronger in the UK, than Sweden.

However, when we consider females specifically. The UK has 0.15% lower female PhD graduates.

(See chart below). **Data extracted from:** (WEFORUM, 2021) **Note: See WEFORUM for the full data.**

Chart 26: Gender Gaps Extraction of data (Appendix K)

Notes for reading extraction (Rank performance is most positive at 0.

% Is more positive when higher).

Data extracted from:	Score	Score	Calc.
Global Gender Gap Report 2021	UK -Females	Sweden- Females	Sweden - UK
Global Gender Gap Index - Overall Score	0.775	0.823	
	Rank	Rank	Rank Diff.
Health and survival	110	130	20
Political empowerment	23	9	-14
Educational attainment	40	61	21
Economic participation and opportunity	55	11	-44
Women's position	Rank	Rank	
Labour force participation rate,	44	13	-31
Wage equality for similar work	75	55	-20
Legislators, senior officials, and managers	52	35	-17
Educational attainment	40	61	21
Percentage women with PHD's	%	%	
PhD graduates, attainment %	0.82	0.97	0.15
	Rank	Rank	
Professional and technical workers,	81	1	-80

Stand out rankings are:

- UK has better female educational attainment.
- Females have more political empowerment and economic participation and opportunity in Sweden.
- Sweden has better ranking for labor force participation and wage equality for similar work and legislators, senior officials and managers.
- A standout rank is the difference between the rank for Professional and technical workers.

This data raises questions: If the UK is better ranked for educational attainment and has a good percentage of PhD graduates. What is impacting women with higher degrees entering or staying in the workforce? What does Sweden do that supports women entering and staying in the workforce? The UK government are currently, running a scheme to get women with STEM qualifications back into the workforce. This suggests there is an acknowledgement by the UK government that women with STEM qualifications have barriers to working in the UK.(Gov.uk, 2023)

According to Laura Bohrer of Lano.io

Sweden is considered to be one of the best countries to live in. This positive perception of the country is backed up by the findings of the Global Gender Gap Report:

The data, highlights:

- More than 50% of the country's firms have a female majority ownership. (Bohrer, 2022)
- In terms of safety, inclusion and justice, Sweden currently ranks number 7 in the world. (Bohrer, 2022)
- Similar to the other Nordic countries, Sweden has a low gender pay gap, with [women earning on average 9.8% less](#) than their male counterparts. (Bohrer, 2022)
- Pregnant women can take maternity and parental leave for a duration of up to 390 days, and women with children under 8 are allowed to [reduce their standard working hours by 25%](#). (Bohrer, 2022)

When critically analyzing the factors involved in business sophistication through the evidence of knowledge workers, it is possible to note significant differences between skills and training, social mobility and inclusion, funding, and gender pay gaps in the UK and Sweden and other European counterparts. Any changes to the UK, to benefit SMEs is dependent upon Institutional and Business collaboration.

5.7 Innovation Linkages, Knowledge absorption and Collaboration

Governments and institutions, have a significant role to play in Innovation linkages and knowledge absorption.

Through research of the Innovation linkages as a sub-pillar of the Business sophistication, it was possible to note the difference in ranks between the UK and Sweden.

Cluster Rank

In Sweden in 2019 = 12th, by 2022 to 15th at 2022. UK in 2019 = 9th, by 2022 28th. (GII.org, 2022)

University Collaboration

In Sweden in 2019 = 9th, by 2022 to 10th at 2022. UK in 2019 = 7th, by 2022 22nd. (GII.org, 2022)

Sweden has remained fairly consistent in both categories, what has caused such an impactful change in the UK?

According to: Patrick Jack at Times Higher Education

Covid had a major UK impact upon university and business collaborations.

'Researchers found that interactions with large businesses fell by 0.6 per cent, and by 2.5 per cent with small and medium-sized enterprises (SMEs). (Jack, 2022) The report warned that there is

uncertainty when interactions with SMEs will reach pre-pandemic levels – as a result of lower private sector activity, high inflation and the loss of key European funding streams. (Jack, 2022)

Conversely a UBC (European university-business cooperation) study that conducted the largest international study into cooperation between universities and business (Oct – Nov 2016) found:

‘Most Swedish businesses cooperate with universities on a regional level (97%) and country-wide (96%). The results also indicate that as much as 81% of Swedish businesses engage in UBC with international university partners’. (: Arno Meerman, 2016) This study contains many fascinating incites and is included in the appendices. The study also highlights the difference in UK and Sweden university relationships.

Research and talent in business, under sub pillar knowledge absorption, correlates to much of what has been found through the research in this paper thus far, in the section relating to knowledge workers and the inability to attract and retain talent within the workforce and the lack of in-work training.

Innovation linkages through cluster development and collaboration between institutes, government and business are interesting factors for SMEs and larger businesses, for which there appears to be evidence of a disconnect in the UK.

In the press and on the radio 22.02.2023, there has been universal coverage of mass redundancies at the Chinese owned British steel, Scunthorpe site.

Coverage, discusses the closure of Coke furnaces, which means Coke will have to be imported, leaving the UK, again subject to cost push scenarios, something akin, to what is, currently happening with gas and oil, and non-seasonal food.

Reporting of British steel discusses the shambolic UK ability to plan an evolved manufacturing infrastructure that could have been supported, through technology changes to running costs through Hydrogen, if only the UK government had communicated, planned and collaborated.

The Evening Standard (The Evening Standard, 2023) and Radio 4 also offered coverage discussing the lack of Government collaboration supporting UK industry and infrastructure and reporting alludes to, the recent political infighting and how it reduces focus on important productivity issues.

This timely piece of news supports the importance of collaboration between government, institutes, and business.

British steel is a large business. This begs the question that if relationships are challenging for large businesses, then what is the relationship and collaboration desire or ability to understand the needs and wants of SMEs within the UK government?

The ability to plan for societal and business benefit is a subject that is brought up in an article by Cecilia Hjertzell which discusses: The magic Swedish ingredient for success is collaboration. (Hjertzell, 2020)

A review of the 'UK Innovation Strategy Leading the future by creating it' by the department of business, energy, and industrial strategy. Found many references to R & D, AI, and technology, but with regard to talent, the report referred to bringing in, innovation skills and talent for recruitment purposes, there was no reference to in-UK development. (UK Government, 2017)

Further research to consider how people are being built into strategy, led to a review of the Department of Business Energy and Industrial Strategy's 'R&D and People and culture strategy' (Gov.uk, 2021) The tone of this report is focused on R & D roles to fulfill: 'Ambitions for R&D we estimate the R&D sector will need at least an additional 150,000 by 2030 to sustain the UK's target of 2.4% research and development intensity, this means attracting and retaining people of all ages and at all career stages into R&D roles.' (Gov.uk, 2021) These statements are at best loose and require further detail to understand the achievable SMART criteria.

The next step was to research SME strategies or action plans:

The BEIS small and medium sized enterprises (SME) action plan (Gov.UK, 2019) this was very much focused on government procurement, with no reference of International, trade for SME's or Skills development.

It was not possible to identify any in-work training strategy or action plan, as a centralised action to develop employees of SME's. However, the author is aware of training available for young people, through apprenticeship schemes and re training of unemployed people.

Through research the author was able to access a new scheme to encourage women into STEM careers, again this was targeting women not currently in the workforce. (Gov.uk, 2023)

There, recognition that this paper focuses on the whole of the UK and that Scotland and Wales are devolved in some local decision making areas, however the majority of the their policy and spending power rolls down from Westminster. Further information can be found at:

[Devolution of powers to Scotland, Wales and Northern Ireland - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/policies/devolution-of-powers-to-scotland-wales-and-northern-ireland)

A study by (AHN, 2015)

Found 'Based on survey data on innovative manufacturing SMEs, we found that OI (Open Innovation) can be a good approach enhancing firm performance in SMEs'.

And that 'OI provides new opportunities for commercialization by diversifying innovation routes. (AHN, 2015)

However, the study also found: 'OI adoption results in an innovation routine modification that brings with it various changes, such as new technology, new market and new organizational structure (Mortara et al., 2011). Therefore, only when SMEs have the necessary managerial resources in dealing with these changes can they have benefit from OI'. (AHN, 2015)

This study was useful regarding having a further understanding of the relationship between OI relationship between SME's and institutions, but it also highlighted skills and managerial resources as paramount to insertion of new technology and new markets.

The study does not discuss how institutes and businesses formulate these relationships to start with.

A study by (Revell, 2003) whilst researching a lack of uptake of environmental studies discussed:

'A lack of institutional enfranchisement for SMEs in the UK '

The same study refers to Fanshawe (2000) who suggests that greater co-collaboration between small firms and stakeholders such as government, regulators, support agencies and trade associations could help SMEs to understand their environmental responsibilities by creating a framework for more coordinated information exchange. (Revell, 2003) and whilst it can be argued this research reflects environmental compliance, it can also be argued that this coordinated information exchange can benefit to value-led production, through digital skills, in-work training, UBC and international trade as it highlights the disconnected relationship between SME's and other stakeholders.

6.1 Challenges

The purpose of this research has been to:

‘To understand what impact the UK’s Business Sophistication ranking, has on their ability to apply value-based production in the UK. and to consider innovative initiatives and methodologies that could support improvement’.

The initial challenge of the research was to consider what WIPO meant by a move to: value-based production and Innovation led production and to understand the fundamental differences.

Through in depth reading the author was able to establish:

Value-based production involves an ethics framework containing factors of: Sustainability, Technology, and Human factors.

The second challenge was to delve into value-based production and to consider, whether anything had previously been done, to form an international framework that could benefit transition to value- based production from a guidance perspective.

From conducting the research, using the keywords of ‘value-based ethics’, ‘value-based frameworks’ which were guided by the suggestion of ‘value-based’ production from WIPO, as a suggested direction, for production, the author found:

There were many articles regarding Business and organisational frameworks and ethics-based product design, despite this the author was unable to find a specific framework, with supporting pillars and measurement from a Global Organisation such as WIPO, OECD, or World Trade Organisation for countries to aspire to and be measured against. This finding was supported, by the discovery of:

Further enlightenment arrived from:

A journal paper ‘An Unexpected Means of Embedding Ethics in Organizations: Preliminary Findings from Values-Based Evaluations’ by (Burford, 2015) who found from a structured literature review that there was a gap in the form of an international framework.

The study found that this had been recognised globally and that there has been several high-level calls for the establishment of a global ethical framework for sustainability by institutes such as the Earth Charter, the United Nations Millennium Declaration and the Earth Systems Science Partnership. More recently, the Club of Rome’s “ValuesQuest” program, linked to the United Nations Culture, Creativity and Values Initiative, has explicitly sought to embed ethical values as a key concern in international development discourse Thus, dimensions of values are increasingly being

developed in sustainable development. (Burford, 2015). Although further research found this to be undeveloped.

The third challenge was to evaluate whether there was a correlation between value-based production and business sophistication and if so, was this impacting the UK economically and specifically, the SME community.

6.2 Key Findings

6.2.1 Correlations

The research found that Business Sophistication wasn't perfectly correlated as both Value-based production and Business sophistication are extremely complex in their construct. However, there were enough similar factors that cross over both Business Sophistication and Value-based production, to suggest that poor business sophistication rankings would be a barrier to the transition for value-based production. In addition, these same factors would act as a barrier to recovery from the Covid pandemic if the UK and business do not act creatively to evolve.

Knowledge Absorption/Innovation Linkages/Knowledge Workers were found to be the main markers with direct links to value-based production (Chapter 4).

Covid acceleration/SME challenges and business sophistication all highlighted the same factors that were causing challenges for SME's Technology and Digital adoption/ Employing and Developing Skills/Sustainability and Quality standards/Collaboration between Government, Business and Institutions. (Chapter 4)

All of these subject areas were found to be interlinked and if undeveloped, it could be argued that they could potentially, cause challenges with transference to value-based production. (Chapter 4)

Also, findings by: (Salas-Velasco, 2018) support the connection between business sophistication, networks and the quality of a firms operations and that technology improvement supports incremental innovation.

6.2.2 Global Outlook

Next an analysis of the Global and economic outlook took place, to highlight any challenges with Covid recovery and to consider any predicted outcomes or changes.

A change in the top 5 economies was notable with India overtaking the UK.

Also, the OECD prediction for the UK to have a lower recovery than their European counterparts, suggested that multiple factors were impacting the UK, including Brexit, Covid and Business sophistication factors, that were mitigating evolution to value-based production.

6.2.3 Business Sophistication and value-based production factors UK and Sweden

Once the economic outlook was completed, research was undertaken to understand how the factors contained in both value-based production and business sophistication were being acknowledged, adapted and applied in the UK and in Sweden (With some broader consideration to Europe where relevant) and what stood out as significantly different.

Sweden is ranked world no' 1 in Business Sophistication against the UKs 22nd position in the GII 2022 analysis and was used for comparison.

Categories included:

- Governance and Collaboration.
- Social Factors.
- Technology, digitization and sustainability.
- Knowledge, Training and Development and Initiatives.

The outcome of this evaluation found:

Performance in the above areas was found to have cross relevance to areas of both value-based production and business sophistication, this made it challenging to critically analyze in separation. For example: technology adoption is dependent upon, the skills to use it. This required the research to consider multiple interlinking factors and to consider what barriers and factors were impacting SMEs and their understanding, subscription, and application of the categories.

6.3 Salient Points found from the research:

6.3.1 Governance and Collaboration:

Prior to considering the significant points it is important to draw attention to the difference in population volumes:

UK = 67,327,000 versus Sweden = 10,416,000

This has relevance to governance. (World Data, 2023) It can be argued that the difference in population size makes governance more challenging in a country the size of the UK.

Also, the UK has devolved areas for localized decision making, Wales, Scotland. The Republic of Ireland is still a member state of the European Union, the UK is a former member after 2020. And it could be argued that this causes fragmentation in collaboration, incentivizing and communicating change.

When comparing the differences between Sweden's best practice for social policy, encouraging change through incentives and University and Business collaboration.

There was a clear difference in how the importance of engagement was considered and applied and how relationships were managed. It was noted from the research that the relationship in Sweden between University and Business was Business led and that Businesses had multiple collaborations with different Universities. Further research that could be of interest, would be how this was founded, and this could act as guidance for relationship building between Business and Universities in the UK. This was outside the scope of this research.

This paper found an overall disconnect and lack of communication between the UK government and SMEs. This was prominent in several areas and evidenced in several specifics including: abstinence from schemes and apathy to net zero obligations. Schemes are being closed early and the climate hub had low uptake to date. (Ref: Chapter 5)

The Future of Jobs report supported the direction of change in digitization and technology and offered insight into the correlations between the relationships, for sustainable and digital attainment and how knowledge and training were fundamental to the future outcomes for employment and welfare.

Other key findings of interest were the difference in Employer and Employee perspectives regarding training.

The reported attitudes to training from employers and employees were notably different globally and there appeared to be a disconnect, between what employers thought they were offering and what employees thought they were being offered.

SME Relationships with Government were interesting, it was difficult to find any meaningful consultation of any quantity between the UK government and SMEs. These findings were supported by the evidence of low uptake in schemes and figures from consultation.

The relationship between UK government and devolved government with SMEs would be an interesting study but is outside the scope of this research.

6.3.2 Social and Education Factors

Social differences were evident in the findings:

With the UK reported as having more over 50's, inactivity in the workforce than any other G7 country.

The UK is not in the top 10 of the Global Gender Gap index, Sweden is 5th overall.

A key finding from evaluating the gender gap report in relevance to knowledge, was that the UK has higher STEM, Math's, Statistics and Natural Science attainment, while Sweden has higher services attainment. Services attainment is worth of more in depth research, not in the scope of this study.

Overall PhD attainment is marginally higher in the total UK, but attainment for women is .15% lower than Sweden.

Poignant findings are the workforce factors, that illustrate the poor overall position for female professional and technical workers in the UK: For comparison: Sweden are ranked 1st whilst the UK is 81st.

The UK have higher pay inequality, for women, for the similar work and generally less participation and opportunity, resulting from less political empowerment.

As of 2023 the UK are running a scheme to get women with STEM back into the workforce, but social barriers for women in the UK (lower maternity, unequal pay, child care costs, caring obligations) are significant barriers for women in the UK. In Sweden the social system and gender pay difference is much more favorable, which is evident in female workforce participation.

Sweden is reported as arguably, one of the best places in the world for women to work.

6.3.3 Technology, digitization.

The main finding and reflection from the study, surrounding technology and digital adaption is reported globally, as lack of investment and knowledge to enable change.

The 'Design Option Paper from the European Commission for Digitalisation Support to SMEs' is a recommended read for anyone who are interested, in how Europe are supporting change through innovative initiatives for digital improvement. **(Appendix F)** The difference is astounding.

Technology and digitization have created a world changing progression for all businesses, the workforce, and SMEs. Services as opposed to products have benefitted from this change and knowledge in this area, is a modern measure of attainment value.

Sweden's overall attainment level is lower in STEM, but almost 50% stronger than the UK in service attainment, education and skills. (See Chart 22)

The most salient point within this research paper from the perspective of the author is the radical difference in how Europe and the UK support SMEs in the digital transition. (See Appendix F)

The digital voucher schemes supported in Europe generally as a comparison to the UK are frighteningly different, this is evident in the closure of the recent UK scheme.

Stand out schemes in Europe illustrating the level of difference in the technological capability of different countries and understanding of importance of investment in digital capability were:

Supported by the value of vouchers: 'Most of the initiatives operate with a grant or voucher size of 10000 - 15000 Euro'. (eic.ec.europa.eu, 2021)

The digital capability in Flanders particularly stood out with a digital wallet for SMEs, evidencing the volume of approved suppliers and value of the scheme, this scheme also supported skills development. Criticism of the scheme from a subjective point is that, consultation isn't included and that businesses, are required to be able to plan and know what investment they want.

‘SME e-wallet in Flanders has already provided 136.000 vouchers –and in 2018 the number of vouchers issued is 53.000. Every SME has up to 10.000 Euro (15.000 for larger SMEs) available each year in its e-wallet. Parts of, or the entire amount, can be spent on one or more of the 1.800 approved suppliers of services’. (eic.ec.europa.eu, 2021)

As a comparison UK support is a drop in the ocean and much less accessible with 8 approved suppliers in the last, scheme. (UK Government, 2022)

A study of the institutional ability and capability would be a recommendation for further study, but in-depth analysis is outside the capacity and scope of this paper.

6.3.4 Sustainability:

SME lack of awareness and understanding of their role, towards, net zero in the UK is the most relevant finding, for sustainability. This is evident in the lack of uptake for the UK Government climate hub scheme with free ISO. (Ref Chapter 5)

This paper hasn’t made a comparison to Sweden or Europe for sustainability, as this paper does not have the capacity.

Knowledge and collaboration are considered the more salient points for lack of uptake, which leads to the last findings.

6.3.5 Knowledge, Training and Development and Initiatives:

Knowledge, awareness, and skills development within SME’s is the highlight of this paper. The Future of Jobs report (Appendix D) The report provides evidence of predictions, covering: What has happened, what is beginning to happen and what will happen to jobs in the future.

Employers discuss training offered, and lament at lack of uptake. While employee perspective states, they would stay with employers longer if they received training. This illustrates a disconnect between employees and employers.

Lack of measurement of formal training in the UK prior to 2017, means that challenging qualitative data found in surveys challenging. The Future of Jobs report states their needs to be better measurement of skills and training. (Appendix D)

Based on findings in the gender gap report the UK has a decent standard of education, the gaps in training appear to be the ability of SME’s to continuously develop their employees, in order that they can remain enfranchised and add value to the business once they have left education and are employed in the workforce.

Conversely the strong collaborative nature between university and businesses was notable in Sweden. Suggesting this relationship supports the continuous improvement of knowledge.

Chapter 7: Conclusion, Considerations and Recommendations

The author found the volume of information relating to this subject much broader than initially expected and has made recommendations for further study throughout.

However, the correlation between: Business Sophistication and value-led production has been identified, although not in an exact perfectly matching picture.

The main features were:

- Technology and digitization cannot be developed without knowledge.
- Knowledge development requires education, collaboration, and governance.
- Skills are directly related to ongoing training and measurement is important to understanding ability in the workforce.
- Attracting and retaining talent in the workforce is as dependent upon social factors and policy as much as it is on education, training and ongoing development.

The future of jobs is intricately linked to technology, digitization, and knowledge. When studying the skills in demand for the future, experience, soft skills, sustainability and innovation will be incremental to success.

SME's globally and in the UK are effected, by their abilities in the key skills of business sophistication and they are dependent upon support for change.

The analysis of Sweden and the collaborative attitude of their economy and their understanding of enabling people to work was significant in this paper.

By contrast the disconnect between the UK government and SME's was evident and disappointing.

Sweden's Business and University collaborations was a particularly interesting piece of information, particularly it was led by business and that there were multiple U2B relationships. The history of this relationship would be a fascinating piece of research, to consider as a benchmark for improvement in the UK.

European Technology and Digitization schemes are so much more advanced than in UK this was evident throughout the paper. Flanders was the stand out scheme in terms of the advanced capability of the digital wallet for SME development. This again would offer a fascinating piece of research for the purpose of recommending improvement in the UK.

There were elements not discussed in this report regarding value-led production and business sophistication, due to capacity, although they deserve to be mentioned, as areas the author has thought would be influential to change.

Leadership

Leadership is not mentioned, but is an intrinsic factor, of the ability of Governments, Institutions and SMEs ability to change.

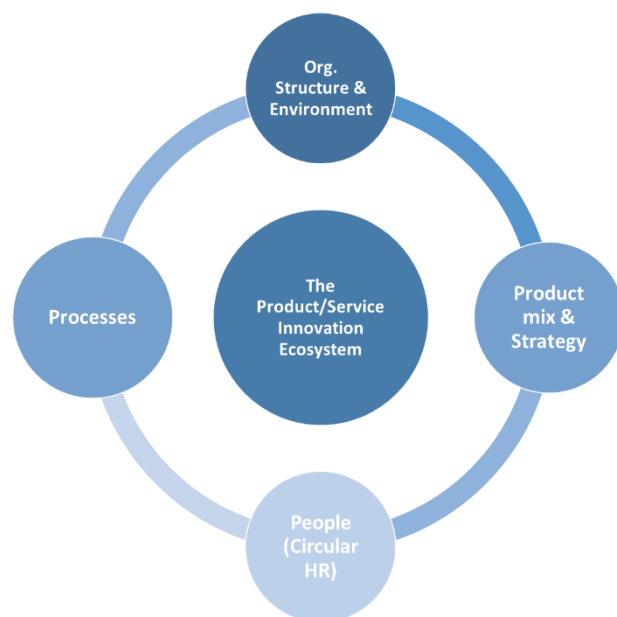
An interesting point of note is that Leadership is not a Pillar or Sub-pillar within the GII. However, innovation does not happen without it.

This is a recommended area for future study, specifically, for leadership capability to improve business sophistication. How can leaders create the time and space for their workforce to lead change? If SMEs cannot rely on government collaboration and initiatives, to lead change to value-based production, leaders will need to look to their workforce, if they want to survive the challenges ahead.

Potential models of innovation that can support this are:

Innovation auditing to understand the current position.

Developing an Innovation policy and strategy that involves the development of each part of the Innovation Ecosystem.



A Design Thinking approach to Product and service development. Creating products and services that people want, is another methodology that can support change.

This supports the thought process that incremental innovation, through improvement or intrapreneurship, can provide businesses with productive innovation opportunities, if they can engage with a 'Design Thinking' approach to product and service creation. 'Design Thinking' a cognitive approach to 'Wicked Problems' first coined by Horst Rittel, based on a deep understanding of human needs, motivations and behaviour. (Interaction Design Foundation, 2023)

This standard of intrapreneurship is reliant upon students leaving university with not only their course specialism, but also an understanding of commercial business, inclusive of design thinking. There is of course, then a dependence placed upon business to fulfil CPD for all employees as an ongoing process of business. The relationship and understanding of each other's roles is key to improving Business Sophistication.

For SME's to survive and flourish in the challenging times ahead they will need to become:

Innovative Organizations creating environments that provide creative space for processes, products, services, systems, and people to continuously improve.

Human Capital is encapsulated in each part of the ecosystem. Potentially applying the principles of circularity to HR, may change thinking, to a workplace that supports working with technology in the future, this is a key aspect considered by Industry 5.0

Final Recommendation:

From all the research and findings in this paper the last recommendation by the author is for the GII (WIPO) to create a pillar that represents the criteria required for a Value-based transition. WIPO are a globally respected organization that have the ability to influence change in Governments and Institutions. Whilst this would be a significant body of work, there is no better time than when this has first been highlighted as the future of production. The world and times have changed since the mass production methods began in 1881.

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