The Journey to Digital World Class Starts Here

The Hackett Group
World Class Defined and Enabled

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Managing markets for scarcity, inflation, disruption, and volatility (November update)

Procurement Executive Advisory Membership Programme

December 2022

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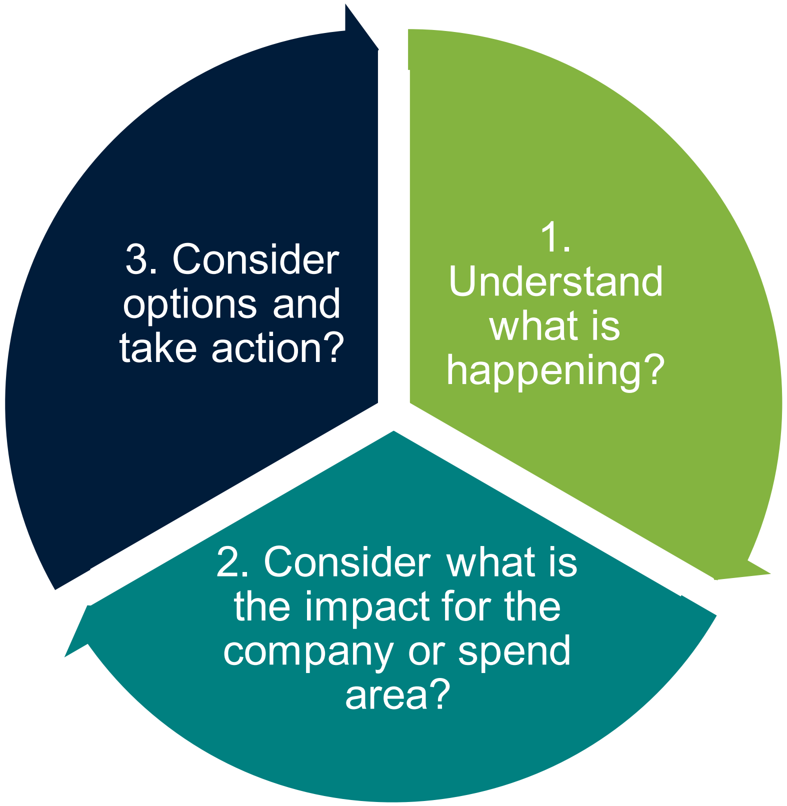
Managing for scarcity, inflation and disruption

- Collecting insights
- Analysing and considering impacts
- Identifying preferred actions

Managing for sustained scarcity, inflation, disruption and volatility conditions

3 STEPS TO MANAGE MARKET CONDITIONS



1. ACTION: Collect insights

- **Scarcity** e.g. semi-conductors, commodities, logistics, labour
- **Inflation** e.g. goods and services, rising future expectations
- **Geo-political, economic and social** e.g. Ukraine, Taiwan, tariffs, sustainability, labour and modern slavery regulation, the great resignation

2. ACTION: Analyse and consider impacts

- Areas of greatest impact e.g. materials, commodities, transportation, labour, future trends
- Plan scenarios (1) inflation increases (2) inflation stable (3) inflation inflects down

3. ACTION: Identify preferred actions

- **Contracts** – avoid tender, rollover existing contracts and pricing, is the proposed increase reasonable?
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- **Develop** - invest in monitoring capabilities e.g. SRM, monitoring dashboard, market intelligence, diversify supply base, etc

Source: The Hackett Group

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Source: The Hackett Group

2022 supply markets continue to show volatility and future uncertainty with significant disruptions, higher inflation and lower demand; resilience and agility are required for success

2022 and 2023 economic growth continues to be reforecast lower due to: headwinds, increasing costs, easing demand, and falling business and consumer confidence e.g. Ukraine/Russia war, energy supply shocks, monetary policy tightening, China reopening

Outside Asia, inflation has softened remains near to, or continues to reach new highs, with tight energy and food supply chains although core inflation measures are also now increasing. To date cost pressures continue to persist, despite easing economic demand and material and commodity prices that continue to decline from March highs. Oil remains volatile with recent OPEC+ cuts.

Transportation and freight conditions continue to improve; lower volumes e.g. falling PMI readings, are quickly translating in significantly lower shipping prices; with regard to China, sporadic localised lock downs may continue as long as a zero-covid policy remains

Services continue to experience very tight labour markets and increasing wage bargaining demands. Market features include a combination of labour shortages, stubbornly high demand, growing future inflation expectations, while job losses to date remain low

Source: The Hackett Group

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Overview of key regional, sector, spend and risk trends

REGIONAL

- China/Asia: weak Chinese economic conditions has been reducing demand. CPI remains lower at 1.6%
- US/North America: softening economic conditions, US CPI continues to fall from June peak now down to 7.1%
- UK/Europe: softening economic conditions, potential recession forecast to be worse. Additional shock from energy prices/scarcity. Easing UK CPI at 10.7%, Euro CPI at 10%
- LATAM: used to operating in inflationary markets

INDUSTRY SECTOR

- Economic slowdown continues with 2023 recession forecast
- Economic performance mixed, with potential differences observed by industry sector, for example:
- Lower demand: electronics, hi-tech, manufacturing, retail
- No/little change: auto, FMCG, public sector
- Higher demand: life sciences, pharma, healthcare

DIRECT AND INDIRECTS

- Commodities: volatile, WTI oil ranging $70-95/barrel
- Metals: prices up on China reopening, shortages reported
- Shipping: sharp fall in pricing, reflecting lower demand
- Directs: PPI continues increase, lower pressure from commodity and shipping costs. Some shortages still exist e.g. auto, semi-c, chemicals, pharma, labour
- Indirects: elevated wage inflation, labour availability, CPI

MACRO RISKS

- Inflation: efforts to reduce demand and control prices
- Energy shock: continued oil price volatility, shortages of natural gas especially in Europe, demand for coal
- China and covid: widespread illness to drag economic performance, while unlocking will increase demand for commodities, etc
- Ukraine-Russia: war continues to provoke escalations, and geo-political and supply chain disruptions.

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Source: The Hackett Group

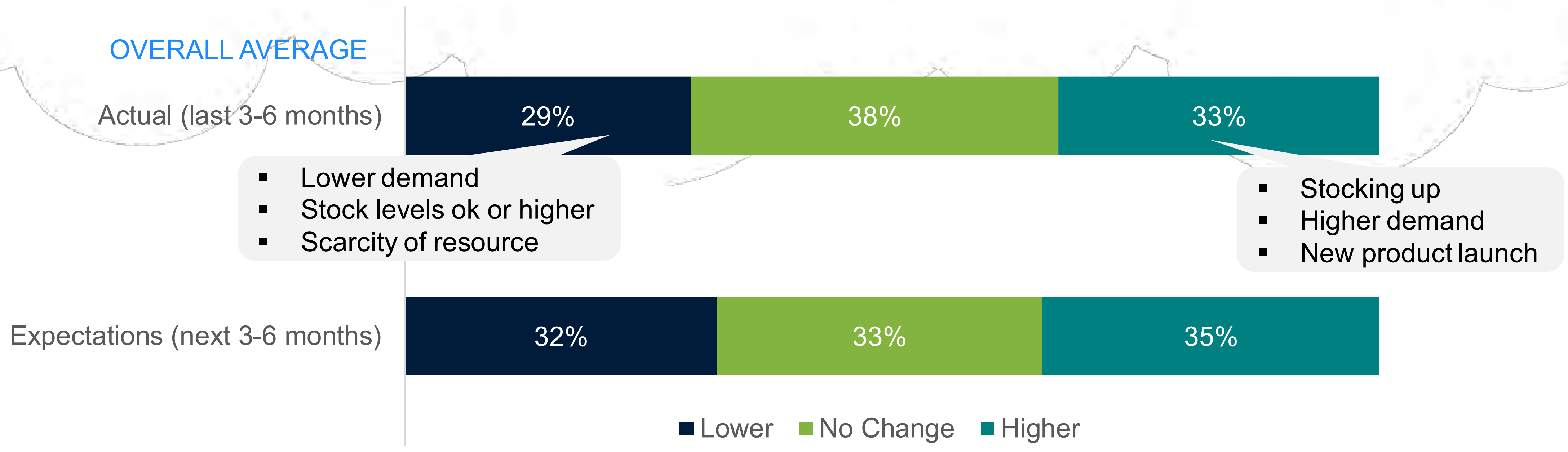
Poll - from your perspective, have you observed a change in business demand or volumes, and thinking ahead do you expect a change?

Please select the two most appropriate answers for each pair of questions (multiple choice)

1. Actual - demand and/or volumes are lower
2. Actual - no significant change
3. Actual - demand and/or volumes are higher
4. Expectation - demand and/or volumes are lower
5. Expectation - No significant change
6. Expectation - demand and/or volumes are higher

External perspective – business demand conditions are mixed, with some companies reporting volumes are lower, while others report flat or even higher

CHANGE IN BUSINESS DEMAND OR VOLUMES



INDUSTRY SECTOR EXAMPLES

- Manufacturing, hi-tech, retailers
- FMCG, public sector
- Life sciences, pharma & healthcare

Q From your perspective, have you observed a change in business demand or volumes, and thinking ahead do you expect a change? Please select the two most appropriate answers for each pair of questions (multiple choice)

Source: client webcast polling, The Hackett Group

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Economic conditions continue to weaken as demand falls with sustained cost inflation, geo-political and supply disruption, and tighter monetary policy

- **Central Banks and economic agencies continue to reforecast lower economic activity and higher inflation in 2022 and 2023/24. Significant headwinds and macro shocks still persist: Ukraine Russia war, energy and other supply chain disruptions, tightening fiscal and monetary policy conditions, each acting to increase costs and uncertainty and to dampen economic activity. UK forecast to have a severe 2 year + recession worst since 1930s**
  - IMF/World Bank reforecast 2022 global GDP growth to be 30% lower at 2.7% compared to the 4.1% initially forecast (2019: 3%, 2021: 6%). 2023 is forecast to be nearly 20% lower. The forecasts show slowdown or recession conditions are expected to increase into 2023 with many Western countries having near zero or negative growth for the year. E.g., OECD Nov-22 GDP outlook for 2023: China 4.6%, US 0.5%, EU (0.1%), Germany (0.3%), UK (0.4%)
  - Many downside economic risks exist including: escalation of the Ukraine Russia war, further energy supply and price shocks, failure to control inflation, excessive central bank monetary policy actions, further escalation of US/China/Taiwan relations, etc.
- **Excluding Asia and USA, CPI and PPI price inflation continues to increase, impacting economic and company performance, as well as reducing consumer and business confidence which are now close to 2020 lows. Many central banks continue action to address runaway inflation including removing liquidity from markets, raising interest rates, while European Governments are at the same time offering stimulus to cushion the effects of the energy shocks.**
  - Western Central Banks continue to tighten monetary policy to control inflation. China and Russia continue their contra efforts to stimulate their economies by easing monetary policy to increase demand. Further China lockdowns may act to create further waves of inflation.
  - Notable 12-month CPI inflation rates to Oct-22: Netherlands 9.9%, Sweden 11.5%, UK 10.7%, Eurozone 10%, Germany 10%, US 7.1%, and China back at 1.6%. Consistent inflation drivers include surging oil and natural gas costs, food, vehicles and equipment. Inflation in services is lower, for example, the UK reporting transportation services up 13.8%, professional services up 6.1%, and business services up 3.9% for the last 12 months. Many consider energy and food prices to be outside the control of many national economies, with central banks therefore having limited opportunity to influence supply factors and demand on life essentials being somewhat inelastic.
  - Producer inflation continues to increase and lead consumer inflation. Recent declines in energy prices have recovered with PPI rates continuing to increase. Signals of future price declines include: Commodities and freight trending lower, month-on-month falls in PMI index to new lows. Fiscal and monetary policy actions often take 6-12 months for the impacts to become apparent on business and economic activity, so recessions manifest later in the cycle.
- **Scarcity may expand to new areas** e.g. energy, aluminium, copper, nickel, and EV materials. Intel are forecasting the semiconductor shortage will now continue into 2024 despite reduced demand and while capital investment is scaled back.

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Source: various sources, collated by The Hackett Group

Supply shortages are exacerbated by extremely tight labour markets, labour shortages and long ordering lead times

- **Many Western labour markets remain very tight with record employment demand and low unemployment driving up wages. Unemployment levels are starting to tick up with high profile layoffs announced at major US companies.**
  - Many labour markets continue to report employment at multi-decade highs due to economic recovery and lower workforce participation. A shortage of skilled labour has significantly increased wages especially for entry-level or blue-collar roles (e.g. warehouse, distribution, HGV drivers, retail, hospitality and services). Demand for technology and digital related roles also remains very high e.g. online commerce, digital transformation, IT sourcing.
  - As a result wage inflation continues to increase in many countries and at levels higher than 2019. This reflects tight markets, increased costs of living, but also that worker expectations of future inflation continue to increase e.g. US, UK, China, India, and some EU countries. Worker wage demands are often leading to strike action especially amongst public sector and unionised workers. A degree of protests and civil unrest are noted in a long list of countries.
  - We can learn from the 1970-1985 period of high inflation in US/UK that sustained wage inflation is one of the main reasons why high inflation may persist for extended periods and much longer than expected.
- **The decline in average shipping costs has really accelerated in recent weeks as volumes decline with prices on some routes approaching 2018/19 levels**
  - Since the beginning of 2022, average shipping costs have trended lower, to now be down 75% since the start of the year to US$2,284. The order book for new TEU capacity is strong and likely to place further downward pricing pressure.
  - Shipping appears to be recovering generally from the ongoing disruptions as demand and volumes have declined significantly. Many factors have been affecting shipping performance in recent years: too many containers clogging up ports and distribution centres, shortage of empty containers in Asia, shortage of packaging materials, shortage of lorry/truck drivers and truck chassis in UK/US/EU, China zero-Covid safety protocols, and other related Covid-19 and ESG changes effectively reducing capacity across the world.
- **Currency and financial markets – USD performance has softened in recent weeks allowing the currencies for many trading partners e.g. GBP, Euro, Yen to recover from the recent multi-decade lows.**
  - While the trend this year remains up for the USD and the Ruble, Many currency pairs like GBPUSD and EURUSD have recovered to reach 3-month. The Ruble now trades higher against the USD due to requiring trading partners to pay in Rubles for energy and commodities instead of the USD.
  - Many central banks continue the recent progress of significant increases in interest/funding rates, with 0.5-0.75% increases more commonplace in recent months. Given the very fast and steep increase in rates it may be that central banks will soften further increases to 0.25-0.5% increases to allow for the impacts on the economy to be observed.

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Source: various sources, collated by The Hackett Group

What else? other recent significant economic and market developments (1)

1. **Russia / Ukraine War**
   a. **The Russia and Ukraine war continues to escalate** with heavy fighting, further troop mobilisation by both sides, and attacks on key civilian infrastructure. Western financial contributions now exceed $100billion and NATO troop deployments and readiness training in nearby countries continues to increase.
   b. **Russia continues to use energy and commodity supply as a geo-political tool** e.g. cutting off/reducing gas supply to Bulgaria, Denmark, Germany, Finland, France, Latvia, Netherlands, Poland, and Slovakia, etc. Nord Stream 1 and 2 pipelines which provide Russian gas to Europe have been intentionally disabled.
2. **European energy security, resilience and supply**
   a. **European gas storage is near 90% of capacity, above the 85% target.** In recent weeks spot gas prices have fallen significantly as purchased demand has fallen and the start of Winter has to date been warmer than usual. Companies have indicated they will refuse to pay the high prices and would rather see a significant recession.
   b. **European countries continue emergency plans** to transition away from Russian energy. **A mandatory minimum 15% reduction in gas usage has been announced.** Other mitigations include e.g., reactivating nuclear and coal power plants, reopening coal mines, identifying new gas supply sources, developing new gas pipeline connections, stockpiling energy resources, accelerating energy efficiency and renewable energy investment plans, implementing further rationing and emergency supply hours.
   c. **UK and European countries are increasingly setting the expectation for energy shortages and electricity blackouts** during January and February as demand is expected to exceed supply at peak periods this winter. Coal imports for energy generation have returned to multi-year highs in the expectation of gas shortages.
   d. EU officials agreed a price cap for Russian oil seaborne exports with the latest expectation being a ceiling of US$65 a barrel.
3. **Energy security, resilience and rationing**
   a. **The IEA regards the current energy crisis as being worse than the 1970s crisis** as it effectively involves simultaneous oil, gas, and electricity shortages.
   b. **Gas**: Over the Summer, European spot gas purchase prices reached record levels as Europe pushed hard to fill storage capacities in tight supply markets, and nuclear and other generation facilities remain offline (e.g. France, Germany). In recent weeks gas prices have fallen significantly. The impact of these energy shocks has been felt globally, with significantly higher prices forcing even countries in Asia to adopt resilience, energy efficiency and rationing actions. 2024 planned investment gas investment is forecast 50% higher than in 2022
   c. **Oil: OPEC+ recently announced to cut production by 2million barrels per day, this is the largest reduction in history** to shore up the oil price, another signal of lower demand. The US continues to release oil from its strategic reserves as part of a release programme to reduce oil prices. The US is reporting the strategic fuel reserve is at its lowest level since 1984 and a warning has been issued as to low diesel fuel stocks.
   d. **Coal:** coal consumption is up 14% in 2022 compared to previous years due to natural gas shortages. Germany has reactivated 21 coal plants.
   e. **Hydropower generation:** lower than normal rainfalls and drought conditions have lead to falling river levels due to and a significant reduction in hydropower generation across Europe and Asia

Source: collated by The Hackett Group

What else? other recent significant economic and market developments (2)

4. **Commodities**
   a. News about China zero covid lockdown policy and reopening or not are creating volatility in commodities. Covid infections are spiking, while isolated social unrest continues notably at the Apple Foxconn factory and in a few city locations.
   b. Goldman Sachs forecasts the commodity super cycle is close to being over, with EV/battery raw materials prices expected to fall to end of 2022 before resuming increases in later years.
   c. Indicative of slower future economic activity and demand, the prices of copper and lumber along with many other commodities have fallen significantly in recent weeks/months. Metals are also showing declines since the March-22 highs.
   d. Automotive companies continue to struggle with demand exceeding supply. Limitations include key components like semi-conductors.
5. **Worker and social unrest**
   a. Scarcity and food shortages leading to **civil unrest and riots** in a growing list of countries (e.g., Argentina, Bangladesh, China, Ecuador, Iran, Iraq, Lebanon, Madagascar, Nepal, South Africa, Sri Lanka, Pakistan, and Peru). The IMF regards 16 countries at more immediate risk of social unrest. The most serious situations are Ecuador and Sri Lanka where Governments have officially announced economic collapse.
   b. Countries like Argentina and Turkey are at risk of hyper inflation with CPI already at 80% in Turkey, and Argentina expects 100% by year-end.
   c. Increasing future inflation expectations is leading to increased private and public sector worker wage demands. The high price of fuel, energy, and food has already lead to protests in many countries, and in some African countries it is reported that protesters have been killed.
6. **Sustainability and ESG**
   a. Many countries including the G-7 group are considering to reprioritise national and energy security compared net zero commitments.
   b. Some leading investment banks like Blackrock, JP Morgan, Bank of America, and Morgan Stanley are pushing back on ESG focused investing.
7. **Fiscal tightening**:
   a. Countries outside of Asia and Switzerland continue to report very high consumer / producer price inflation. Some countries including USA and UK have reported a few months of negative GDP growth, and Europe economic performance continues to look weak. In many Western countries consumer confidence reports are reaching low levels last seen in 2020 at the pandemic lows and some PMI index's are reporting as being under 50, indicating a contraction in supply conditions.
   b. Volatility in financial markets is heightened as liquidity is withdrawn and as bank rates increase the potential for sovereign debt crisis increase as borrowing costs rise
   c. Central banks continue to tighten monetary policy with further significant hikes often between 0.5-1% in funding/cash/interest rates. Rates as at October e.g. Canada to 4.25%, US to 4.25-4.5%, Australia to 3.1%, South Korea to 3.25%, UK to 3.5%, Sweden to 2.5%, Eurozone to 1.5-2.25%, Swiss up to 0.5%, and counter trend: Russia continues down to 7.5%, China down to 3.65% and continues monetary policy stimulus to prop up its economy and especially the worlds largest property sector.

Source: collated by The Hackett Group

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2. Analysing and considering impacts

2. Analyse and consider impacts and future scenarios

3 STEPS TO MANAGE MARKET CONDITIONS

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Source: The Hackett Group

Tools: Various tools are available to evaluate data, determine impacts and prioritise on the areas that matter the most to manage spend and cost controlling

EXAMPLE

1. Prioritisation	▪ Objective: to manage the greatest aspects of the impact of inflation we should focus our time on the largest contracts and areas of spend, the long tail can be parked as time allows
2. Strategic options	▪ Objective: identify major trends presenting challenges and opportunities e.g., PESTEL framework analysis
3. Total Cost / Should Cost Whole Life Cost Modelling	▪ Objective: to model the relevant costs associated with supply decisions for materials or service. over the end-to-end lifecycle from acquisition, consumption, through to end of life or offboarding ▪ Cost structure or financial analysis aids to indicate of importance of driver impacts
4. Scenario Planning	▪ Objective: to manage uncertainly through identifying alternative scenarios and outcomes, impacts, tracking planning assumptions, and which scenario is most likely to occur
5. Porter's Five Forces Analysis	▪ Objective: a framework that to analyse the level of competition within an industry to support business strategy development ▪ This type of analysis tends to be high level and may not reflect important internal details
6. SWOT Analysis	▪ Objective: Qualitatively evaluate the supply market landscape by completing a SWOT (strengths, weaknesses, opportunities, and threats) analysis ▪ Use the results to create a list of suppliers that the team has selected for further assessment

Source: The Hackett Group

Tool: Prioritise and adopt an 90:10 pareto approach and focus on the 5-10% of suppliers and contracts with the largest amount of spend (consider to use this as an opportunity to further concentrate and reward preferred suppliers while supporting business resilience)

PERCENT OF SUPPLIERS THAT PROVIDE 80% OF ANNUAL SPEND

	Non-World Class	Digital World Class
Purchased Finished Goods	10.0%	3.6%
Raw Materials/Packaging	9.3%	9.3%
Direct Services	11.7%	3.7%
Capital Equipment/Facilities Operations	7.6%	4.4%
IT and Telecommunications	11.3%	5.5%
Sales and Marketing Support	12.3%	8.3%
General Equipment and Supplies	9.6%	3.6%
Travel and Entertainment	10.5%	5.9%
HR Services	8.8%	3.7%
Business and Administrative Services	7.6%	3.9%

Source: The Hackett Group, 2021 Procurement Benchmark

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Tool: the PESTEL framework can provide a useful structured analysis of geo-political, economic, social, technology related, and other relevant issues

EXAMPLE

POLITICAL

- Breakdown of **globalisation** trend, supply chain regionalisation for resilience
- Government's protecting **critical supply chains** and industries e.g. chips
- **Russia / Ukraine war and sanctions**
- **China-Taiwan –** tensions continuing
- **US-China** – ongoing trade war & tariffs e.g. chips
- **US-Europe** –new carbon focused trade agreement
- **China-Australia –** China relaxed restrictions to buy Australian coal
- **UK-Europe – Brexit**

ECONOMIC

- **Significant economic and supply chain headwinds** reduce 2022 GDP growth (scarcity, shortages, **energy security**, record inflation)
- Recession may happen from H2 2022 onwards (US already negative GDP growth)
- 75% of US companies mentioning supply chain and inflation in Q3 **earnings reports**
- 65% of US companies **met or exceeded Q3 2022 financial guidance**
- **Excess economic stimulus** resulting in longer more sustained inflation and interest rate rises to attempt to manage
- **Widespread inflation and wage increases**

SOCIAL

- **Covid challenges** – hangover from lockdowns, supply chain disruption, labour force, service disruptions
- Workforce – **significant labour** and talent shortages
- **Preference for hybrid** / remote working
- The **great resignation** ~50% of workers want to transition to new roles, jobs or sectors. Re-evaluation of life goals, % of people leaving workforce – retiring, wealth
- Broadening **left and right culture** and political divides
- **Diversity**, **equity and inclusion;** social justice

TECHNOLOGICAL

- **Technology and break through innovation** offers significant opportunity to overcome modern challenges e.g. growth, productivity and innovation
- **Artificial intelligence**
- **Advanced analytics** – real-time insights, predictive, and big data
- **Blockchain** – digital currencies, decentralisation
- **DNA sequencing** – genomics, vaccines
- **Energy storage**
- **Robotics** – hardware and software

ENVIRONMENTAL

- Growing importance of **sustainability** in business and society – real positive impacts rather than simple greenwashing
- Sustainability defined widely as ESG or SRI
- **COP26 commitment** to global minimum tax rate, reduce CO2, funding for developing countries to transition to renewables
- **Renewable energy generation**
- **Scope 3 emissions** reporting and carbon pricing
- **SRI investing reduces funding** and investment for "dirty" industries
- New **sustainability accounting standard IFRS,** emissions reported using GHG Corporate Protocol

LEGAL

- **Health / employment restrictions** – vaccine mandates, personal freedoms vs state control, lawsuits and redress for injuries
- GDPR, **data and cyber** protection increasingly important
- UK/EU – **higher minimum wages**
- EU/Germany/US - **new supply chain due diligence laws** relating to worker conditions and to keep products free from forced labour
- UK – Brexit transition, **IR35, audit reforms**
- Nordics – **immigration / migration restrictions**

Source: collated by The Hackett Group

Deep-dive CPI inflation: outside of Asia, consumer price inflation remains at record levels not seen since the 1970-1985 period – November shows falls for many

EXAMPLE

MONTHLY CPI INFLATION RATES BY COUNTRY

COUNTRY	YEAR TO FEB'22	YEAR TO MAR'22	YEAR TO APR'22	YEAR TO MAY'22	YEAR TO JUN'22	YEAR TO JUL'22	YEAR TO AUG'22	YEAR TO SEP'22	YEAR TO OCT'22	YEAR TO NOV'22	SHORT-TERM TREND	2022 FORECAST (version date)	2023 FORECAST (version date)
US	7.9%	8.5%	8.3%	8.6%	9.1%	8.5%	8.3%	8.2%	7.7%	**7.1%**	↓	5.4% (Sep)	2.8% (Sep)
UK	6.2%	7%	9%	9.1%	9.4%	10.1%	9.9%	10.1%	11.1%	**10.7%**	↓	11% (Sep)	9.5% (Aug)
GERMANY	5.1%	7.3%	7.4%	7.9%	7.6%	7.5%	7.9%	10%	10.4%	**10%**	↓	7.9% (Jul)	4.8% (Jul)
CHINA	0.9%	1.6%	2.1%	2.1%	2.5%	2.7%	2.5%	2.8%	2.1%	**1.6%**	↓	3.6%	1.1%
EUROZONE	5.9%	7.8%	8.1%	8.1%	8.6%	8.9%	9.1%	10%	10.7%	**10%**	↓	7.6% (Jul)	4.0% (Jul)
DENMARK	4.8%	5.4%	6.7%	7.4%	8.2%	8.7%	8.9%	10%	10.1%	**8.9%**	↓	7.5% (Jul)	3.4% (Jul)
SWEDEN	4.5%	6.1%	6.4%	7.3%	8.7%	8.5%	9.8%	10.8%	10.9%	**11.5%**	↑	6.6% (Jul)	3.6% (Jul)
FINLAND	4.5%	5.8%	5.7%	7.0%	7.8%	7.8%	7.6%	8.1%	8.3%	**9.1%**	↑	6.4% (Jul)	2.8% (Jul)
NETHERLANDS	6.2%	9.7%	9.6%	8.8%	8.6%	10.3%	12%	14.5%	14.3%	**9.9%**	↓↓	9.4% (Jul)	3.3% (Jul)
ITALY	5.7%	6.5%	6.3%	6.9%	8%	7.9%	8.4%	8.9%	11.8%	**11.8%**	←	7.4% (Jul)	3.4% (Jul)
INDIA	6.1%	7%	7.8%	7%	7%	6.7%	7%	7.4%	6.7%	**5.9%**	↓	6.7% (Jun)	4.5%
AUSTRALIA	Q	5.1%	Q	Q	6.1%	Q	Q	7.3%	Q	**Q**	↑	7.8% (Aug)	4% (Aug)

Source: * = expectation; various sources, annual forecasts from Central Banks continue to be revised up, date shows latest forecast, collated by The Hackett Group

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Deep-dive wage inflation: wage inflation is elevated for many Western countries compared to 2019 levels; some recent softening noted especially in US rates

EXAMPLE

QUARTERLY WAGE INFLATION RATES BY COUNTRY (LAST 12 MONTHS)

COUNTRY	JUN 21	SEP 21	DEC 21	MAR 22	JUN 22	SEP 22	LATEST	AVG. LAST 4 QTRS	SHORT TERM TREND	NOTES
US	12%	11%	9%	11.3%	9.0%	8.2%	**6.7%**	8.0%	↓	US Bureau of Economic Analysis
UK	8.8%	5.9%	4.6%	7.0%	5.2%	6.0%	**6.1%**	5.9%	←	Office of National Statistics
GERMANY	(2%)	3%	(1.4%)	(1.8%)	(4.4%)	TBA	**(4.4%)**	(1.2%)	↓	Federal Statistical Office, not regularly published
CHINA										Not published
EUROZONE	(0.5%)	2.2%	2.2%	3.7%	4.1%	TBA	**4.1%**	3.1%	↑	Eurostat
DENMARK										Not published
SWEDEN	2.9%	2.3%	1.9%	2.2%	2.9%	2.6%	**2.6%**	2.8%	↑	Swedish National Mediation Office
FINLAND	8.2%	5.9%	5.2%	6.6%	6.1%	TBA	**6.1%**	6.0%	←	Statistics Finland
NETHERLANDS	2.2%	2.3%	2.4%	2.7%	3.3%	3.6%	**3.6%**	3.5%	←	Statistics Netherlands
ITALY	0.6%	0.7%	0.7%	0.7%	1.0%	1.1%	**1.3%**	1.2%	←	National Institute of Statistics
INDIA										High inflation of 6% p.a. drives people to regularly change roles for 10-15% pay rises; societal expectations
AUSTRALIA	1.7%	2.2%	2.3%	2.4%	2.6%	3.1%	3.1%	2.6%	↑	Australian Bureau of Statistics

Source: various Government statistics agency sources, not all countries regularly publish this statistic, collated by The Hackett Group

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Deep-dive EU inflation: industrial producer prices (PPI) increased by 31% in the 12 months to October, reflecting a notable reversal from September due to energy

EXAMPLE

INDUSTRIAL PRODUCER PRICES COMPARED TO SAME MONTH LAST YEAR

	May 22	Jun 22	Jul 22	Aug 22	Sep 22	Oct 22
Euro area						
Total industry	36.2	36.1	38.1	43.4	41.9	**30.8**
Total industry excluding energy	16.0	15.7	15.1	14.6	14.5	**14.0**
Intermediate goods	25.1	24.0	21.5	20.0	18.9	**17.4**
Energy	93.9	93.4	98.0	117.3	108.0	**65.8**
Capital goods	7.5	7.6	7.9	7.8	7.6	**7.5**
Durable consumer goods	9.1	9.6	9.8	9.9	9.8	**9.8**
Non-durable consumer goods	12.1	12.6	13.8	14.5	15.2	**16.0**
EU						
Total industry	36.3	36.3	38.1	43.2	41.4	**31.2**
Total industry excluding energy	16.7	16.2	15.7	15.2	15.0	**14.5**
Intermediate goods	25.4	24.3	21.7	20.1	19.0	**17.6**
Energy	92.5	92.6	96.9	115.8	105.2	**67.0**
Capital goods	7.9	7.9	8.1	8.1	7.9	**7.7**
Durable consumer goods	9.6	10.1	10.3	10.3	10.1	**10.1**
Non-durable consumer goods	13.1	13.5	14.8	15.6	16.4	**17.1**

Source dataset: sts_inppd_m

Country	Jul-22	Sep-22	Nov-22
Denmark	55.1 DW	46 DW	36 DW
Germany	38.1 UP	46.9 =	36 DW
France	27.2 =	28.5 DW	25 DW
Ireland	47.5 UP	30 DW	-17 DW
Italy	45.9 UP	53 UP	34 DW
Netherland	39.3 UP	37 DW	24 DW
Finland	26.9 DW	25 DW	21 DW
Sweden	19.9 DW	20 DW	18 DW
Norway	28.3 DW	27.5 DW	26 DW

- **Month growth**: In October 2022, industrial producer prices fell by 2.9% in the euro area and by 2.5% in the EU, compared with September 2022
- **12-months growth**: In October 2022, industrial producer prices increased by 30.8% in the euro area and by 31.2% in the EU, compared with October 2021

Source: Eurostat, published Dec-2022, collated by The Hackett Group

Deep-dive UK inflation: PPI prices have risen by 6.6% for services and 15-19% for goods year-on-year

UK PPI INFLATION RATES BY GOODS OR SERVICES

EXAMPLE

UK Output price growth rates

As at Oct 2022 (Monthly)

PRODUCT GROUP	Percentage Change: 1-MONTH RATE	Percentage Change: 12-MONTH RATE
Food products	1.0	16.1
Tobacco and alcohol (excl. duty)	0.2	7.1
Clothing, textile and leather	0.2	7.5
Paper and printing	1.0	20.8
Petroleum products (excl. duty)	-6.1	40.6
Chemical and pharmaceutical	0.2	20.1
Metal, machinery and equipment	0.0	15.5
Computer, electrical and optical	0.4	7.6
Transport equipment	0.9	7.5
Other manufactured products	0.7	12.3
ALL MANUFACTURING (OUTPUTS)	**0.3**	**14.8**

Source: Office for National Statistics - Producer Price Index

UK Input price growth rates

As at Oct 2022 (Monthly)

PRODUCT GROUP	Percentage change: 1-MONTH RATE	Percentage change: 12-MONTH RATE
Beverages and tobacco	0.7	9.8
Fuel excluding Climate Change Levy	3.1	57.8
Crude oil	2.5	43.8
Home food materials	1.7	18.7
Imported food materials	1.7	31
Other produced materials	-0.1	20.6
Metals & non-metallic minerals	-0.5	16.9
Chemicals	0.1	18.7
Other parts and equipment	0.5	8.7
Other inputs	0.7	8.6
ALL MANUFACTURING (INPUTS)	**0.6**	**19.2**

Source: Office for National Statistics - Producer Price Index

UK Services Producer Price growth rates

As At Quarter 3 (July to September) 2022

SERVICE GROUP	Percentage change: 1-QUARTER	Percentage change: 12-MONTHS
Repair & maintenance of motor vehicles	2.0	5.6
Transportation and storage	3.3	13.8
Accommodation and food	0.0	5.9
Information and communication	2.4	4.4
Real estate activities	0.2	2.7
Professional, scientific and technical activities	3.2	6.1
Administrative and support services	1.2	3.9
Education	0.6	2.4
Other services	4.3	11.2
SERVICES PRODUCER PRICE INDEX	**2.2**	**6.6**

Source: Office for National Statistics – Services producer price index

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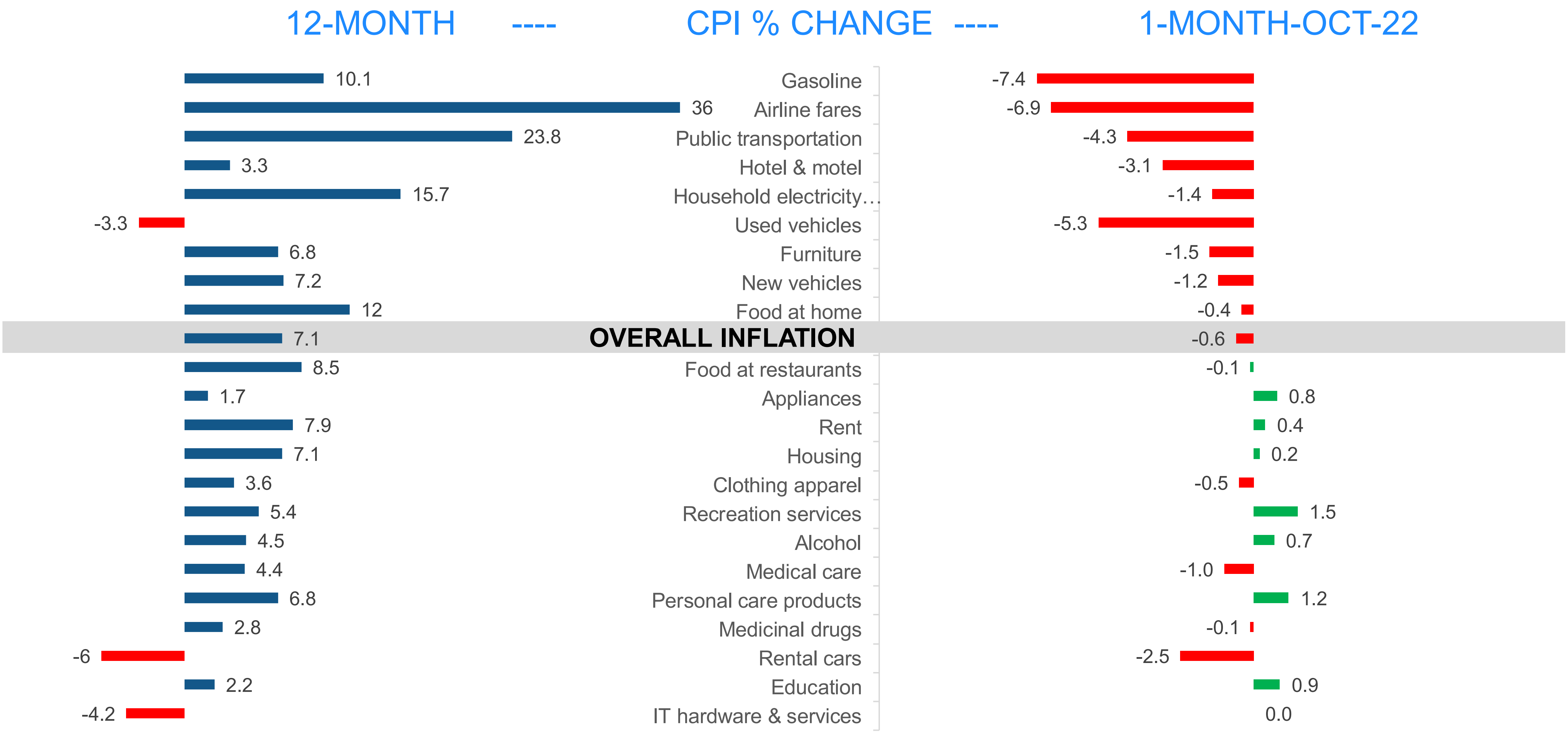
Source: ONS UK, collated by The Hackett Group

Deep dive US inflation – at Nov-22, consumer prices are up 7.1% over the last 12 months, with now many categories showing month-on-month price declines



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Source: Bureau of Labor Statistics, USA

Deep dive commodity and resource trends: markets show significant price volatility with recent the trend of price increases reversing and continued supply shortages

SELECTED COMMODITY PRICE TRENDS

EXAMPLE

COMMODITY	SPOT PRICE DEC-21	SPOT PRICE AUG-22	SPOT PRICE SEP-22	SPOT PRICE OCT-22	SPOT PRICE NOV-22	SHORT-TERM TREND	2022 CHANGE YTD	RECENT LOW / HIGH	LONGER TERM PRICE FORECAST CONSENSUS	PRICE TREND COMMENT
Oil (WTI) (Barrel)	91	89	80	85	80	↓	Down 12%	Low $-38 (Apr-20) High $129 (Mar-22)	US$110 (2022), 100 (2023)	Sanctions, OPEC supply caps, demand slowing?
Labour cost index (UK)	4.6%	6.1%	6.0%	6.1%	TBA	←	Up 33%	Low 4.2% Nov-21 High 6.4% May-22	3% (2023), 4% (2024)	Up with inflation and tight labour market
Iron (62%FE China) US$MT	104	97	95	77	102	↑	Down 2%	Low $77 (Oct-22) High $220 (Jul-21)	US$123 (2022), 95 (2023), 83 (2024)	China reopening offsetting lower supply / energy costs
Steel (HRC NW Europe) US$MT	1,052	801	660	650	660	←	Down 37%	Low $400 Apr-20 High $1430 Mar-22	US$980 (2022) 850 (2023), 700 (2024)	Lower order demand offsetting lower supply / energy costs
Aluminium (LME) US$MT	2,621	2,371	2,149	2,211	2,485	↑	Down 5%	Low $1500 Apr-20 High $3849 Mar-22	US$3276 (2022), 3020 (2023) 2865 (2024)	China reopening offsetting lower supply / energy costs
Copper (LME) US$MT	9,512	7,720	7,700	8,300	8,197	↓	Down 14%	Low $4900 Mar-20 High $10.7k Mar-22	US$9900 (2022), 9426 (2023), 8803 (2025)	Lower order demand offsetting green initiative demand
Lumber US$TBF	937	485	424	450	405	↓	Down 57%	Low $403 Sep-22 High $1711 May-21	US$1200 (2022), 850 (2023), 500 (2024)	Rising interest rates reduce housing demand vs supply
Plastic (Plastixx ST, West Europe US$	3,366	3250	3,065	3,000	2980	←	Down 11%	Low $2000 Aug-20 High $3910 Apr-22	Reflect oil trend	Higher oil and production disruptions
Polysilicon US$KG	43	38	37	37	37.3	←	Down 13%	Low $11 Jan-21 High: $43 Dec-21	Decline into 2022	Green initiatives increase demand > supply
Semi-conductors						↑		n/a	Shortages forecast to continue into 2024/25	Sanctions & geopolitics increase disruption
Freight (Drewry WCI) US$	9,050	5,662	4,014	3,050	2,284	↓↓	Down 75%	Low $1900 Jun-20 High $10k Sep-21	Container ship capacity order book up 30%	Order demand and volume declining

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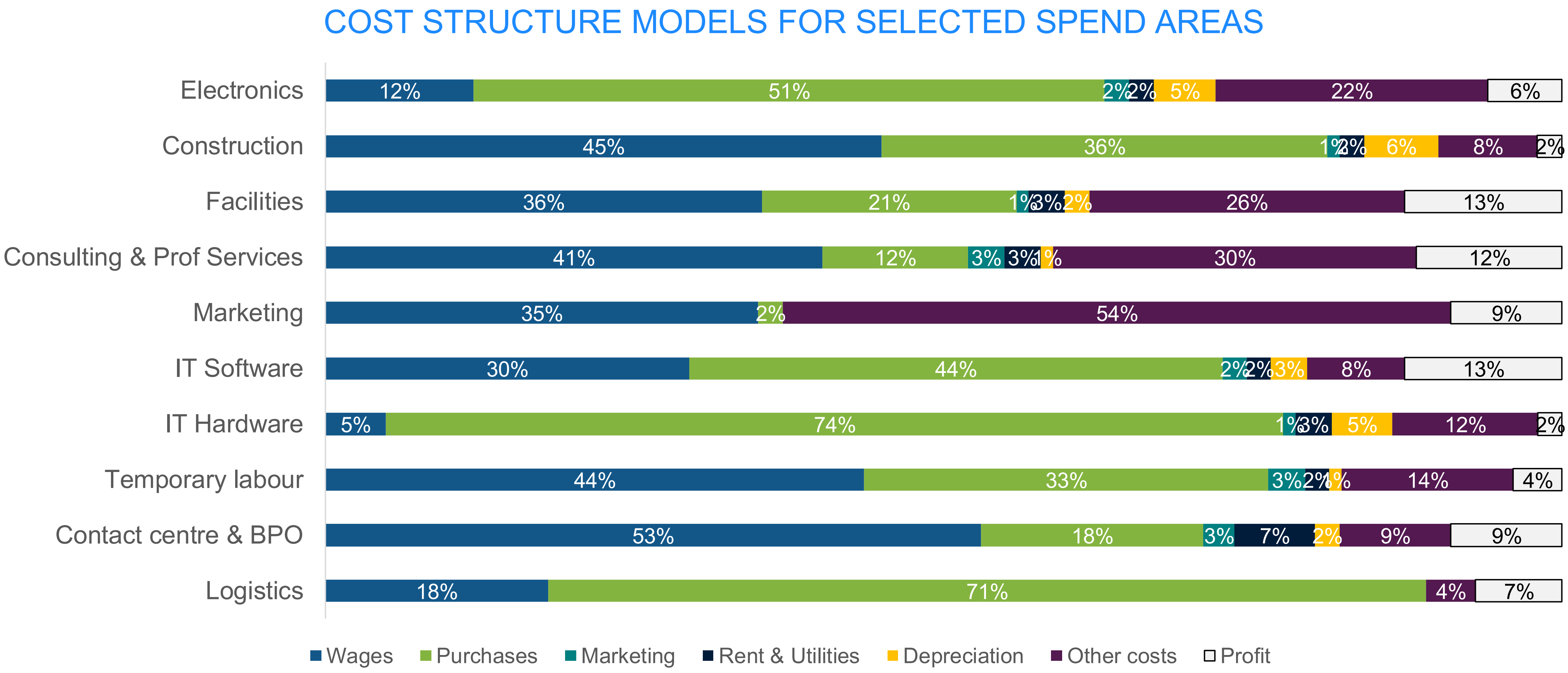
Source: various sources, collated by The Hackett Group

Tool: Cost structure models can be used to determine the impact and of inflation increases on supplier costs and therefore how justified price increases may be

EXAMPLE



Source: IBIS World, collated by The Hackett Group

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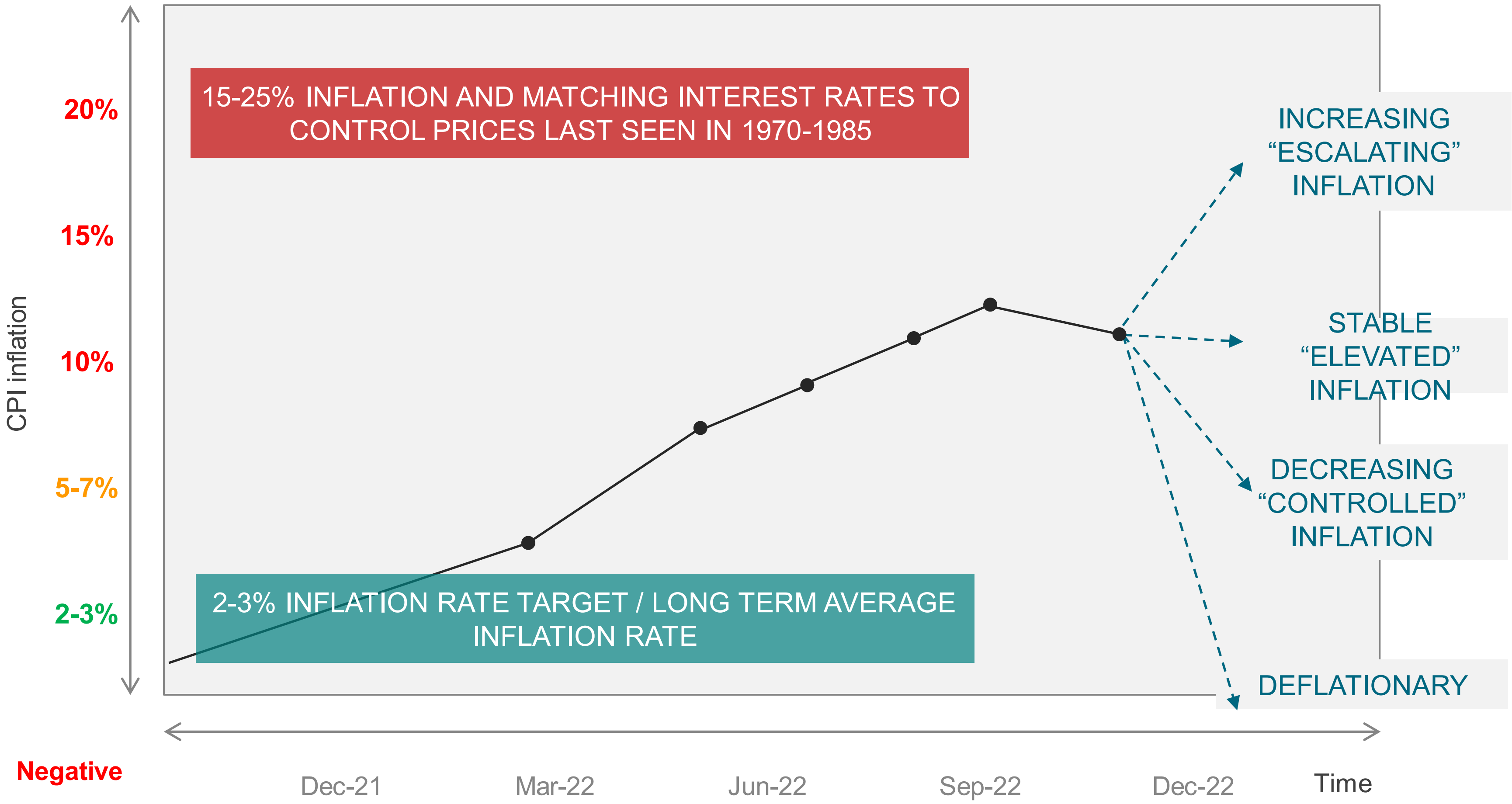
Tool: Managing uncertainty through scenario planning e.g., (1) prices continue to increase, (2) demand is lower and buyers regain negotiating power

POTENTIAL FUTURE INFLATION SCENARIOS



SCENARIO CHARACTERISTICS

EXAMPLE

Increasing "escalating" inflation

- Sustained inflation at 1970-85 levels
- Market imbalances remain e.g., labour
- Continued fiscal stimulus, low interest / funding rates
- Higher demand remains / higher asset prices
- Continued supply chain headwinds or restrictions e.g., sanctions, war, lockdowns

Stable "elevated" inflation

- No action, least likely
- Governments always overcompensate
- History shows recession follows (90% prob.)

Decreasing "controlled" inflation

- Long-term mean reversion
- Fiscal/monetary stimulus stopped
- Increased interest / funding rates
- Demand destruction and lower asset prices
- Supply chain headwinds resolved & new capacity

Deflationary

- Worst case scenario is falling prices, not only slower price increases
- Significant demand destruction and collapse

Source: updated Oct-22, The Hackett Group

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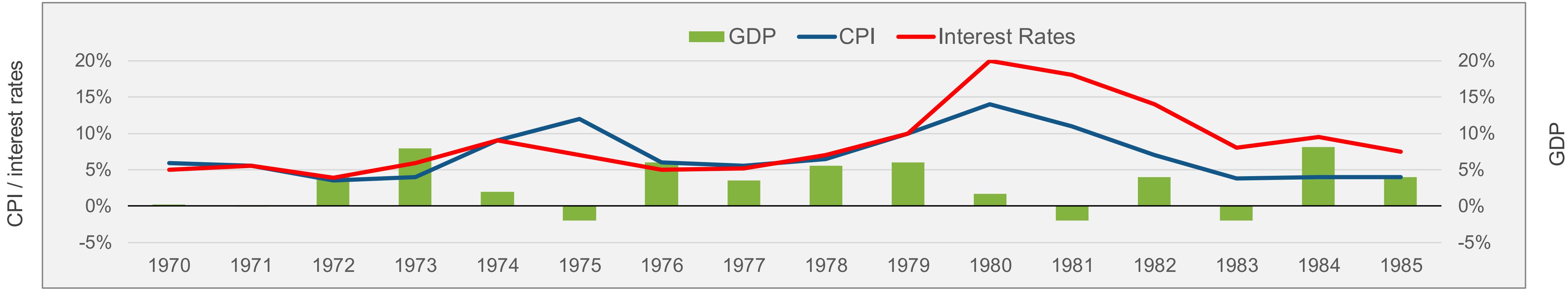
Tool: Utilising the economic history learnings of 1970-1985 and compare to the current day to understand what could potentially happen in the years to 2030

EXAMPLE

US ECONOMIC HIGHLIGHTS 1970-1985



1970-1985 CHARACTERISTICS

- Commodity bubbles (1972-1975, 1978-79)
- Energy crisis (oil)
- War (Korea, Vietnam, Iran/Iraq, Afghanistan)
- Inflation embedded, sticky and in waves
- Tight monetary policy and raised interest rates
- Recession (1973-1975, 1980, 1981-82, 1987)

2020-2022 CHARACTERISTICS

- Pandemic
- Sustained supply disruptions
- Labour shortages
- Fiscal stimulus and money supply expansion (QE)
- Commodity bubble (2021-22) and asset bubble (2020-21)
- Energy crisis (oil, nat. gas, electricity)
- War (Ukraine/Russia)
- Inflation embedded and sticky
- Tight monetary policy and raised interest rates
- Recession (2020, 2022-?)

Source: US Federal Reserve, The Hackett Group

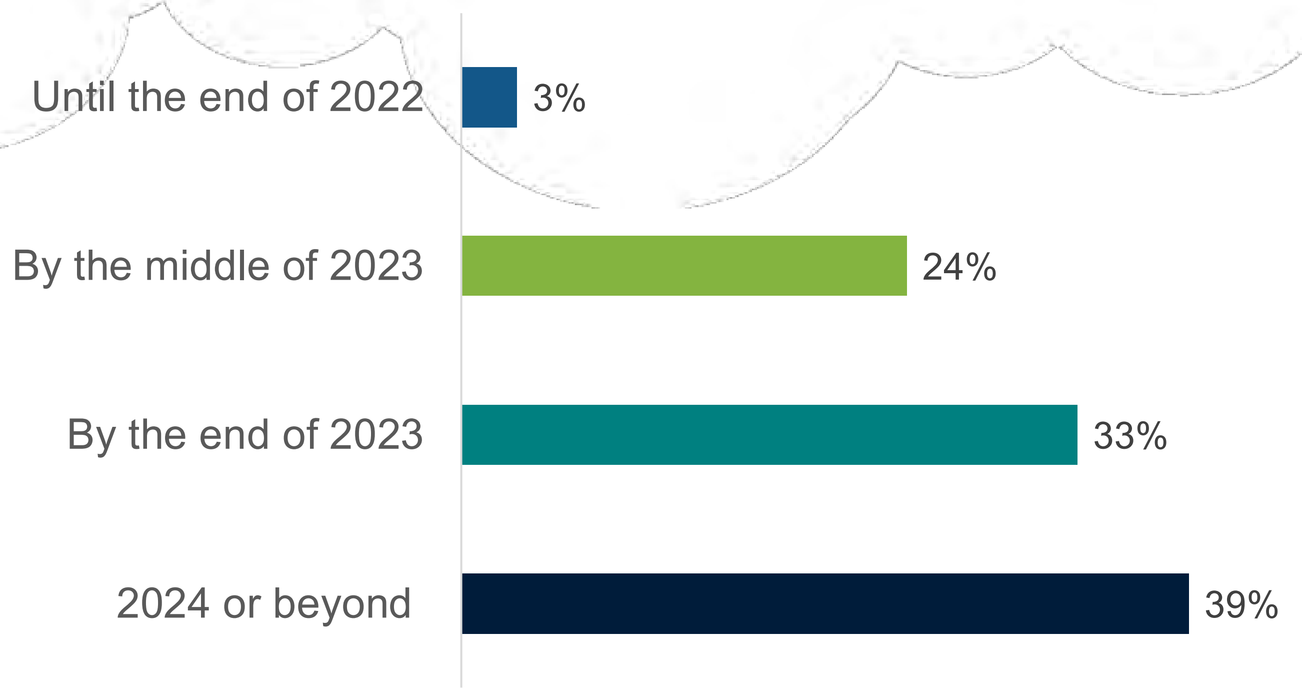
Poll - from your perspective, when do you expect the current increased inflationary (CPI) environment to start to decline?

Please select the most appropriate response (single choice)

1. By the end of 2022
2. By the middle of 2023
3. By the end of 2023
4. During 2024 or beyond

External consensus: expectations relating to the duration of the heightened inflationary environment continue to extend later into the future

EXPECTATIONS ON WHEN THE CURRENT INCREASED INFLATIONARY (CPI) ENVIRONMENT WILL START TO DECLINE



Q from your perspective, when do you expect the current increased inflationary (CPI) environment to start to decline? (single choice)

Source: client webcast polling August-November 2022, The Hackett Group

Longer term outlook – what could happen if inflation and supply chain headwinds continue for a longer sustained period resulting in lower GDP growth?

Supply side: optimised supply chains with limited spare capacity, reduced capital investment in recent years, addressing supply headwinds may be a multi-year or longer programme e.g. chips, ports, energy, commodity extraction, etc.

Demand side: ongoing stimulus and over ordering, buying preferences changed to favour goods over services, continued economic development, innovation, population growth. GDP per capita in US/UK is 10X that of India/China.

ESG and sustainability: encouraging practices to provide positive social good. Could this be driving unforeseen outcomes driving imbalances in supply markets – shifting from fossil to renewables, increasing demand for certain commodities, SRI investing and financing favours more sustainable infrastructure investments, companies, and stock investments.

Stagflation: sustained combination of challenging economic conditions – rising inflation (prices and wages), low GDP growth, low productivity, rising unemployment. In 2022 this scenario is increasingly talked about as a more likely economic outcome.

Structural cost disadvantage: economies able to access cheap energy for production enjoy a structural advantage over others who are sanctioning Russian supply. This implies offshore goods and services will always be cheaper than onshore delivery in Western countries. Analysts forecast energy prices to remain significantly higher than long term averages to 2030, in part due to higher renewables energy production costs. Recent Russian oil and energy price caps are an attempt to mitigate this risk.

Source: The Hackett Group

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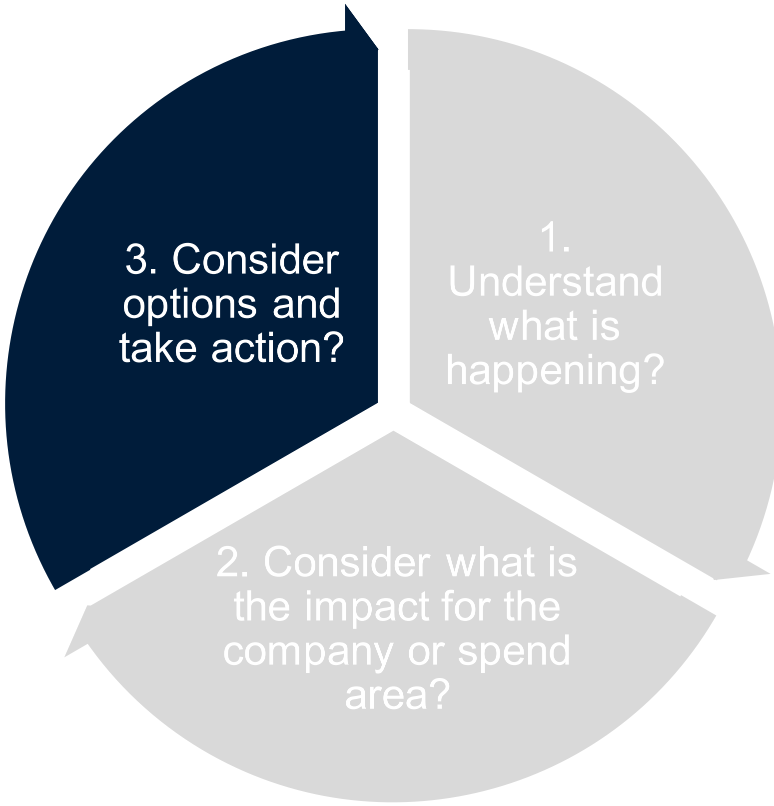
3. Identifying preferred actions

Managing for market and business conditions of sustained scarcity and inflation

3 STEPS TO MANAGE MARKET CONDITIONS

3. ACTION: Identify preferred actions

- **Contracts** – avoid tender, rollover existing contracts and pricing, is the proposed increase reasonable?
- **Negotiate** – challenge increase and what can I get in return? e.g. promotions, preferred terms, investment, allocated capacity, short vs long trade-offs, CPI clauses, specification or service levels
- **Develop** - invest in monitoring capabilities e.g. SRM, monitoring dashboard, market intelligence, diversify supply base, etc



1. ACTION: Collect insights

- **Scarcity** e.g. semi-conductors, commodities, logistics, labour
- **Inflation** e.g. goods and services, rising future expectations
- **Geo-political, economic and social** e.g. Ukraine, Taiwan, tariffs, sustainability, labour and modern slavery regulation, the great resignation

2. ACTION: Analyse and consider impacts

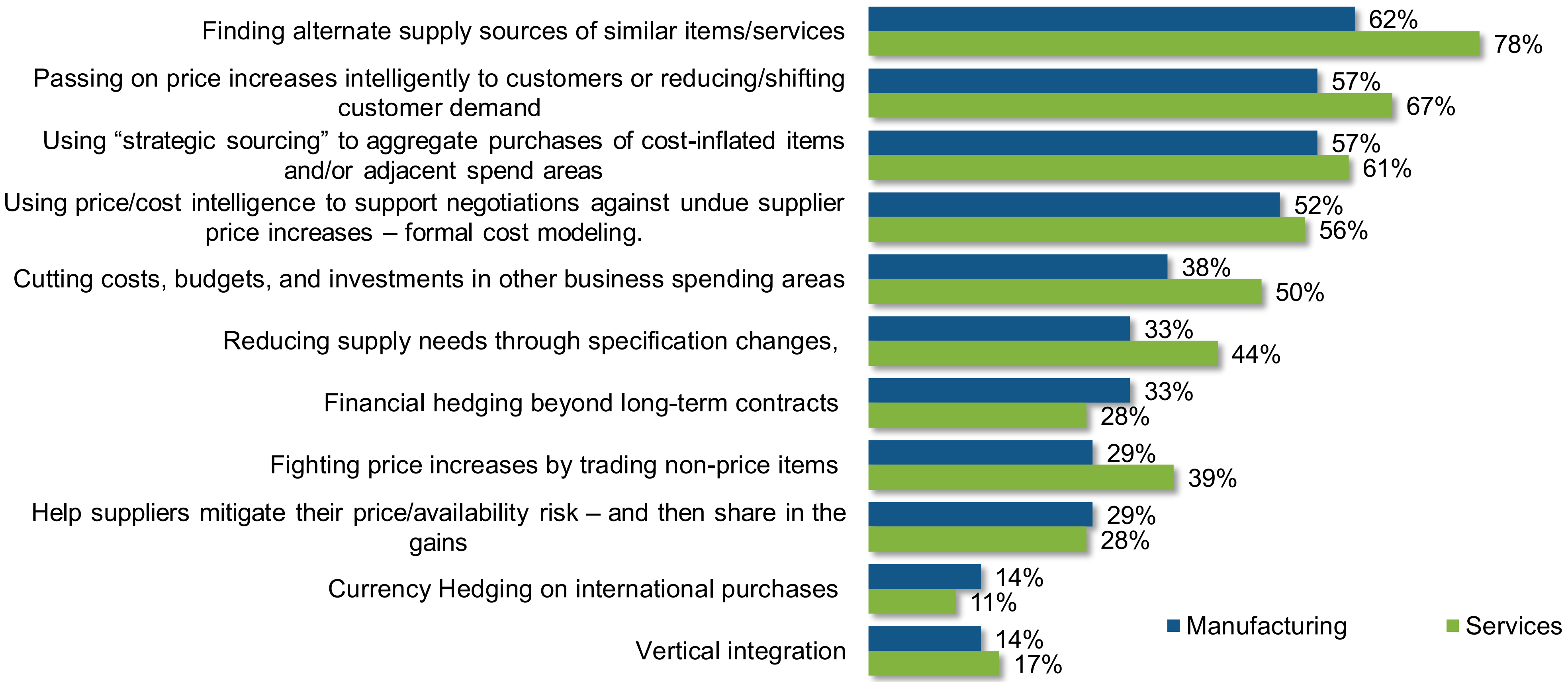
- Areas of greatest impact e.g. materials, commodities, transportation, labour, future trends
- Plan scenarios (1) inflation increases (2) inflation stable (3) inflation inflects down

The Hackett Group

Source: The Hackett Group

External perspective - practices used to mitigate price inflation

PRACTICES USED TO MITIGATE PRICE INFLATION



Q What specific practices have you used to mitigate price inflation?

Source: 2022 inflation performance study, The Hackett Group

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Additional scarcity and inflation responses

EXAMPLE

Spend now, buy ahead	Hold more safety & buffer stocks	Adopt alternative solutions: technology, requirements, suppliers	Avoid tendering in seller markets	Roll over existing contracts
Cost models / 3rd party cost benchmarks and cost indexes	Supplier workshop for additional value	Evaluate deal terms – shorter?	Outsource services to lower cost locations	Benefit from volume / allocation / spend commitments
Monitoring and intelligence capability	Risk scenario planning & mitigation	Accurately forecast costs and demand with integrated business planning	Adopt “safe” or reserve currencies, hedging	Re-engineer for less waste, agile working
SRM and get deeper with suppliers	Payment terms, buy now, pay later	Increase debt financing where interest rates are lower than inflation	Cut budgets in other areas	Align with Sales and Marketing and pass along price increases

Source: collated by The Hackett Group

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Poll – from your perspective, which commercial approach do you prefer to take given known market conditions?

Please select the three answers to this multiple choice question (select one option for each of the three question types i.e. price/cost, price adjustment, contract duration)

1. Price/cost - fixed
2. Price/cost - floating i.e. changes over term
3. Price adjustment - using CPI or PPI type index
4. Price adjustment - using specific index e.g. metals, plastics
5. Price adjustment - using other mechanism
6. Contract duration - shorter
7. Contract duration - longer
8. Contract duration - no change

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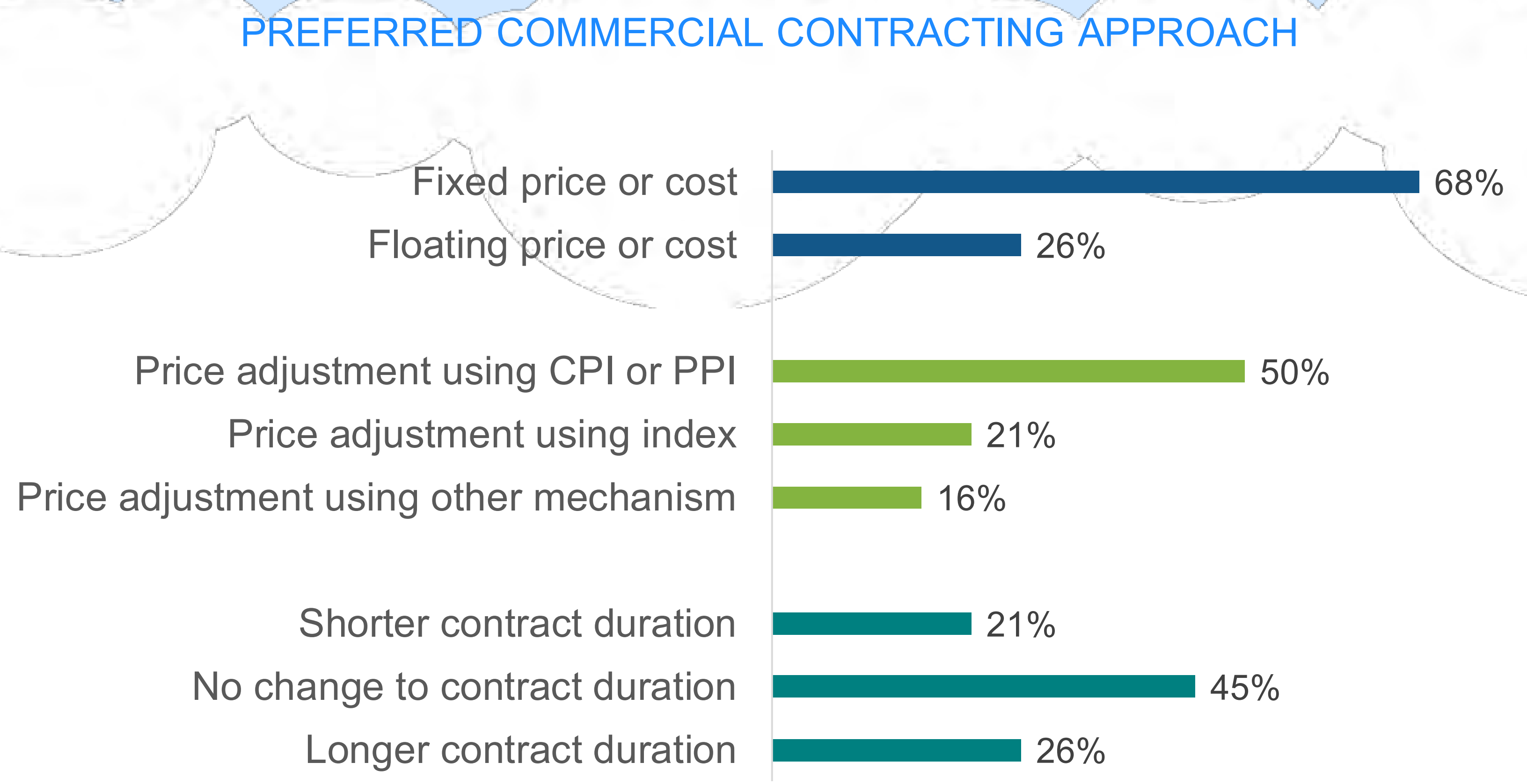
External perspective - which commercial approach do you prefer to take given known market conditions?



Q from your perspective, which commercial approach do you prefer to take given known market conditions? Please select the three answers to this multiple-choice question (select one option for each of the three question types i.e. price/cost, price adjustment, contract duration)

Source: Hackett webcast polling, The Hackett Group

Contract terms - indexing for price or cost changes and preferred currency to maintain or enhance margins in times of enhanced volatility

INDEXATION CLAUSES

- **Fixed price contracts:** Many buyers with fixed price contracts are being asked to revisit the situation as the cost position has moved so significantly for suppliers and the expectation is for this to continue. Obviously you have a choice whether to be aggressive and hold the supplier to the deal, or to renegotiate and trade the relationship. The situation of suppliers going bust doesn't help anyone.
- **Flexible price or agile contracts:** the price revision formula must reflect the cost breakdown of the service/product and this should be a large part of the upfront preparation. In terms of contract agility, it is best (or even essential) if terms work well when cost conditions increase as well as when they decrease, so make sure to do this test in terms of contract term suitability. Imagine the future situation where instead of inflation, we now have lower demand and future cost decreases. This is already the case with many commodities, metals, and freight costs.
- In terms of an index, the best practice is to use one that best fits with the cost of the goods or service being delivered. For some, a general index is appropriate which could be either CPI (consumer basket of goods and services) or PPI (producer basket of goods and services). As an alternative, companies may choose to prefer an index that matches specific market movements and more tightly the specific cost changes of what it being bought,
    - whether it is metals (LME prices), plastics (Plastixx), etc.
    - there may also be specific industry indexes that get used as part of common contracting practice.

– Advanced practices include
  - using **escalator/de-escalator contract pricing mechanisms** may be an option that works well since it would cover parameters like frequency of price reviews and changes (monthly, quarterly, etc), criteria for changes (e.g. index price must increase by 5% or greater in order for supplier to raise price - with the converse being true with price decreases); and finally, some companies will put a cap on how much pricing can fluctuate over the contract term (e.g. +/- 10% of base).
  - exploring the option of a **cost plus pricing scheme** in which the only constant is the supplier's mark up - is a great option for the supplier but represents an investment in time (tracking, audits, etc) and an exposure to volatile pricing for the buyer. However, it is a way to keep supplier's pricing honest and to ride the wave (up and down) of indexed-based commodity costs.
  - negotiating discounts on the basis of discount from the index.

PREFERRED CURRENCY CLAUSES

- In terms of currencies, the best practice is again to match to the cost base, so that you do not have a situation where your costs increase while revenue stays the same. As a high level future currency forecast, the USD is considered the safe haven currency and its strength along with the Russian Ruble can be expected to continue, and all other currency pairs to decline until rates and bonds peak likely in 6-18 months. Then the trade will reverse, USD will decline and national currencies will strengthen as bank rates then decline.
- We can see in recent months the US Federal Reserve has aggressively tightened monetary conditions and funding rates, and this can be expected to continue. One observation is that the Fed are succeeding to tighten and raise rates where other countries appear unable to push as strongly e.g. UK, EU, Australia, etc which further supports the USD currency.

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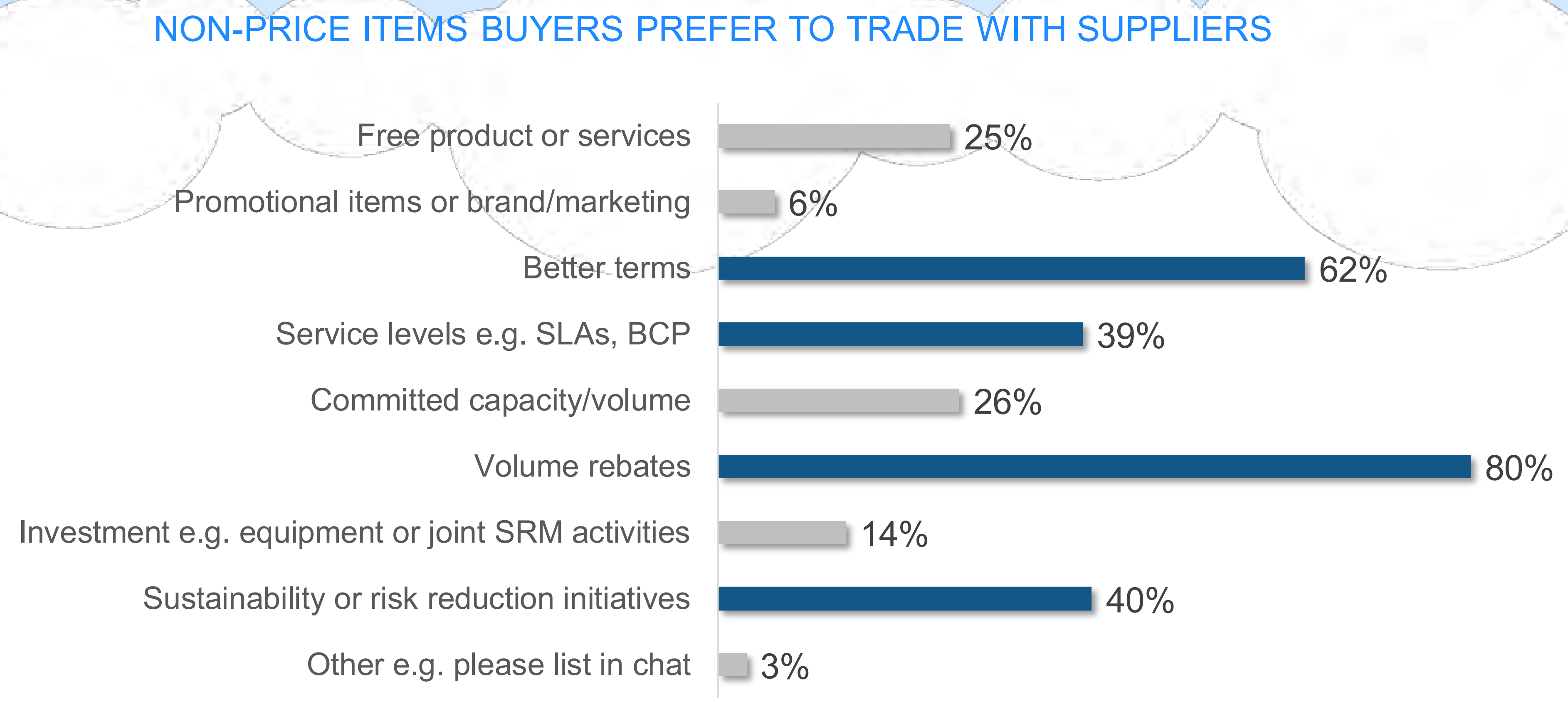
Source: The Hackett Group

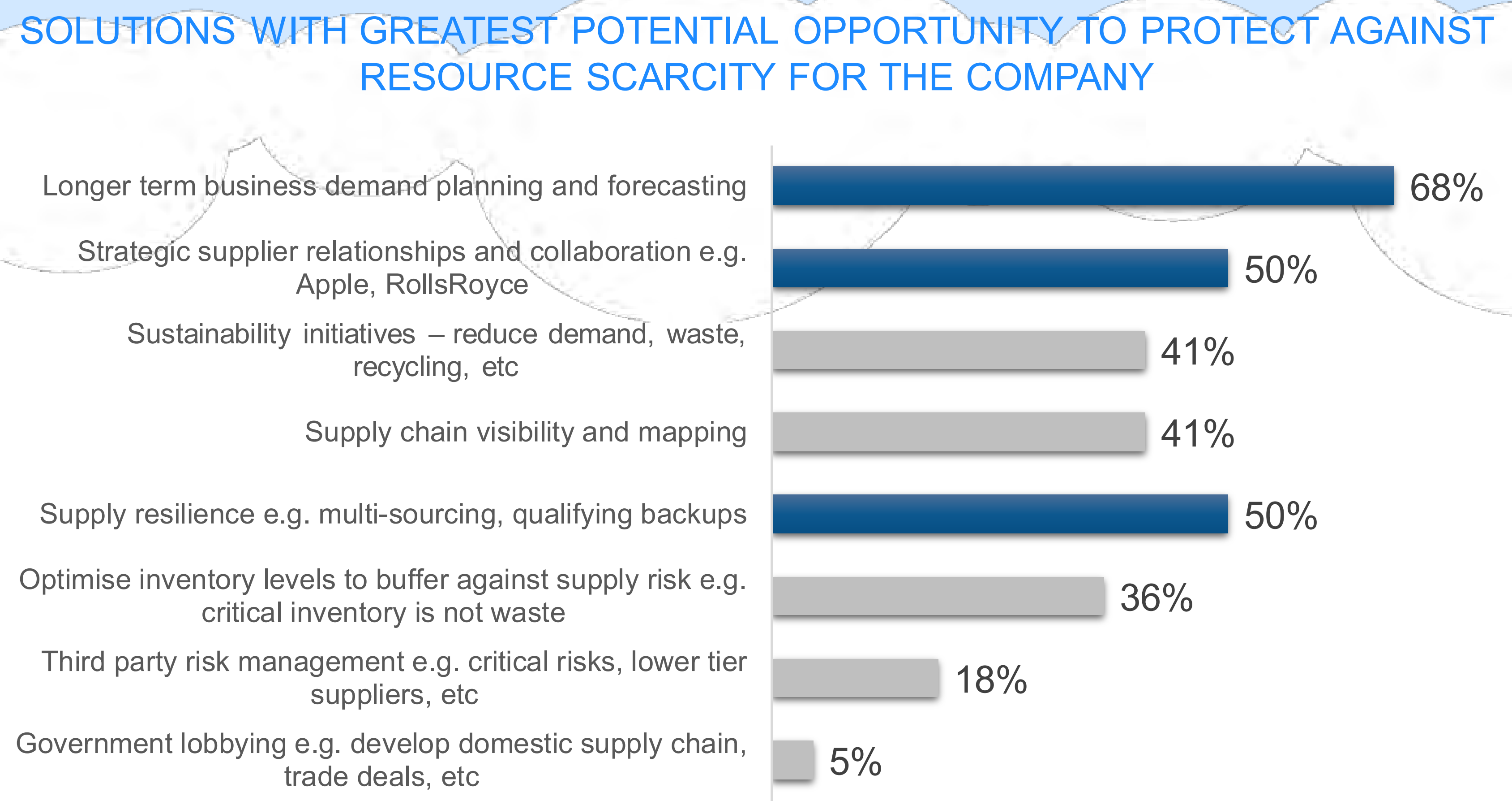
External perspective – which non-price or cost items are more often traded with suppliers?



Q Which additional non-price items do you prefer to trade with suppliers? (multiple choice)

Source: Hackett webcast polling, The Hackett Group

External perspective – which solutions represent the greatest potential opportunity for your spend category or company to protect against resource scarcity?



Q Question - from your perspective, which solutions represent the greatest potential opportunity for your spend category or company to protect against resource scarcity?

Source: Hackett webcast polling, The Hackett Group

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