

8th drupa Global Trends Report 2022 Introduction

Welcome to the 8th drupa Global Trends Report. The report series is unique in tracking key economic and market developments across the print industry globally, regionally and within markets. After a two-year gap caused by the Covid pandemic, which also caused the cancellation of drupa 2020 and made drupa 2021 to be online only, we are delighted to be back.

With no opportunity to recruit fresh panel members at drupa 2020 and with the two-year gap, we were not surprised to find participation levels fall, but we still have a unique global sample of over 500 panel members, both printers and suppliers, who very kindly gave us a detailed insight into how they had prospered through and since the Covid pandemic and the other global and regional shocks that have occurred since. We sincerely thank them.

We circulated two separate surveys to printers and suppliers in April and May this year, which share many questions, but ensure that their differing interests are addressed. With a smaller overall data set, we have been careful to be transparent in the report, not drilling down into very small data sets and we spell this out where we have used marginal data sets, so that readers can decide for themselves how useful the findings are. We hope and expect participation numbers to climb again next year, as we start the build up towards drupa 2024.

The findings show that confidence levels are recovering across the globe as economic momentum builds post Covid, but that major socio-economic challenges lie ahead for all. As always, those that look ahead and invest accordingly will thrive best, and our panel's forecast and their brief comments given in the survey show the industry is up for the challenge.

Messe Düsseldorf, in its role as drupa organiser, must thank Printfuture (UK) and Wissler & Partner (Switzerland) for conducting and authoring this report series. We are confident you will find the resulting report insightful. We would be pleased to receive any feedback, so send us an email to drupa-expert-panel@drupa.de.

The drupa team
September 2022

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8th drupa Global Trends Report 2022 - Executive Summary

Welcome to the 8th drupa Global trends Report Executive Summary. A lot has happened since the last one was drafted in Spring 2020! Covid pandemic, global supply chain difficulties, regional wars, trade wars, rising inflation, climate change - the list goes on. But so does

life and the print industry is remarkably resilient. So strikingly, printers globally were on average slightly more confident about their companies than they were in 2019 and have strong expectations for 2023.

drupa Printer Barometer of economic confidence 2022 by region

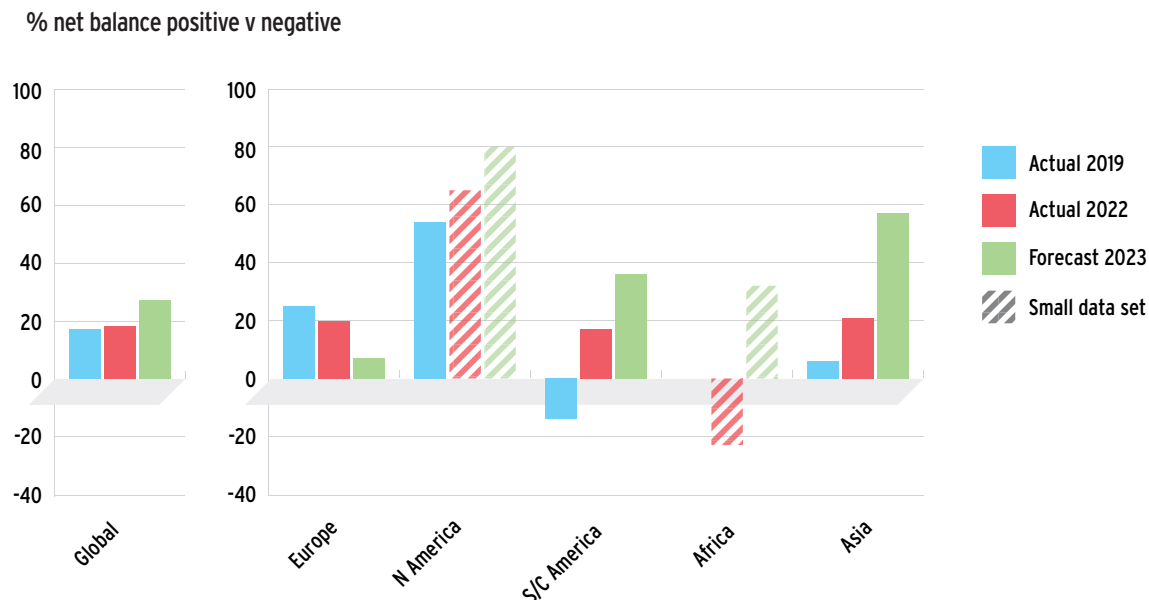


Chart A: How do you rate your company's current economic situation? What are your expectations for the next 12 months?

Globally in 2022 34% of the printer panel stated their company current economic condition to be 'good' and 16% described it as 'poor', a net positive balance of +18%. It is this net balance, positive or negative that is used in many of the charts. The detailed breakdown of printers and suppliers by market and region is given in the full report's Appendix, but the data sets for Australia/Oceania and the Middle East were too small to use separately, though they are included in the global data. The same applies to Functional

printers. Where small data sets have been included e.g. North America and Africa, attention is drawn to this limitation in both the text and the charts.¹

1. Column gaps in any chart indicate a nil result.

We can see striking variations in optimism e.g. between Europe - cautious and South/Central America or Asia - optimistic. Looking at the data by market, Packaging printers show increasing confidence, Publishing printers show a recovery from a poor result in 2019 while Commercial printers reported a small decline in confidence this year but have expectations of recovery in 2023.

“Raw materials availability, rising inflation rates and rising product prices, declining margins, ruinous price wars between competitors [combine to be the biggest threat over the next 12 months].” **Commercial printer, Germany**

“Take advantage of economy growth after pandemic times. Communicate our innovation and sell our added value products to new customers and markets.” **Packaging printer, Costa Rica**

Suppliers were more confident, a global net positive of +34% for 2022 and notably more

positive for Europe for 2023. Whilst they were a little more cautious for the Commercial and Publishing markets for 2022 - down 4 or 5% on 2019, they have strong positive forecasts for all market sectors for 2023 (net positive balances for Publishing +36%, Commercial +38%, Packaging +48%, Functional +51%).

Between 2013 and 2019, more printers dropped prices than raised them by an average of -12% despite ever increasing paper/substrate prices.¹ Then suddenly in 2022 there is an unprecedented positive net balance of +61% in favour of those raising rather than lowering prices. Yes, there were heavy paper/substrate price increases, but those never prompted such price increases to end customers in the past. What is going on? What is more, this pattern is global, applying to most regions and markets. It should be noted that margins remain under pressure for almost everybody - so some things stay the same.

1. We report on paper/substrate prices from the perspective of printers.

Global printer financial performance over time

% net balance positive v negative

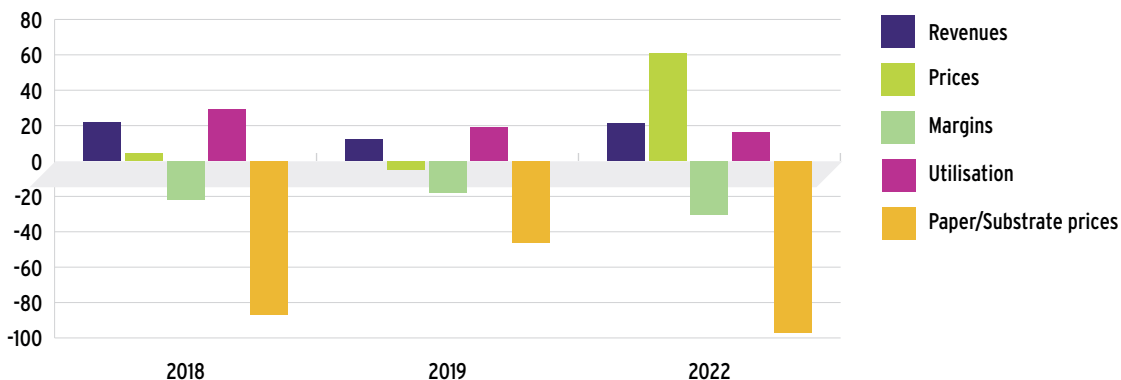


Chart B: How have your company's revenues/prices/margins/utilisation/substrate prices changed over the last 12 months?

It is a similar story for Suppliers with a +60% net increase in pricing - previously the highest was +18% in 2018. Clearly emerging from Covid, pricing behaviour has changed radically and this has implications for inflation if repeated across other industries.

Turning to printer operational measures, one key metric that has been tracked since 2014 is the volume of print produced by the huge variety of print technology. The Appendix of the main

report provides this in full, but Chart C gives the headlines, shown as net positive or negative net balances in volume of printed material. A large drop in Sheetfed offset in Commercial was almost matched by an increase in Packaging. It is worth remembering that the first negative net balance in Commercial was only in 2018 and then only very small. The other standout features are the huge growth in Flexo for Packaging and substantial gains in Digital toner cutsheet colour and Digital inkjet rollfed colour.

Print volume 2022 by technology

% net balance positive v negative

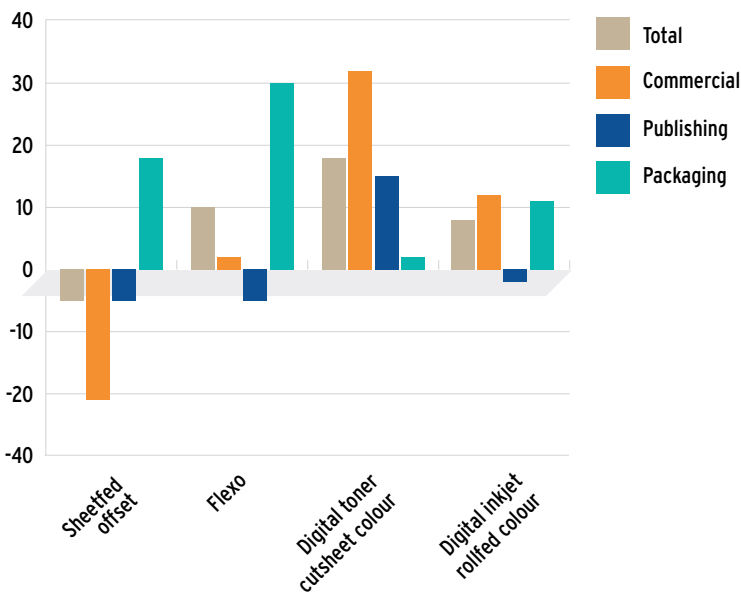


Chart C: How would you assess your printing volume in the following technologies over the last 12 months?

One trend we would expect to have seen sustained through the pandemic is the growth of digital print as a % of total turnover. Yet this appears to have stalled globally between 2019 and 2022 - except in Commercial print which grew modestly.

Next, we must report a real puzzle. There has been a steady decline in the % of printers reporting they operate a Web-to-Print/Digital storefront from a peak of only 27% in 2017 to

23% in 2019 and 20% in 2022. For Commercial printers this has dropped from 38% in 2017 to 26% in 2022, while Publishing grew to 33% this year, but Packaging fell from 15% in 2019 to 7% in 2022. We acknowledge the reduction in sample size, but the numbers are still good globally. We will just have to see if next year shows a recovery.

% of those with web-to-print with > 25% of turnover W2P

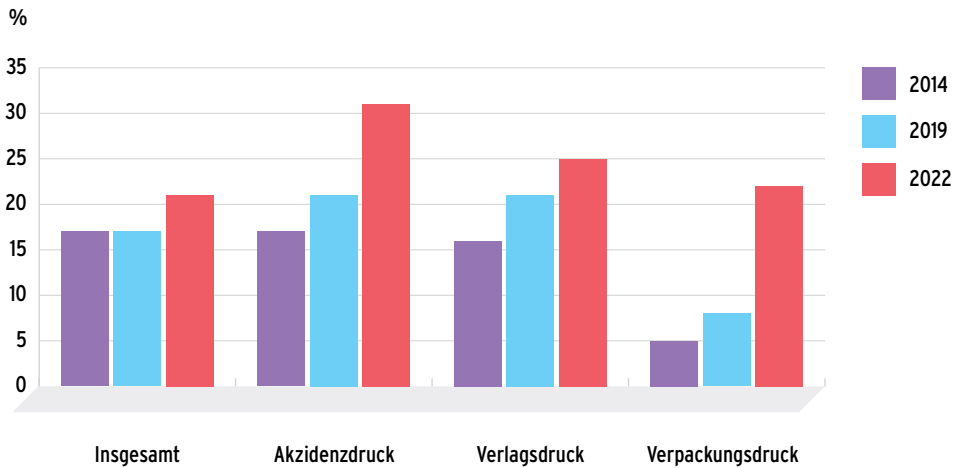


Chart D: What % of total turnover by value was handled by Web-to-Print over the last 12 months?

However, for those with Web-to-Print installations, the Covid period saw a substantial increase in turnover via that channel (Chart D). Pre Covid this growth had stalled with no significant growth globally across all markets

between 2014 and 2019 (just 17% of the panel with Web-to-Print reporting that more than 25% of turnover came that way in both years). But since then, it has shot up to 26% and the increase is across all markets.

Cap Ex Printers 2022 Global and by market

% net balance positive v negative

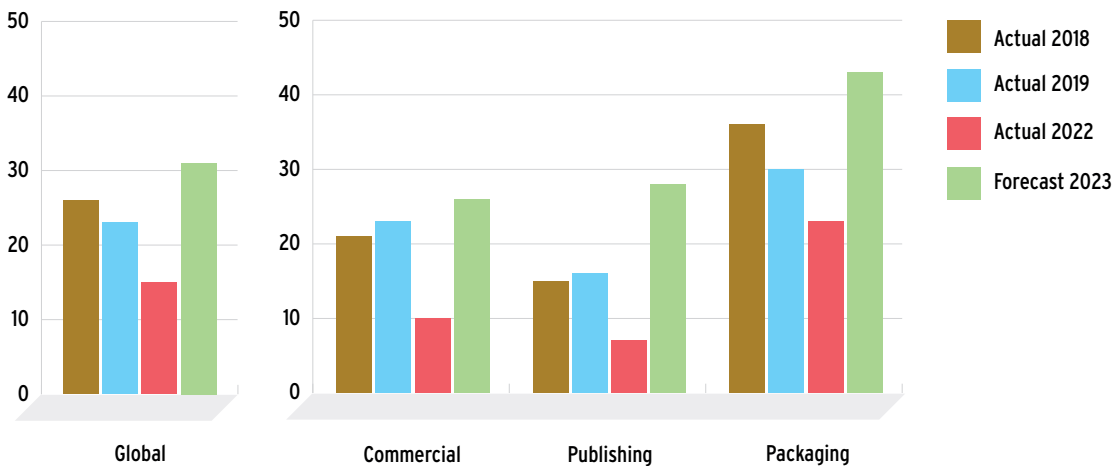


Chart E: How has capital investment changed over the last 12 months? Over the next 12 months will your company's capital investment go up, go down, stay the same?

Not surprisingly Capital expenditure (Cap Ex) has fallen back since 2019 both globally and in all markets, but the prospects for 2023 and beyond are good. Regionally all regions forecast growth next year, except Europe with a flatline forecast. Finishing equipment and print technology were by far the most popular targets.

Regarding print technology, the clear winner in 2023 will be Sheetfed offset (31%), followed by Digital toner cutsheet colour at 18% and Digital inkjet wide format and Flexo both at 17%. It is very striking that Sheetfed offset remains the favourite target in 2023, despite a clear decline in volume

of print by that means in some markets. For some it is to consolidate, reduce labour and wastage, for others it is to grow capacity. What is more the popularity of Sheetfed Offset remains for all three markets - see table 1.

Strikingly when asked about long term (5 year) investment plans, top came Digital Print at 62% then Automation at 52%. Conventional print was still listed as the third most important likely investment 32%, this is not to overlook the fact that the Digital technologies are growing fast if we collate the various technologies together.

2023 Print technology investment targets - Global and by market				
	Global	Commercial	Publishing	Packaging
1st choice	Sheetfed offset 31%	Sheetfed offset 30%	Sheetfed offset & Digital toner cutsheet colour 27%	Flexo 39%
2nd choice	Digital toner cutsheet colour 18%	Digital toner cutsheet colour 26%		Sheetfed offset 34%
3rd choice	Flexo & Digital inkjet wide format 17%	Digital inkjet wide format 25%	Coldset offset 24%	Gravure, Digital inkjet rollfed colour and hybrid offset/flexo/digital 14%

Table 1: In which of the following print technologies do you plan to invest in the next 12 months?

As for suppliers, they reported a net positive balance +15% for Cap Ex in 2022 and a net positive of +31% in 2023. Investment forecasts for 2023 were more muted in Commercial and Publishing but strong in Packaging and Functional.

Looking at the emerging strategic challenges, both printers and suppliers have been struggling with supply chain difficulties (paper/substrates and consumables for printers and raw materials for suppliers) and they expect these to continue into 2023.

41% of printers and 33% of suppliers also reported labour shortages. Wage/salary rises have been and/or will be the result.

Environmental, Social and Governance issues are increasingly important across the globe for both printers, suppliers and their customers.

Considering short term constraints on the Print Market globally, the traditional issues dominate: Strong competition and Lack of sales/Demand - the former highlighted more by Packaging

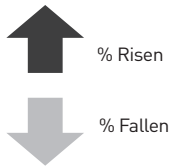
printers, the latter more by Commercial printers. Looking to the next 5 years, the impact of Digital media is highlighted by both printers and suppliers followed almost equally by Lack of specialist skills and Overcapacity in the industry.

When we started the Trends Report series, we paid only modest attention to broader socio-economic issues. However, given the increasing impact these were having on the print market, we introduced questions on this in 2019. Given Covid and the other challenges that have come fast and furious since, this was a wise move. Globally 52% highlighted the impact of pandemics either directly or on the economy and 42% chose Economic recession in their country or region. But there were some noticeable regional variations. For example, 62% of Asian printers chose pandemic impact versus 52% globally; 58% of South/Central American printers chose Economic recession versus 42% globally; and 32% of European printers chose regional physical wars versus 21% globally. And there was a clear majority (59%) that thought socio-economic pressures were either more important than or of equal importance to market pressures.

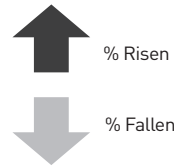
In conclusion we were encouraged by the broadly positive outlook that printers and suppliers had both of trading in 2022 and the prospects for 2023. Indeed, perhaps the single most striking result of the survey was that globally the Barometer of Economic Confidence was slightly higher in 2022 than in 2019 before Covid struck. Then again, most regions and markets forecast better trading in 2023. This was not universal and there are strong headwinds to make things more difficult - some global, some regional.

Clearly investment fell during the Covid pandemic and companies have taken time to recover. Nevertheless, printers and suppliers report a determination to grow their businesses, investing as necessary, starting in 2023. As there are few signs that market and broader economic pressures will lessen, this is just as well. For only those companies who invest wisely, bring their costs down by raising productivity, diversify and innovate and invest in their team, will prosper. This is well summarised in a quote from a printer in Portugal.

“Looking for the biggest opportunity, my company must be alert, be patient and look for new demands... The Covid pandemic, and the Russia/ Ukraine war will bring new disruptions in market, but equally may create new opportunities. [These] could be found in markets where innovation and rehabilitation [reform] could happen. For that, my company will look essentially for digital operations... (labelling, digital printing - wide format and medium format).” **Commercial, Packaging and Functional printer, Portugal**



Key financial measures for printers 2022

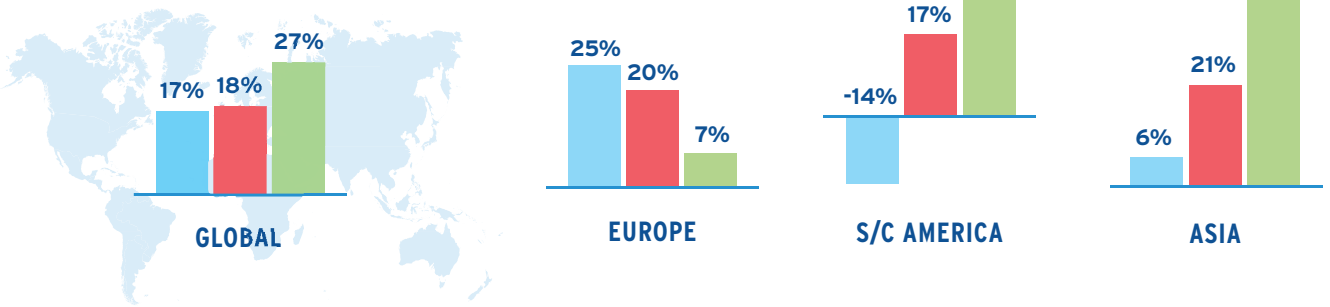


Key financial measures for suppliers 2022

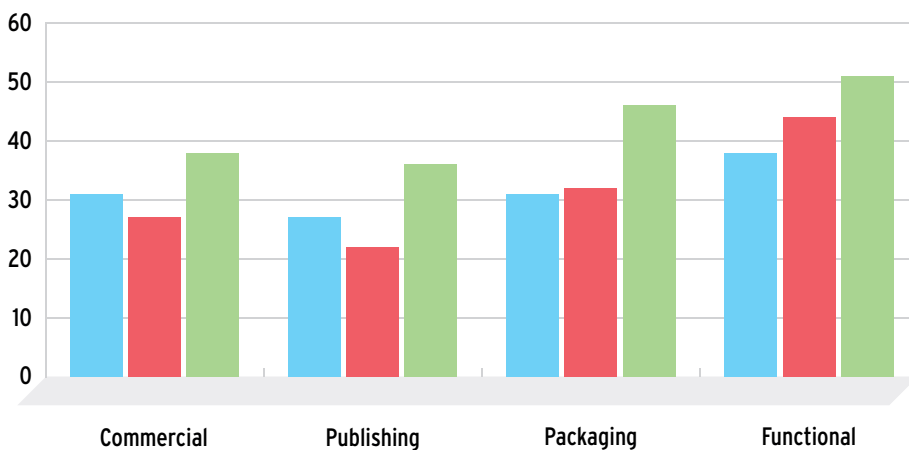


drupa Printer Barometer economic confidence 2022 Global and by region

% net balance positive v negative

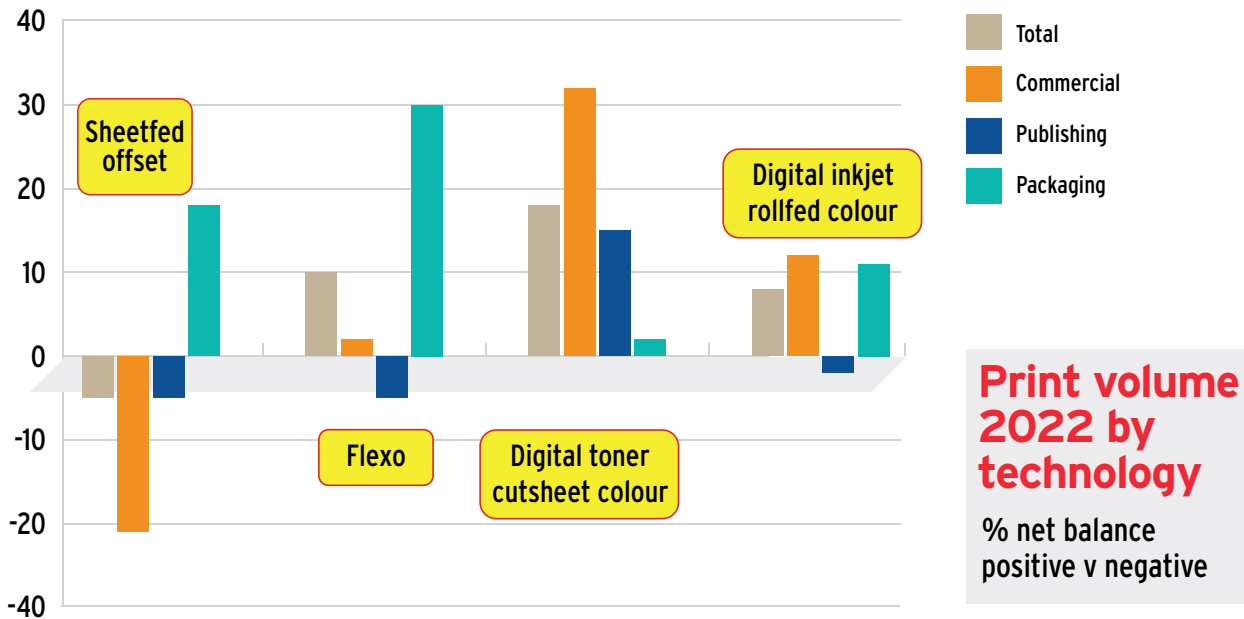


Actual 2019 Actual 2022 Forecast 2023

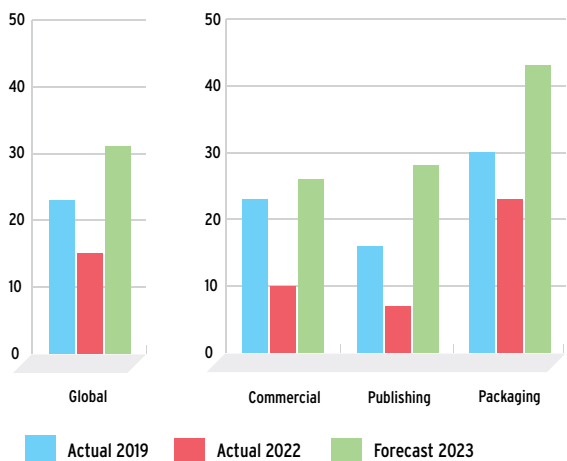


drupa Supplier Barometer economic confidence 2022 by market

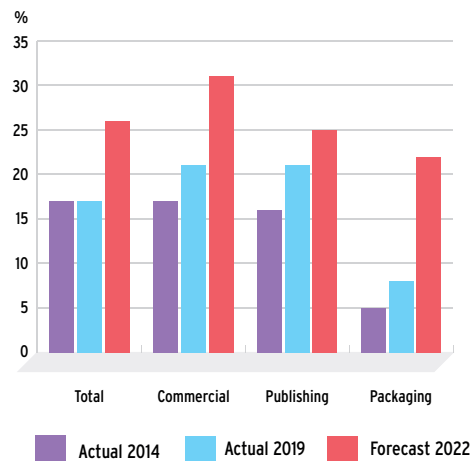
% net balance positive v negative



Cap Ex Printers 2022 Global and by market % net balance positive v negative



% of those with web-to-print with >25% turnover W2P



Top two print technology investment plans by market 2022

Global total

- Sheetfed offset **31%**
- Digital toner cutsheet colour **18%**

Publishing -

- Digital toner cutsheet colour **27%**
- Sheetfed offset **27%**

Packaging -

- Flexo **39%**
- Sheetfed offset **34%**

Commercial -

- Sheetfed offset **30%**
- Digital toner cutsheet colour **26%**

drupa Economic Commentary 2022-23

Global economic prospects have worsened significantly since our last drupa Trends Report in 2020. At the time, projections indicated sustained growth for developed economies and signs of stability and recovery in most emerging economies. The global pandemic put a stop to that and has subsequently caused enormous pressure on global supply chains and uncertainty around economic prospects in the short-medium term.

The global economic recovery had been predicted to strengthen from the second quarter of this year after the short-lived impact of the Omicron variant. However, since then, the outlook has deteriorated significantly, due to the Russian invasion of Ukraine. This has caused huge upheaval not just in Eastern Europe but around the world due to the sanctions imposed on Russia and the resulting cost of living crisis driven by higher energy and fuel prices. This has caused a significant divergence between the economic recoveries of advanced economies and emerging and developing ones. In addition to these factors,

new wide-ranging lockdowns in China in particular have also slowed manufacturing activity causing delays and bottlenecks in global supply chains. This had led to increased price pressures and a tightening of monetary policy resulting in trade-offs and risk management challenges.

The lingering impact of Covid coupled with the effect of the war in Ukraine will severely set back the global recovery, slowing growth and increasing inflation even further. The latest IMF report projects global growth at 3.6 percent in 2022 and 2023 - 0.8 and 0.2 percentage points lower than in the last forecast in January 2022. Not surprisingly, both Russia and Ukraine are projected to experience large GDP contractions in 2022. The severe collapse in Ukraine is a direct result of the invasion, destruction of infrastructure, and exodus of its people. In Russia, the sharp decline reflects the impact of the sanctions and a severing of trade ties, which has eroded domestic financial confidence.

Real GDP growth

Annual percent change

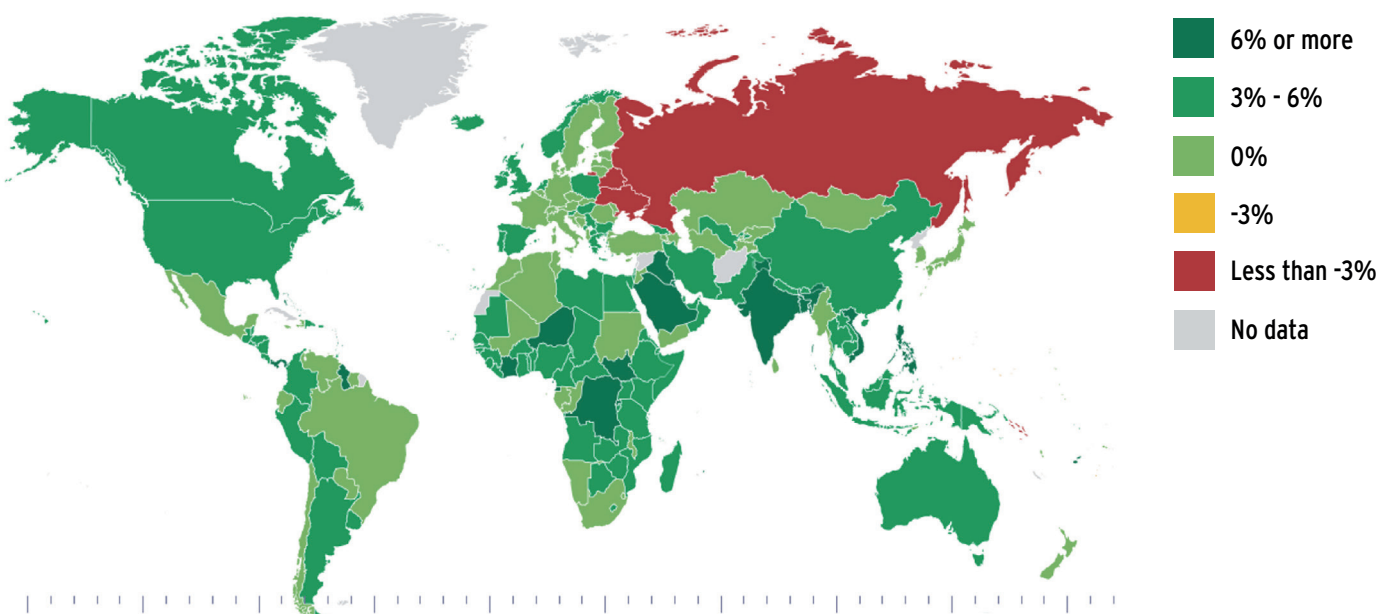


Chart F: Real GDP Growth Source: IMF Data Mapper

World economic outlook April 2022 Growth projections by region

Annual percent change

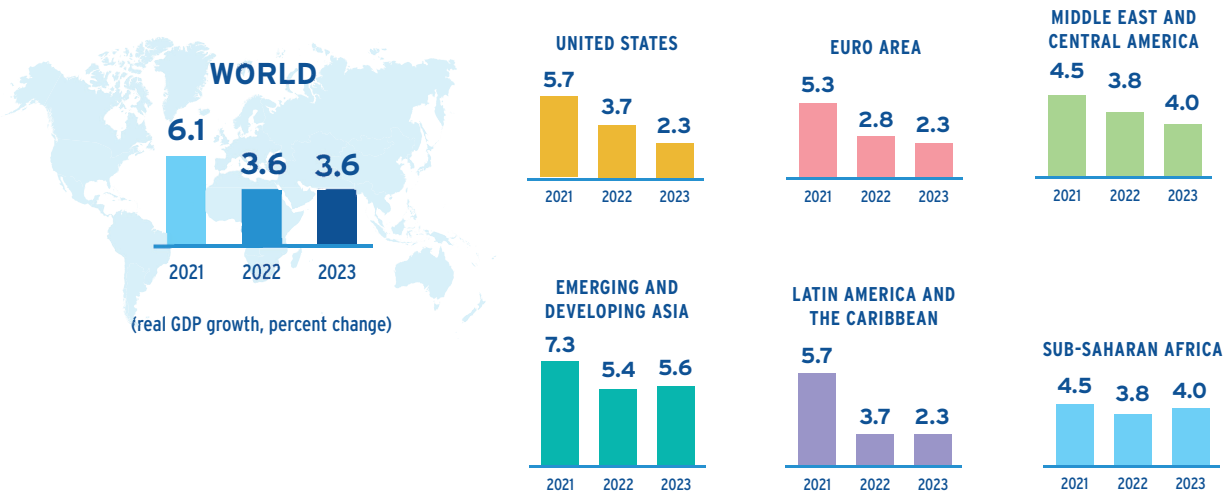


Chart G: Growth projections by region Source: IMF World Economic Outlook April 2022 Redrawn for this report

The seismic economic effects of the war are spreading far and wide. Russia is a major supplier of oil, gas, and metals, and Ukraine, of wheat, corn and sunflower. The current and anticipated decline in the supply of these commodities has already driven their prices up sharply, significantly affecting regions like the Middle East, North Africa, and sub-Saharan and hurting lower-income households globally. The war adds to the series of supply shocks that have struck the global economy over the course of the pandemic, contributing to more shortages beyond the energy and agricultural sectors. Due to closely integrated global supply chains, production disruptions in one country can very quickly cascade globally. We have seen this massive supply chain impact in numerous industries including printing.

In the print industry raw materials like paper and consumables have been in short supply with unprecedented price hikes. This has also been exacerbated by industrial action in the paper supply chain.

Inflationary Pressures

Even prior to the war, inflation was beginning to rise in many economies because of soaring commodity prices resulting from the pandemic and supply and demand imbalances. These bottlenecks will eventually ease as production elsewhere responds to higher prices and new capacity becomes operational. However, supply shortages in many sectors are expected to last through this year and into 2023. As a result, global inflation is now projected to remain elevated for much longer than previously forecast.

Shocks to commodity prices from the invasion of Ukraine reaccelerated inflations rise and raised future expectations

Consumer price index, annualised change

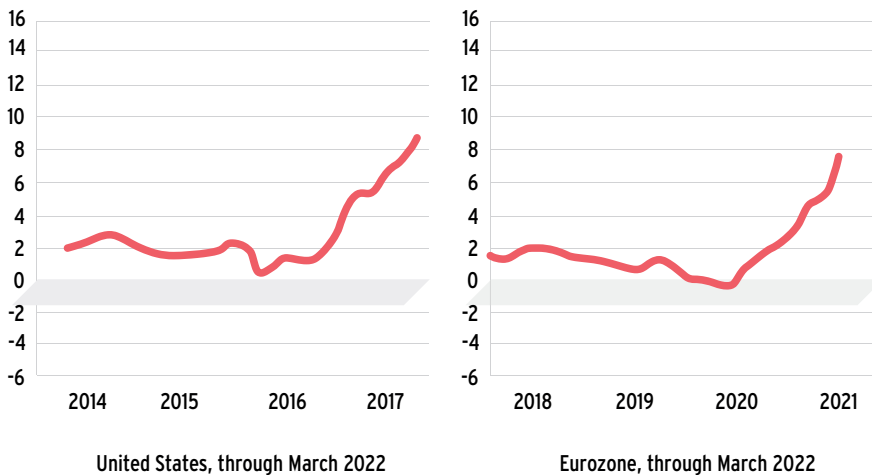


Chart H: Consumer price index Source: McKinsey Quarterly - Navigating inflation (redrawn for this report)

In many countries inflation has become a central concern. In some advanced economies like the United States and some Eurozone countries, it has reached its highest level in more than 40 years. This is resulting in a growing risk that inflation pressures will result in an aggressive fiscal tightening from the central banks. Combined with this, increases in food and fuel prices could significantly increase the risk of social unrest in emerging markets and developing economies.

These inflationary pressures are largely uncharted territory for most businesses and subsequently have become a major challenge. Business owners and leaders are starting to ask whether a fundamental shift in the way they lead and manage their organizations is required. It has become increasingly apparent that for the next few years inflation will be well above the 2.0 percent that central banks have targeted. The consumer price index rose by 8.5 percent from March 2021 to March 2022 in the United States, a 40-year high, 7.5 percent in the Eurozone, and 7 percent in the United Kingdom. Some 60 percent of advanced economies are grappling with year-on-year inflation above 5 percent.

Due to inflationary pressures business leaders and managers of key operational areas need to start asking themselves some key questions:

- Where will customers see value in this new high inflation environment?
- How can we reinvent products, services, and experiences to deliver this value?
- What is the fastest way to stabilize and redesign stretched and, in some cases, broken supply chains?
- How can we increase a company's resilience and at the same time control costs?
- How can we adapt procurement processes to reduce cost and create value?
- How should we approach re-pricing in an inflationary environment?
- How is the new landscape going to affect recruitment, compensation and benefits?

Starting with a clean sheet and building new digital, integrated, transparent, and agile supply chains seems to be the answer. During the pandemic new tariff regimes and increasing shipping and trucking rates had emerged calling into question the validity of old-school thinking that made cost optimization the primary goal

of managing supply chains. Global shipping costs have risen sharply and in response, many companies moved to increase inventories, find new sources for raw materials or more localized production. But far fewer have successfully tackled such difficult tasks as reducing the number of SKUs and diversifying their manufacturing base.

Globally, shipping costs have increased significantly over the ocean and on land

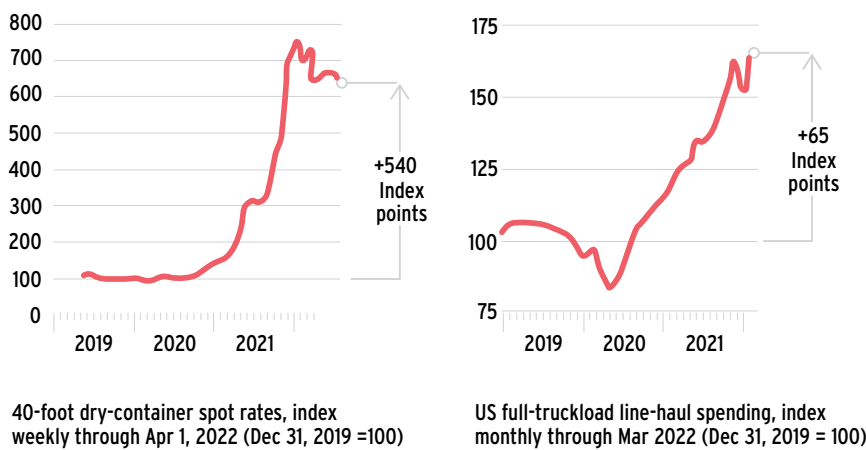


Chart 1: Shipping spot rates Source: McKinsey Quarterly - Navigating inflation (redrawn for this report)

In inflationary environments a fundamental challenge is what to do about current pricing. As costs rise, re-pricing to sustain margins is the obvious answer but it is viewed as unpleasant for companies and worse for customers. Companies that are consistently addressing total customer and product profitability are likely to weather inflationary cycles better than those that focus solely on cost changes. As an example, this can be particularly difficult for manufacturers with a surge of high-cost, low-volume products, requiring a lengthening of lead times, to increase in productivity to maintain margins without price increases.

Identifying and manage potential supply chain risks is becoming essential to survival let alone growth, depending on a company's sector and specific needs. Numerous risk factors need

to be considered from finance, operational management, regulation, reputation, and data security. On the supply and demand side, companies must plan for longer lead times and earlier ordering. The financial implications of increased transportation, energy, and materials costs on working capital must be accounted for. Stock of critical materials and inventory must be reviewed and production scheduling must be prioritized in the event of foreseeable shortages.

All these risk elements involve investment for which there needs to be a return. Will customers pay a premium to ensure the availability of goods? Will suppliers accept cost sharing to lower the risk of disruption in demand for their products? Investors may have to accept this new norm and temper their expectations based on risk-adjusted returns.

We are already beginning to see increased wage demands based on the cost-of-living crisis resulting in industrial action and strikes. Employee wages and benefits are one of business's biggest costs. Wage increases put pressure on a company to maintain margins potentially by increasing prices. The flip side is that attractive wages and benefits are crucial to attracting and retaining employees. Since 2019 private sector wages in the United States have increased annually at a 6.6 percent. That is more than twice the rate of the two years before the pandemic. Wage increases reached 6.4 percent in the United Kingdom over the same period, while furlough and other labour market policies that were followed during the pandemic resulted in less disruption and kept Eurozone wage inflation thus far in check. Differing labour market policies and conditions have led to a broad dispersion in wage growth around the globe.

The Path to Financial Stability

Covid-related spending over the last two years has significantly increased national debt levels and eroded government fiscal policy. Financial support was expected to be removed in 2022-23 but the war and global interest rate rises will further reduce fiscal space in many countries, especially oil- and food-importing emerging market and developing economies. During the pandemic, many governments helped maintain access to credit for business and personal use. Looking ahead, this may create some additional credit market vulnerabilities as interest rates rise and increase the risk of financial instability.

The pandemic combined with the war has also increased the risk of a more permanent fragmentation of the world economy into geopolitical blocks with distinct technology standards, cross-border payment systems, and reserve currencies. Such a fundamental shift will entail high adjustment costs and efficiency losses as supply chains and production networks are reconfigured to the new landscape, which presents a challenge to the framework that has governed international and economic relations for the last 70 years.

The unprecedented shock of the last two years makes it difficult to predict the future accurately

as we are in uncharted territory. As a result, growth could slow significantly while inflation could turn out higher than expected, moreover, we cannot forget the pandemic is still with us. The continued spread of the virus could give rise to more lethal variants that escape vaccines or immunity from past infections, prompting new lockdowns and production disruptions. In this difficult, volatile and uncertain environment, effective national-level policies and multilateral efforts have an ever more important role in shaping economic outcomes. Central banks may need to be even more aggressive with their fiscal policy if medium or long-term inflation expectations start to move off target. As advanced economies and their central banks tighten policy and raise interest rates, emerging market and developing economies could face a further withdrawal of capital and currency depreciations that in turn increase inflation pressures.

Currently all focus is on reducing the impact of the war and the pandemic, however attention will need to be maintained on longer-term goals. This will have a huge cost to reskill workers for the ongoing digital transformation and the transformation necessary to achieve net zero emissions. These shared global risks and priorities are extremely complex and will interact in different ways for the short, medium, and long-term horizons. In the future rising interest rates, the need to protect vulnerable populations against high food and energy prices, or increased defence spending, make it more difficult to maintain fiscal sustainability. Without this fiscal stability investing in the climate transition will be more problematic and any delays make economies more vulnerable to commodity price shocks, which feeds into inflation and economic instability. Currently the global future is uncertain financially and politically and if Geopolitical fragmentation worsens the risk of decreasing overall efficiency and increasing conflict and economic volatility will persist.

Sources:

International Monetary Fund -
World Economic Outlook 2022
International Monetary Fund -
Global Financial Stability Report 2022
World Bank Group - Annual Report 2021
McKinsey and Company - Insights

8th drupa Global trends Report 2022 - The full report

Economic assessments

Printers

The last drupa Global Trends survey was in 2019 and a lot has happened globally since then. However life goes on and so does the print industry, so it was pleasing to discover that printers globally were on average slightly more confident about their company's economic situation in 2022 than they were in 2019 pre Covid and most had even better expectations for 2023.

Before we consider the data in more detail, let us explain a little more about the data, how it is presented and how to read the charts that follow. The survey was conducted in April and May of this year after a break of two years and without the advantage of drupa in 2020 to top up the expert panel. The result is a decline in the number of participants, so that some data sets are too small to use, and others are marginal. The full breakdown of participants by region and market is in the Appendix as in previous years. However, this year we are going further for complete

transparency and where we include a marginal data set, we will highlight this both in the body of the text and in any associated chart. The reader can decide then for themselves how best to assess that particular result.²

Let us now turn to how the data is shown in the charts in many cases. If you look at Chart 1 and the Global data set, the orange column is the 2022 data set. 34% of the sample stated their company's current economic situation was 'good', and 16% described it as 'poor' while the remaining 17% described it as 'satisfactory'. The net positive balance of +18% i.e. 34% minus 16% is the overall result shown in the chart, 1% better than in 2019. It is this net positive or negative balance that is shown in many of the charts that follow.

2. Column gaps in any chart indicate a nil result.

drupa Printer Barometer economic confidence 2022

% net balance positive v negative

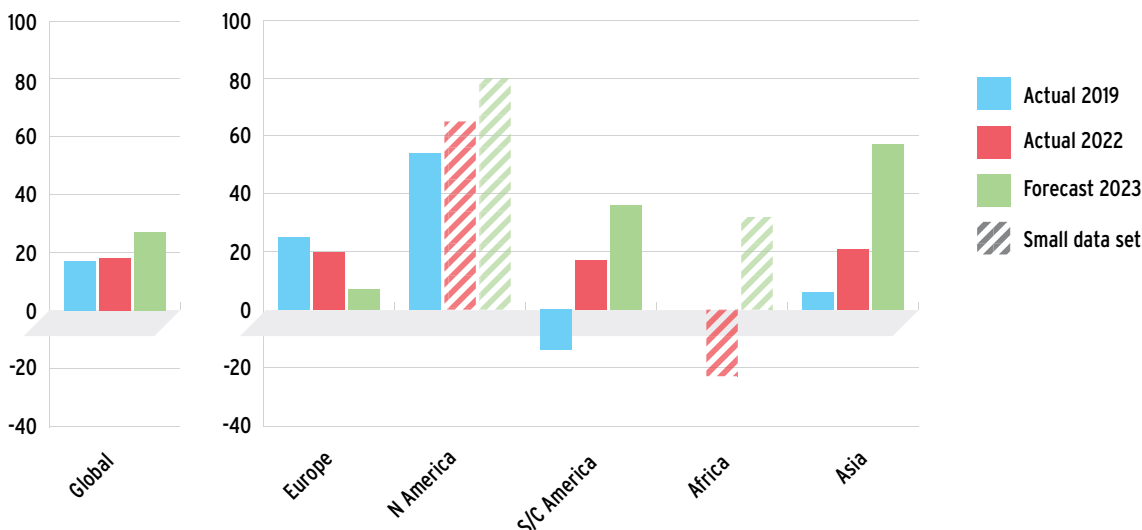


Chart 1: How do you rate your company's current economic situation? What are your expectations for the next 12 months?

Regrettably the printer data set for Australia/Oceania and the Middle East are too small to be shown as separated data sets although they are included in the global data set. The North American (20) and African (22) data sets are marginal and are shown striped in the chart.

What is striking is the clear decline in confidence amongst European printers. The net balance is still a positive +20% but significantly down from 2019 and the forecast for 2023 down again to just +7%. Indeed, German printers, who form 29% of the European sample, are even more cautious, with a net positive balance of just +12% for 2022 and a negative balance i.e. -10% for 2023. North America printers report a remarkably positive net balance of +65% for 2022. Given a marginal data set, it is tempting to discount this result, but the result is entirely consistent with the very positive view taken by the larger North American data sets in previous years. South and Central America has bounced back after a poor result in 2019, while Africa (also a marginal data set) shows a negative net balance for 2022 but a far better forecast for 2023. Asia shows a steady recovery in confidence after a poor result in 2019 pre Covid.

“Companies are coming back to life. As hotels, restaurants & many businesses come back to life, I would expect increase in orders as there are many printing presses closed.”

Publishing printer, Philippines

“The economy has begun to turn a corner. Because the epidemic has declined, there will be demand for advertising. Every industry hopes to receive new information. The printing industry will increase environmental protection requirements and create new opportunities.”

Functional printer, Hong Kong

“Due to the unpredictable price increase in raw materials, maintenance cost, and less jobs - small and less determined printing companies will vanish and only those who are stronger can survive.”

Commercial printer, India

“It’s a whole... Covid 19, War and instability in raw materials both in scarcity and in prices that leads to little demand and consequently low consumption.”

Packaging printer, Portugal

“[The biggest threat...] Product availability, rising inflation rates and rising product prices, declining margins, ruinous price wars between competitors.”

Commercial printer, Germany

drupa Printer Barometer economic confidence 2022 globally by market

% net balance positive v negative

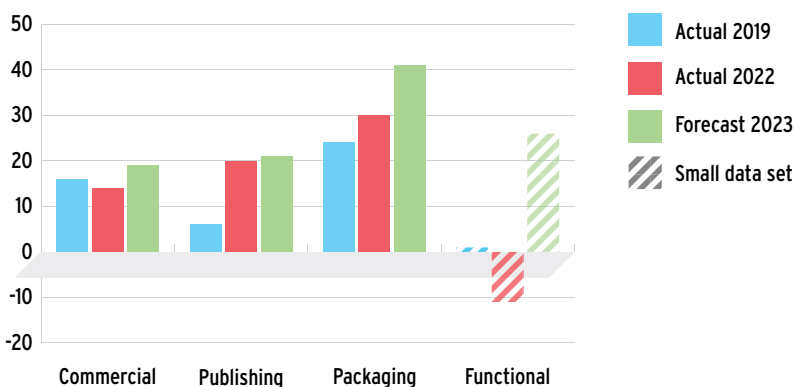


Chart 2: How do you rate your company's current economic situation? What are your expectations for the next 12 months?

Turning to market sectors³ (Chart 2), confidence is greatest among Packaging printers, recovering among Publishing printers from a low in 2019 and among Commercial printers a little lower than in 2019.

“The demand for packaging for online products is the biggest opportunity for our company in the coming days. We need to add post press finishing capacities and use the existing printing capacities to increase our capital utilisation.”

Publishing printer, India

“[One of the biggest threats is] the transition of many commercial printers to packaging.”

Packaging printer, Argentina

The poor result among Functional printers (sample size marginal at 27) is a puzzle, as the suppliers to that market are very positive as will be seen, but it is consistent with the declining confidence reported in 2019. There is a further comment on this in the Appendix.

Suppliers

The global results for suppliers are significantly more positive amongst suppliers - net positive +34% compared with +18% amongst printers and strikingly more positive for Europe for both this year and next. The Asian result is more typical with a small decline compared with 2019 but with confidence in a bounce back in 2023.

drupa Supplier Barometer of economic confidence 2022 global and regions

% net balance positive v negative

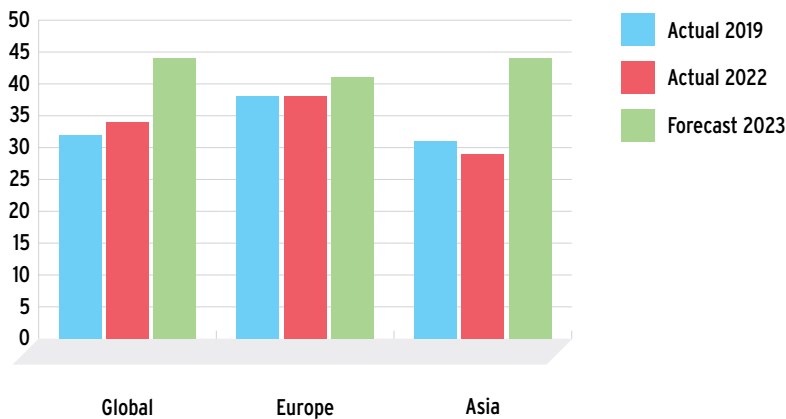


Chart 3: How do you rate your company's current economic situation? What are your expectations for the next 12 months?

Turning to markets served, the picture is similar to printers with a small reduction in confidence levels among those serving Commercial and Publishing markets, consistent confidence in Packaging but a strong and growing confidence in the Functional market - very different from the pessimistic view of the small printer sample.

3. **Commercial** includes Direct Mail, Business Forms, Security, Wide-format, Trade Finishing for Commercial work, Transactional, Photoproducts **Publishing** includes Newspapers, Magazines, Catalogues, Conventional book production, Short-run digital books, On-demand digital books, Trade Finishing for publications **Packaging** includes Labels, Cartons & Carton Board, Flexible **Packaging**, Corrugated/Secondary, Rigid, Point of Sale/Point of Purchase/Banners **Functional** (Industrial/Decorative/Textile) includes Printed electronics, 3D products, Ceramics, Textiles, Wall coverings/ Other Decorative Printing

drupa Supplier Barometer of economic confidence 2022 by market

% net balance positive v negative

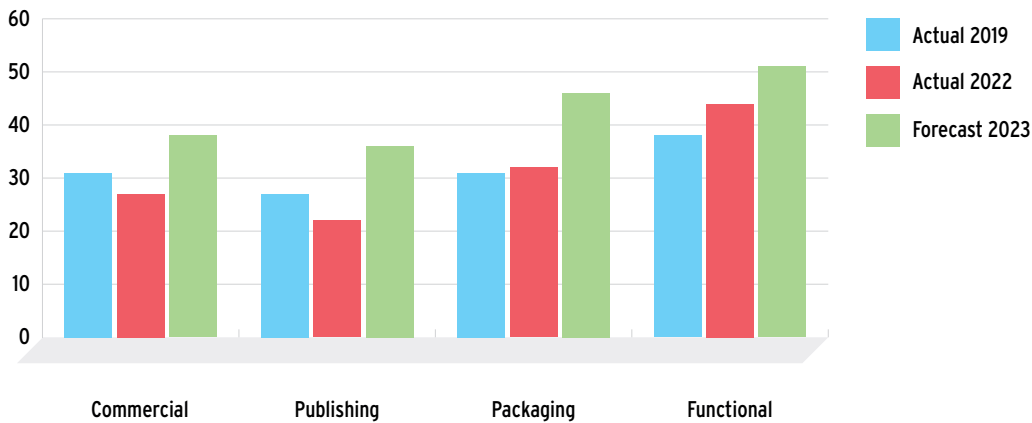


Chart 4: How do you rate your company's current economic situation? What are your expectations for the next 12 months?

Trends over time

One major strength of the Trends reports is the long and growing time series. If we look at printer confidence by regions over time, we see North America go from strength to strength (small data set); Europe peak in confidence in 2017 and decline steadily since then; Asia fairly steady after a wobble in 2019; South/Central America bounce back after a poor result in 2019 and Africa (small data set) show an overall decline in confidence after a temporary boost in 2019.

Printer regional economic confidence over time

% net balance positive v negative

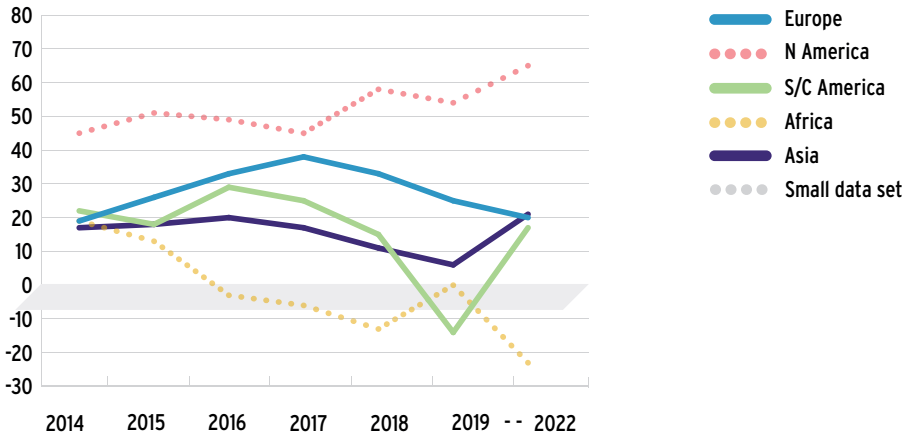


Chart 5: How do you rate your company's current economic situation? What are your expectations for the next 12 months?

Looking at the three traditional markets, Packaging is consistently the most positive market; Publishing bounced back after a poor result in 2019 and Commercial is declining steadily since 2017.

Printer global market economic confidence over time

% net balance positive v negative

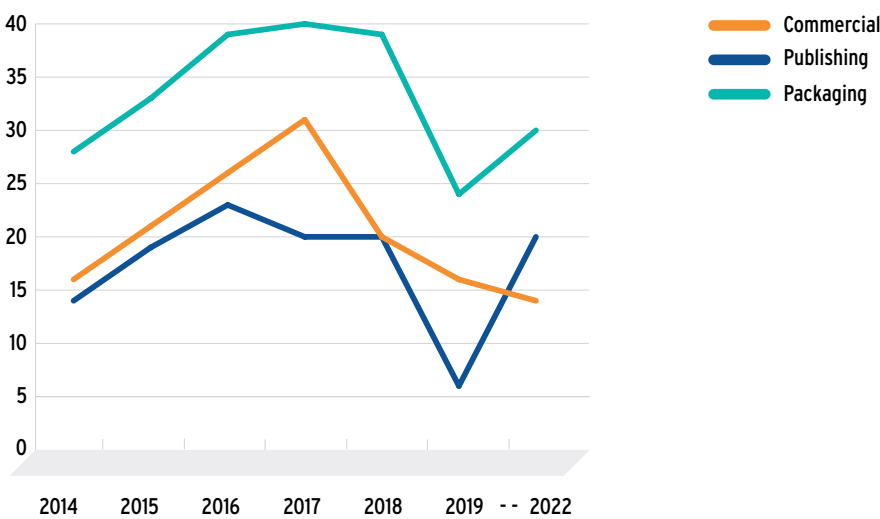


Chart 6: How do you rate your company's current economic situation? What are your expectations for the next 12 months?

Financial performance measures

Printers

Shock headline - Printers raise prices!
 Between 2013 and 2017, printers globally lowered prices - those that lowered prices outweighed those that raised prices by an average of -16%, this despite a negative balance of those suffering paper/substrate price increases averaging +46% over the same period. Nothing changed in 2018 or 2019. Then in 2022 suddenly there is an unprecedented positive net balance of +61% in favour of those raising prices to those lowering prices, albeit there is a simultaneous net -97% suffering paper/substrate price increases⁴.
 For clarity we show just the last three years with

results in Chart 12. What has driven printers to change pricing behaviour so radically? Did the Covid pandemic somehow give them the confidence to say, 'sorry customers, but prices must go up' or is it the sheer scale of paper/substrate prices that have forced the printers' hands? And is this a one-off result or the beginning of a more assertive industry? And what are the inflation implications if other industries follow the same pattern?

4. We report on paper/substrate prices from the perspective of printers.

Global printer financial performance over time

% net balance positive v negative

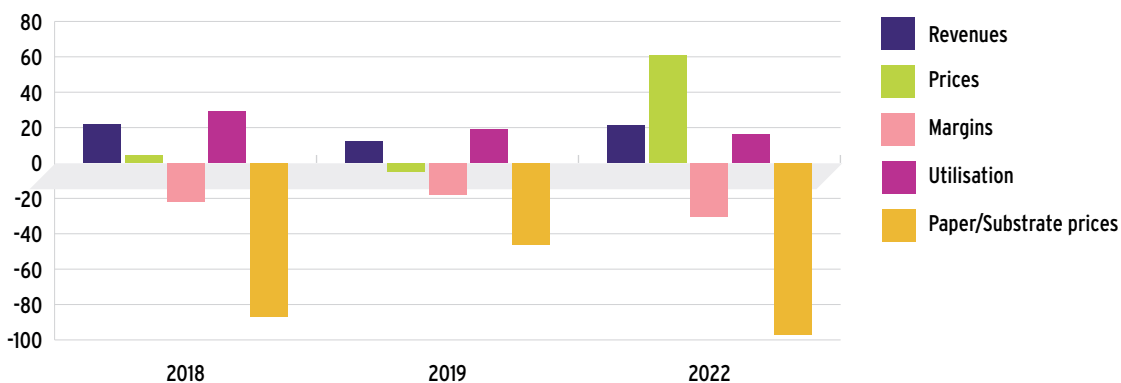


Chart 7: How have your company's revenues/prices/margins/utilisation/substrate prices changed over the last 12 months?

"Skyrocketing prices for paper and consumables. The currently reached price level is already a big burden for the customers. Customers may run out of breath." **Publishing printer, Germany**

"Constant price increases in the cost of paper material will result in an increase in the transfer of printed products to alternative electronic media as a cost saving." **Commercial printer, Australia**

This phenomenon is global with most regions showing the same pattern as that shown for 2022 in Chart 7. The exception, not for the first time, is North America where there was a large positive net balance for those increasing revenues (+65% - small data set), compared with a far lower range for all other regions (+11% Europe to +36% South/Central America).

If we consider market data (Chart 8) the pattern is remarkably similar, the exception being revenues and utilisation in Packaging, which show the greater demand levels in that market make life somewhat easier. However, it is worth noting that margins are under pressure in all markets and all regions. So, some things do not change!

Printer financial data over time by market

% net balance positive v negative

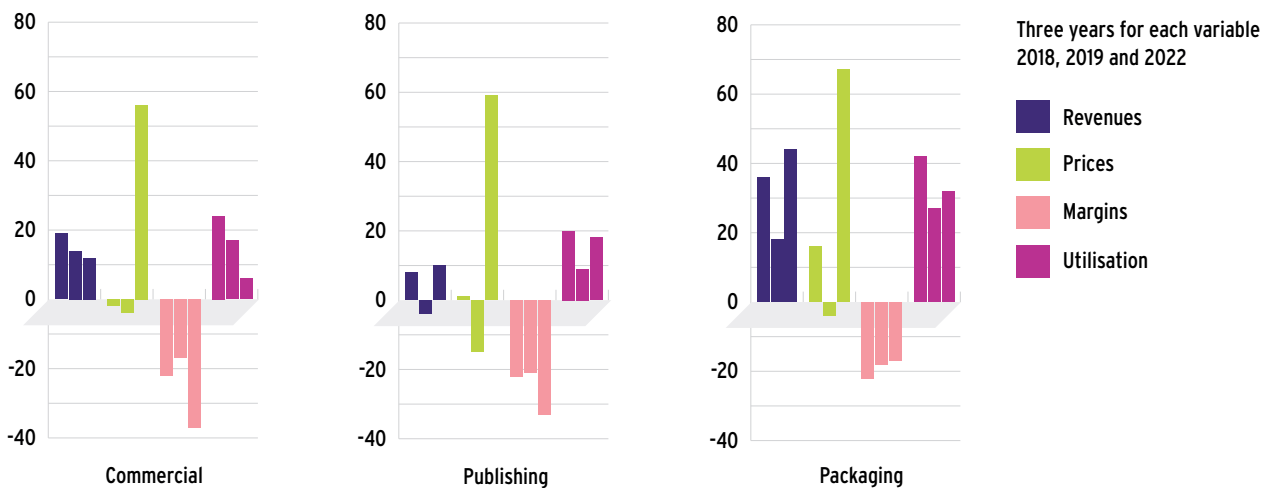


Chart 8: How have your company's revenues/prices/margins/utilisation changed over the last 12 months?

Suppliers

Another shock headline - but less so, as it is the same pattern as for the Printers - namely an unprecedented net positive balance of +60% of suppliers increasing prices over those reducing

prices. The highest previously was the 2018 figure of +16%. Clearly Covid and its aftermath has had a major impact on pricing behaviour right across the industry. This in turn has major implications for inflation more widely if this pattern is repeated in many other industries.

Global supplier financial performance over time

% net balance positive v negative

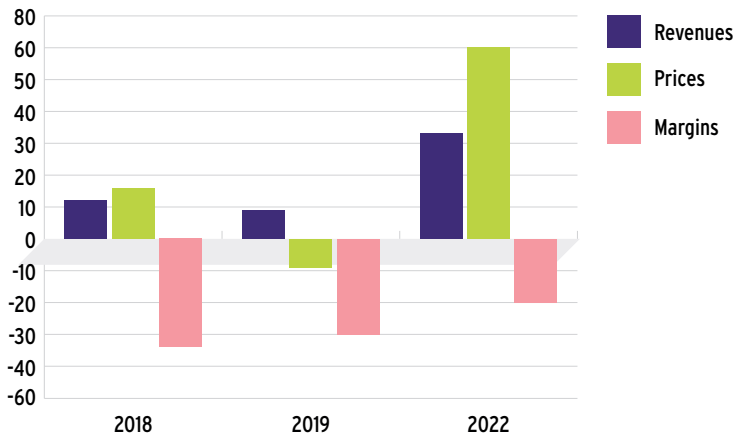


Chart 9: How have your company's revenues/prices/margins changed over the last 12 months?

Revenues also increased substantially - net positive balance of 33% against a previous average of the previous 5 years of 16%. The net effect was to ease the pressure on margins.

Printer operational measures

Print volume 2022 by technology

% net balance positive v negative

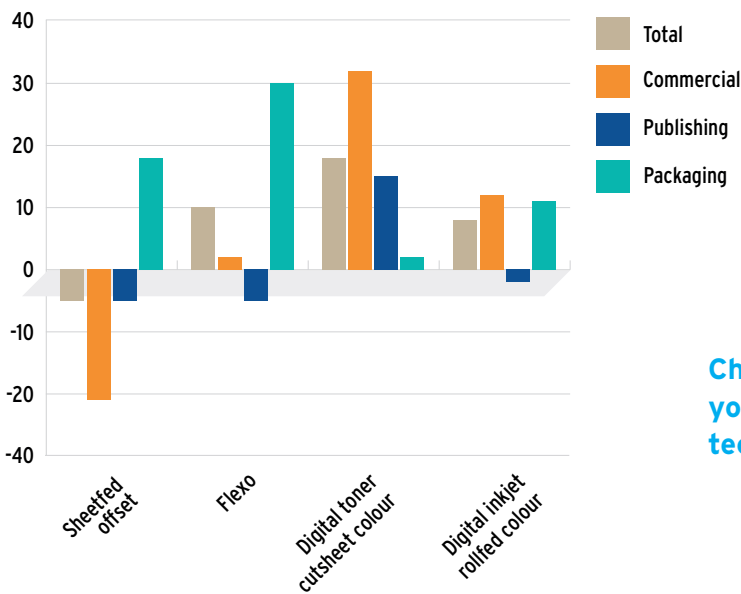


Chart 10: How would you assess your printing volume in the following technologies over the last 12 months?

One key measure tracked since 2013 is the changes in print volume by the huge variety of print technologies used. As in previous years we provide figures for all the main print technologies in the Appendix, but Chart 10 shows the key changes globally by market. Again, to remind the reader these are the positive or negative net balances in volumes. We can see a substantial

decline in Sheetfed offset in the Commercial market (first reported only in 2018) and almost balanced by an increase for Packaging, a huge increase in Flexo again for Packaging, and significant increase in Digital toner cutsheet colour and Digital inkjet rolled colour across several markets.

Digital print as % of total turnover by market over time

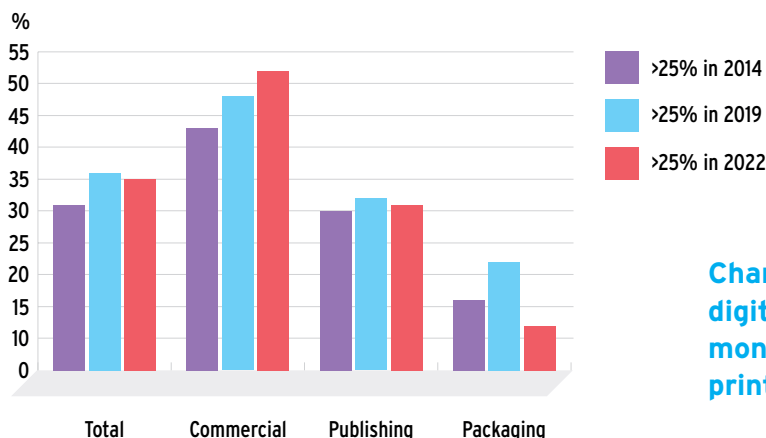


Chart 11: What % of turnover was digitally printed in the last 12 months? - chart shows that % of printers with more than 25% digital

Since 2014, we have tracked the growth of digital print as a % of total print turnover. Interestingly this appears to have stalled globally between 2019 and 2022 although the growth by market has continued in Commercial. (Chart 11 shows the % of printers with more than 25% of total turnover that is digitally printed.) Whether the noticeable drop in Packaging reflects a sample change in the Packaging printers or something more significant we shall see next year.

"[Biggest opportunity is] starting a digital print business for web-portals in packaging."

Packaging printer, Germany

Equally puzzling is the decline in the % of printers reporting they have Web-to-Print or a digital storefront from a peak of only 27% in 2017 to 23% in 2019 and 20% in 2022. Amongst Commercial printers such installations peaked at 38% in 2017 and has fallen to 26% in 2022.

In Publishing it has grown to its highest at 33% this year, whilst for Packaging it has fallen to 7% from 15% in 2019. This last statistic may best be explained by a sample change although the global sample is large, but the lack of overall growth across markets is puzzling.

What is clear is those with Web-to Print installations are receiving a lot more turnover via that channel than before the pandemic (Chart 12). Pre Covid the % getting more than 25% by that means was static at 17%. Now post Covid that has shot up to 26% overall while the 10% increase amongst Commercial printers and the 14% increase amongst Packaging printers are dramatic increases.

"The continuing growth of e-commerce [is the biggest opportunity]."

Packaging printer, Great Britain

% of those with web-to-print with >25% turnover W2P

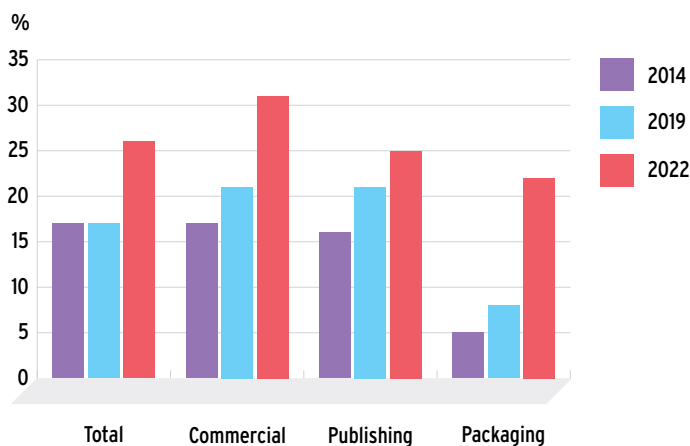


Chart 12: What % of total turnover by value was handled by Web-to-Print over the last 12 months?

Supplier operational measures

There was a big surprise in the mix of revenue streams for suppliers. We would have expected an increase in the proportion of consumables sold with the recovery post Covid. But we did not

expect to see the big swing to core equipment/software/materials - unless that again is the post Covid recovery in materials?

Supplier - Mix revenues

% net balance positive v negative

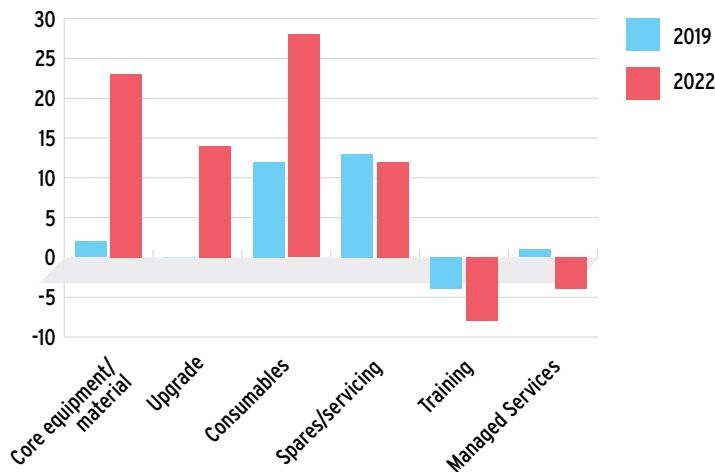


Chart 13: Overall for your region(s) how has the proportion of revenues changed over the last 12 months?

We asked suppliers what were their key internal profit drivers in the next 12 months. New product launches were the most important (63% - up 10% on 2019) and followed by New added value services (40%).

Turning to Marketing, we asked about budgets. 40% stated they would spend more on marketing in 2023 compared with just 11% spend less. Expenditure would be increasing in all channels except Seminars and Conferences - a Covid

legacy? Not surprisingly Online content/education was most popular with a net +45% positive increase over decrease followed by Product training (+31%) then Webinars (+23%).

Examining technical support, there was a decisive swing to Onsite contract servicing - up from 47% in 2019 to 60% in 2022, although Remote support/helpline remains the most common channel at 67%.

Other operational measures for printers and suppliers

Employment amongst printers has fallen globally over the last 12 months, a net negative balance of -5% overall but it varies significantly by region in the range -15% Asia to +40% North America (small data set), with Europe -3% but Germany -21%. As might be expected the picture by market reflects broad market conditions with Commercial globally at -11% net balance, Publishing -13%, but Packaging +9%. Among Suppliers there seems a fairly stable overall workforce over the last 12 months globally and the balance of staffing between markets reflecting that amongst printers. With hindsight it would have been better to ask about changes since 2019 for both printers and suppliers.

38% of the printer sample exported in 2022. This is the lowest % since we first asked this question in 2015 - highest 49% in 2016. However, for those that do export it has been a decent year, with a positive net balance of growth of +19% globally -

although again this is the lowest net balance since 2015. Packaging not surprisingly was the most successful growth market (+32% net balance). Given the global nature of most supplier supply chains, we do not attempt to track suppliers exporting.

"Exporting [is the best opportunity] growing in new markets around our location, North America, Central America and South America."

Packaging printer, Mexico

"Overseas markets are the biggest opportunity."

Packaging printer, India

Capital expenditure

Printers

While there was a small positive net balance globally (+15%) of more printers increasing capital expenditure than decreasing it, the trend is clearly down since 2018 (Chart 14). However, this is hardly surprising given the huge disruption to trading over the last few years. What is encouraging is that in every region there is confidence that

investment will grow again in 2023. North America once again leads the way at +80% (caution small sample), but even Europe forecasts a modest net increase to +21%. The question remains whether these hopes and expectations turn to reality. Next year's survey will tell us.

Printer Cap Ex by region 2022

% net balance positive v negative

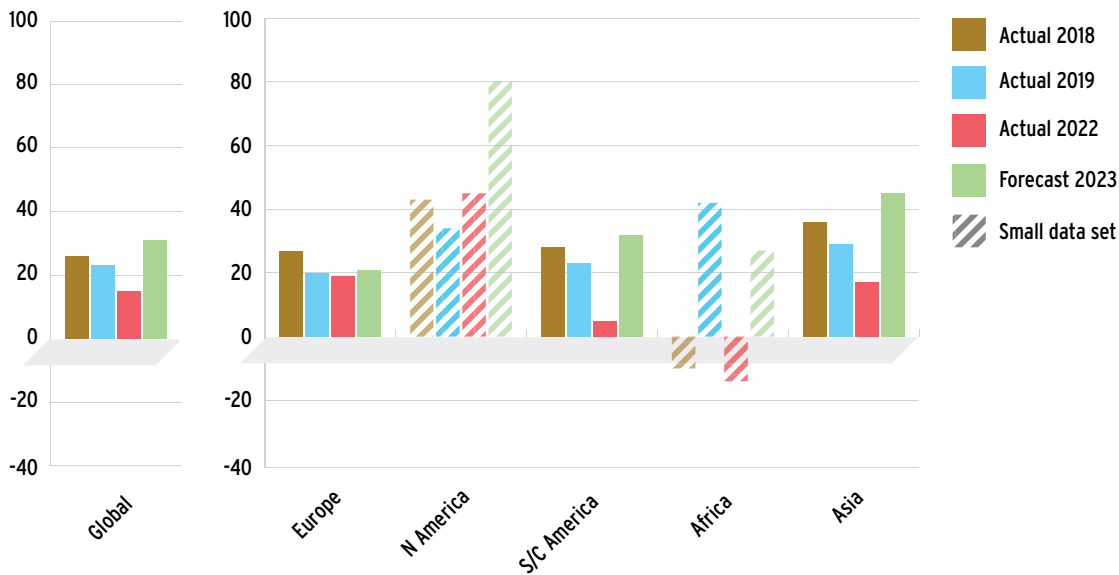


Chart 14: How has capital investment changed over the last 12 months? Over the next 12 months will your company's capital investment go up, go down or stay the same?

The pattern was repeated when we examine the results by market with even the strongest market, Packaging, showing a clear decline since 2018 but

a healthy bounce-back next year. Commercial and Packaging were significantly lower in 2022 but share the optimism for 2023.

Printer Cap Ex by market

% net balance positive v negative

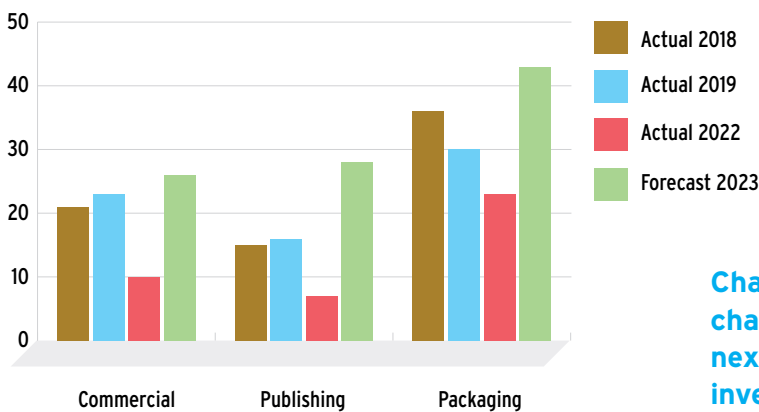


Chart 15: How has capital investment changed over the last 12 months? Over the next 12 months will your company's capital investment...?

When asked how the investment would be spent; 47% globally stated it would go on Print technology, 46% on Finishing. Two specific market related responses are worth mentioning. First that 25% of Commercial printers said they would invest in Web-to-Print (11% Publishing and 9% Packaging) while just 19% of Commercial printers stated they would invest in Site/building compared with 36% in Publishing and 39% in Packaging.

"We are increasing our presence in the national packaging market and we need to move to a larger and more functional plant to save costs and process the merchandise. We want to position ourselves among the top three companies in that market." **Publishing printer, Uruguay**

Printer Cap Ex targets Global

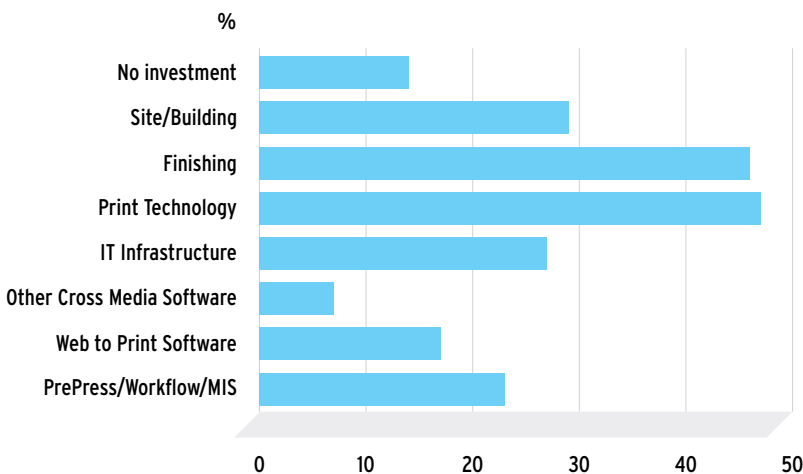


Chart 16: In which areas does your company plan capital investment in the next 12 months?

While the sheer variety of Finishing equipment makes it impractical for us to track investment plans in more detail, we can do so for Print technology. The clear winner globally is Sheetfed offset at 31% with Digital technologies trailing well behind (next highest is Digital toner cutsheet colour at 18%), though their impact is split between different types and if added together they outweigh Offset substantially.

“As the customer and consumer want to have more variety of products in smaller volume and faster lifecycle, then digital printing is an opportunity to fulfil this demand.”

Packaging printer, Germany

“[Biggest opportunity is] having high speed Digital Printing systems i.e., colour and mono (wide format).” **Publishing printer, Pakistan**

“The opportunity is given from incorporating new digital printing equipment to offer better products and services and sustainable paper or products.”

Commercial printer, Argentina

Nevertheless, it is very striking that in 2023 the biggest investment intention in print technology is still in Sheetfed offset. These charts show the most popular print technologies, but tables for all print technologies are provided in the Appendix.

Global Print technology Cap Ex plans 2022

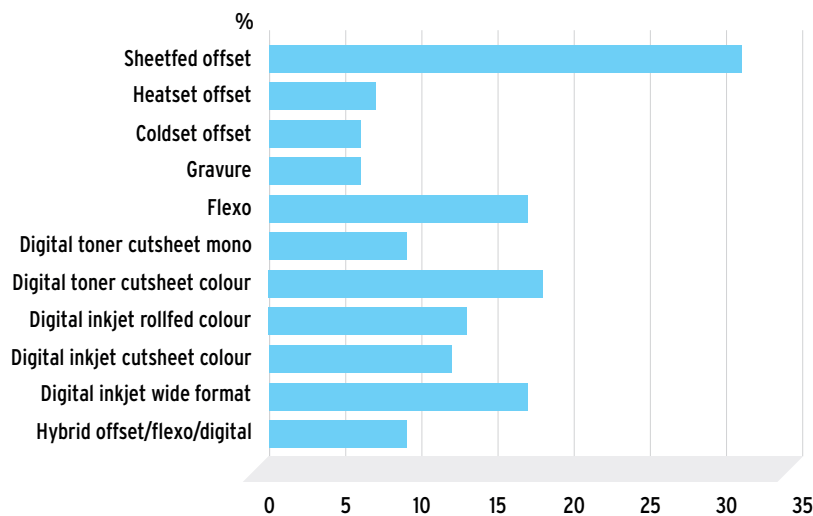


Chart 17: In which of the following print technologies do you plan to invest in the next 12 months?

In addition, if we examine by market, the popularity of Sheetfed offset remains for all three major markets and this despite the reported significant drop in Sheetfed offset print volume by Commercial printers. The explanation must be that the different markets are investing in this technology for different reasons. In Commercial (and probably for Publishing) it is for efficiency - reduced labour and waste, replacing two older machines with one new press etc. While for Packaging it is for increased capacity, as well as efficiency.

Flexo investment is a clear winner for Packaging (39%) and Gravure and Hybrid offset/flexo/digital should not be overlooked for the same market (both 14%). The Digital technologies continue to grow steadily with Toner cutsheet colour (26%) and Inkjet wide format (25%) the most popular for Commercial printers. Toner cutsheet colour (27%) is most popular digital investment amongst Publishing printers. It is worth noting that Publishing Printers' third most popular investment is Coldset offset (24%).

Print technology Cap Ex plans by market

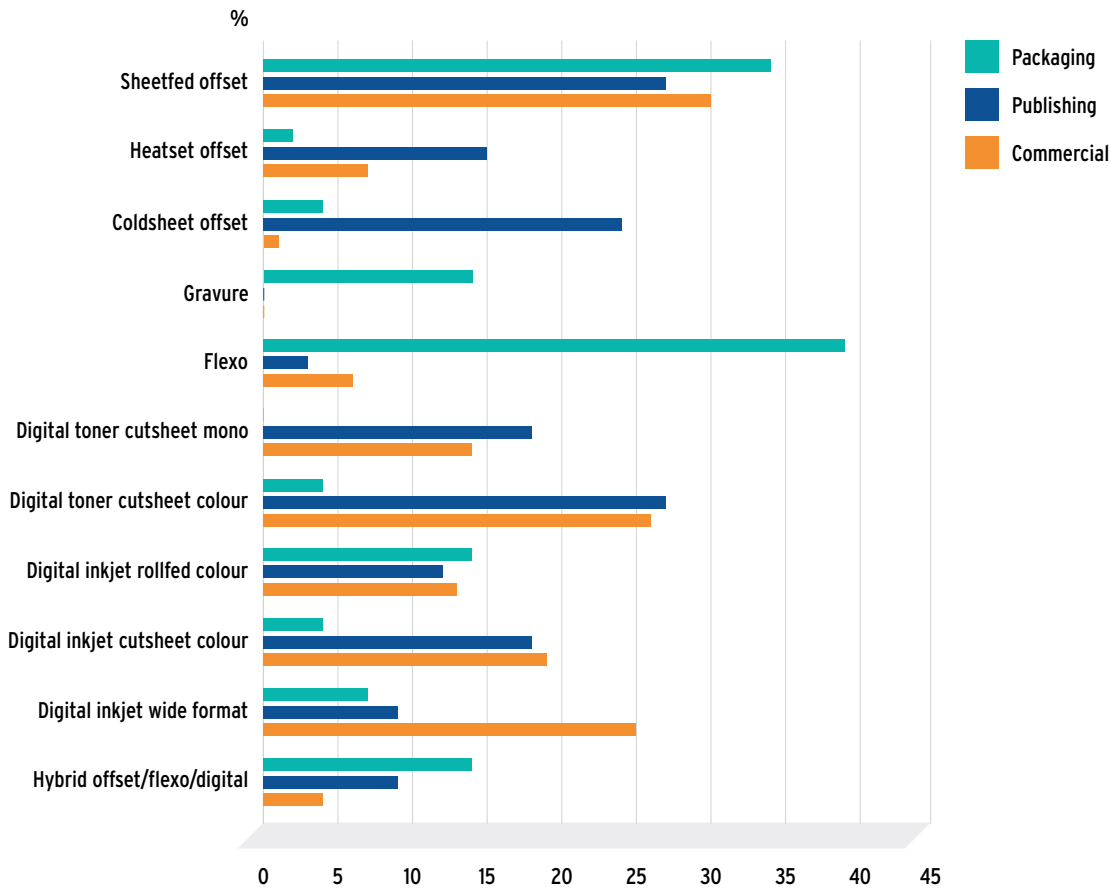


Chart 18: In which of the following print technologies do you plan to invest in the next 12 months?

We asked an additional question this year to examine the impact of the Covid pandemic on the investment pattern. It was clear that Covid had slowed investment for most printers (Global 60%, range 45% North America (small data set) to 77% Asia) and just 13% stating it had accelerated investment. As to where that investment will go in the long term (5 years) 59% will go to create new products (65% Packaging), 46% new markets (56% Packaging) and 43% new services (51%

Commercial). Digital print at 62% and Automation at 52% are the most important technologies for the future, although even 5 years out printers still list Conventional print at 32% as the third most important likely investment.

Printers long-term investment technologies

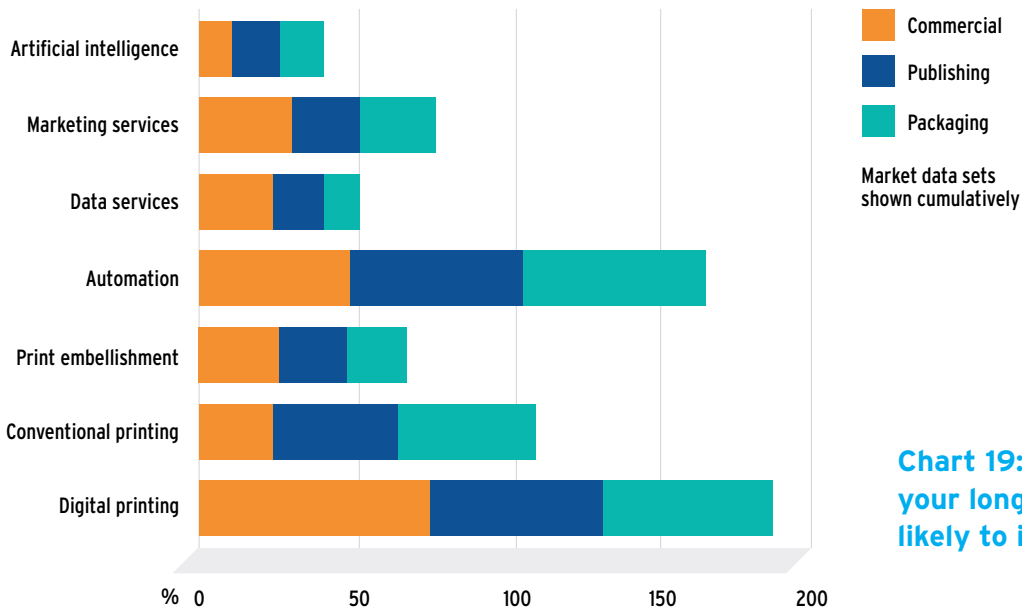


Chart 19: What technologies are your long-term investment plans likely to involve?

Suppliers

Suppliers globally were cautious in 2019 (net positive balance for growth in cap ex just +3% and more positive in 2022 (+15%) and bullish for 2023 (+31%). They have very different views about market prospects, with heavy investment in Functional (31% net positive balance in 2019,

dipping to +27% in 2022 but up to +47% in 2023). At the other end of expectations, investment in Publishing dropped to a net negative balance in 2022 (-7%) but a modest recovery is expected next year (+20%).

Supplier Cap Ex Total and by market

% net balance positive v negative

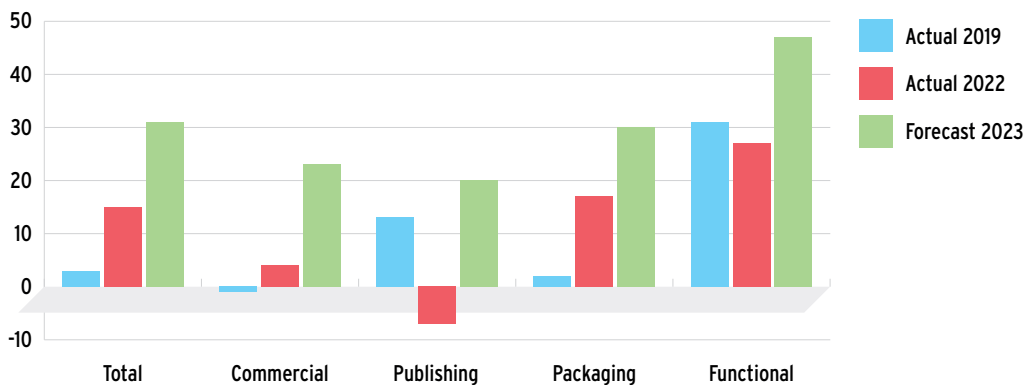


Chart 20: How has capital investment changed over the last 12 months? Over the next 12 months will your company's capital investment...?

*“The most significant opportunity is not only to reduce man-hours by dramatically automating the process through in-line inspection equipment that differentiates us from our competitors, but also to enable us to enter an industry that, until now, has not been able to use digital printing presses to their full potential.” Commercial, **Publishing and Packaging supplier, Netherlands***

Suppliers plan to spend most investment on developing new channels (38%) followed by enhancing existing products (36%) and raising

efficiency/reducing capacity (34%). There are some notable variances between markets on Research and Development (R&D). This is the most common target for the Functional market (40%) but shrinks to a modest 16% for Publishing.

*“Innovate new products, develop more high-quality, more environmentally friendly and energy-saving products, realize Industrial Automation 4.0, and improve production efficiency.” **Packaging and Functional supplier, China***

Global Supplier 2022 Cap Ex targets

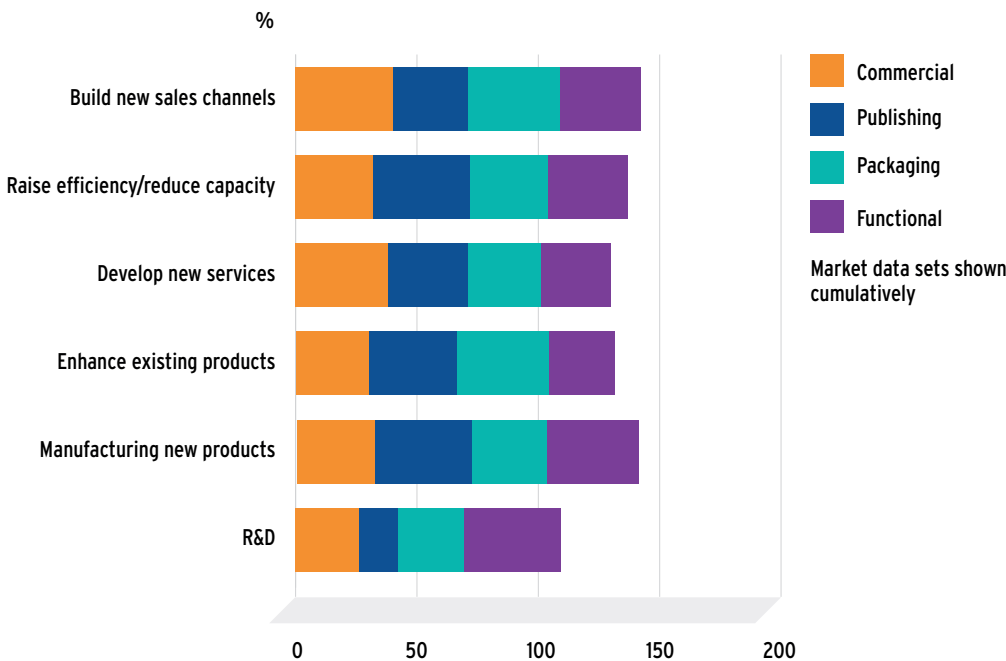


Chart 21: What are the two principal reasons for your overall capital investment plan?

We asked Suppliers the same question about the impact of Covid on long term investment and 50% stated it had slowed down investment, 32% said it had no impact and just 18% stated it had accelerated investment. The pattern of investment by technology over the long term was

almost identical to that for Printers with 48% choosing Automation, 46% Digital Print (range 42% Publishing to 60% Functional), and 28% Marketing services.

Strategic challenges

Our last survey was pre-Covid, pre-supply chain difficulties and pre the Ukraine war. Printers, Print Suppliers and indeed the whole global economy have experienced more shocks in the last three

years than at any time since the 2nd World War. So, we make no apology for giving broader strategic issues more attention this year than before.

Supply Chain Disruption

In the short to medium term there has been massive disruption to supply chains and it was no surprise that both printers and suppliers confirmed this had been their experience and that they expect problems to persist into 2023.

The 'Global' figures in Chart 22 are the overall %s of those experiencing significant supply chain difficulties. For Printers it is Substrates and Consumables and for Suppliers Raw materials that are the problems.

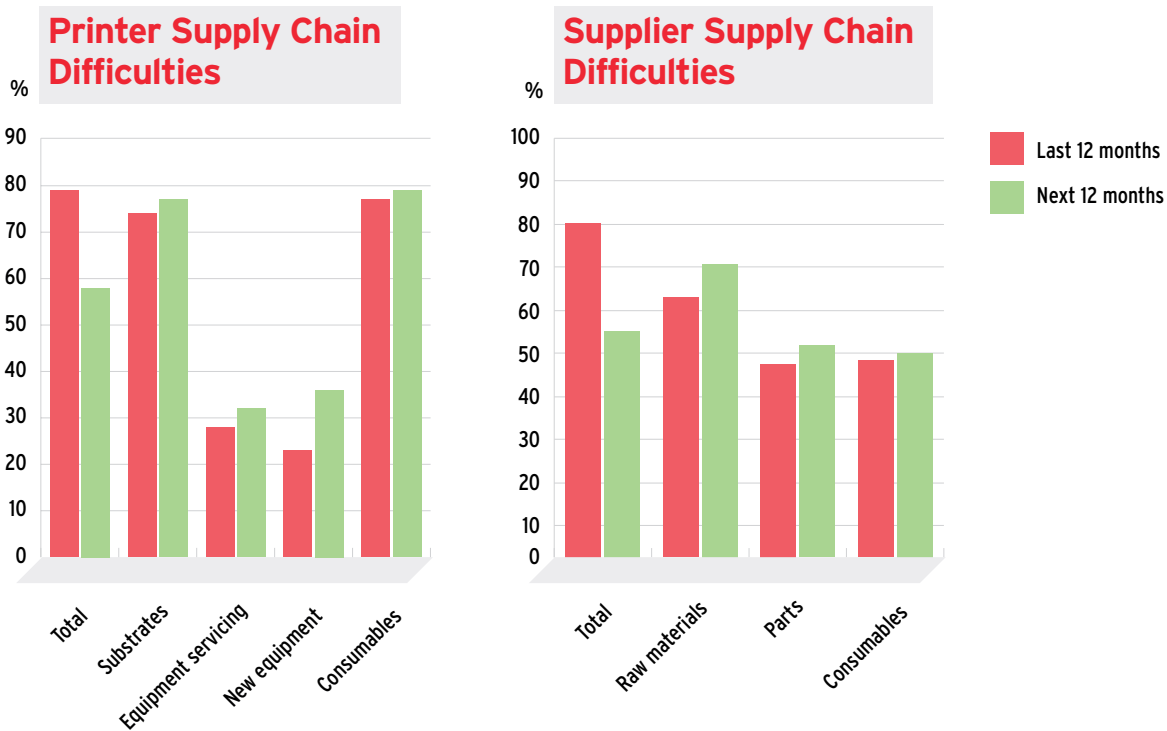


Chart 22: Have you experienced significant supply chain difficulties in the last 12 months or do you expect them in the next 12 months? Please state which supplies

"[The challenge is] capitalizing on current demand while being able to obtain the correct/sufficient amounts of substrate & raw materials."
Commercial printer, USA

"Broken supply chains brought us new customers. Our biggest opportunity/challenge is to keep them after all goes back to normal, if it does at all..."
Publishing and Packaging supplier, Bulgaria

"The best opportunity we have is to be close to our clients, it has been shown that globalization is weak and dangerous." **Packaging printer, Spain**

Labour shortages

The second strategic issue we explored, Labour shortages, may prove to be a longer-term threat to the industry, and has been an issue post-Covid for many this year. Globally 41% of printers stated they had significant labour shortages in the last 12 months. Most regions were around that figure though North America was up at 65% and Africa at just 14% (small data sets for both). Finishing staff (72%) and Conventional press operators (59%) were the prime challenges globally. In response to these shortages, 35% reported they had increased wage/salary levels in the last 12 months and 33% expected to do so in the next 12 months.

36% of suppliers reported labour shortages in the last 12 months, most notably in Manufacturing (69%) and Technical Support (50%). 25% reported they had raised wages/salaries in response in the last 12mths and 34% planned to do so in the next 12 months.

"[Biggest threat] Skill shortages and competition for labour." **Publishing printer, Italy**

"[Biggest threats] Physical war and a lack of skilled printing specialists." **Packaging supplier, Lithuania**

"[Biggest opportunity] Deploy new solutions reducing the need for skilled employees who are rare to find." **Packaging supplier, Switzerland**

Environmental, Social and Governance

Another increasingly important issue carries an acronym, ESG, meaning the wide range of Environmental, Social and Governance issues⁵. Both printers and suppliers acknowledged that these issues are becoming increasingly of concern, both to them and their customers (80% of printers and 77% of suppliers stating this was a more important topic than in 2019). And this is a global phenomenon with very little variation in the level of concern between the regions.

Focussing on Sustainability and Environmental issues the results were almost identical for both

printers and suppliers. However, there were modest variations in the relative importance of environmental issues. For Printers the use of Accredited papers (e.g. FSC/PEFC) was very important (54% globally) particularly in those regions where such accreditation schemes are well established, with the use of recycled paper (40% globally) more important in other regions. Waste management at 48% was the second most important issue. For Suppliers, Waste reduction was the most important at 48%, with energy reduction the next most important at 37% - a topic that we expect be of concern to all next year.

"[Biggest opportunity] Focus our efforts on printing for packaging meeting the sustainability and environmental requirements."

Packaging supplier, Japan

"Move towards sustainable and recyclable products to reduce the use of single use plastics."

Packaging supplier, India

Diversification

Given the huge challenges of the last two years, we were keen to ask whether they had prompted an acceleration in diversification among both printers and suppliers. The answer was a clear 'Yes'. Since 2019, 50% of printers globally had introduced new products (60% for Packaging), 40% new services and 35% entered new markets. 59% of the new products and 72% of the new services involved technologies new to the printers involved. In all cases, the printers stated that only about 25% of these initiatives had been prompted by the Covid pandemic, though it is the authors' experience with their own clients that in many cases while Covid did not specifically prompt the work to be done, it did create the opportunity to get on with something that had been intended, but never quite started when 'normal' busy conditions existed.

5. **Environmental:** energy and water consumption, waste output and management, pollution mitigation, material usage and compliance with environmental laws **Social:** Within workplace - diversity, equality, labour standards, supply chain management Customers and broader community - product safety, customer privacy, community engagement **Governance:** Transparency, Connectivity with stakeholders, Equality, Fairness and Efficiency

Diversification since 2019

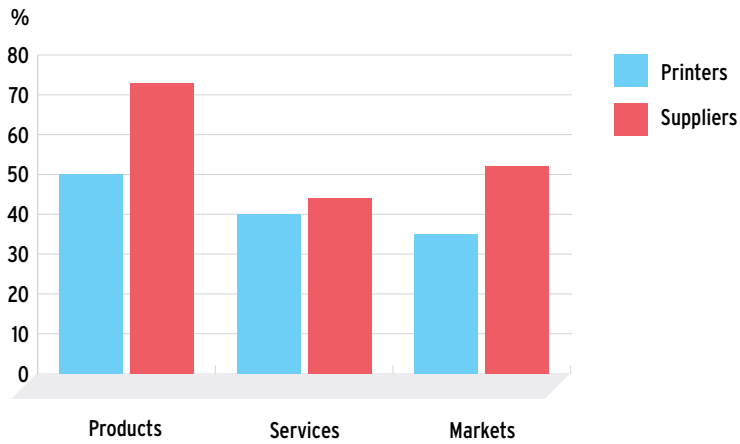


Chart 23: Has your company introduced major new products/services/entered new markets since 2019?

For suppliers, 73% had introduced new products since 2019, 44% new services and 52% entered new markets. Again, only between 15-20% was stated to be prompted by Covid. Almost 60% of both new products and services involved technologies new to the suppliers concerned.

“[Biggest opportunity] Innovative ways of marketing. Value added services. Creating new revenue streams. Adoption of new technologies.”
Commercial/Packaging/Publishing/Functional Supplier, India

“This is the best time to diversify.”

Commercial printer, India

We wondered if Covid and its aftermath would have accelerated restructuring across the industry. So far, the evidence is of a modest impact as evident from Table 2. Both Printers and Suppliers state that Covid prompted only c.20% of these changes. Among Suppliers, it is worth noting that Strategic technical partnerships remain very important with 32% having entered a new one since 2019.

	% Printers	% Suppliers
Taken over by another company	2	4
Taken over another company	7	9
Merged with another company	3	3

Table 2: Has your company been restructured since 2019?

The print market - short and long term

Top print market constraints next 12 months

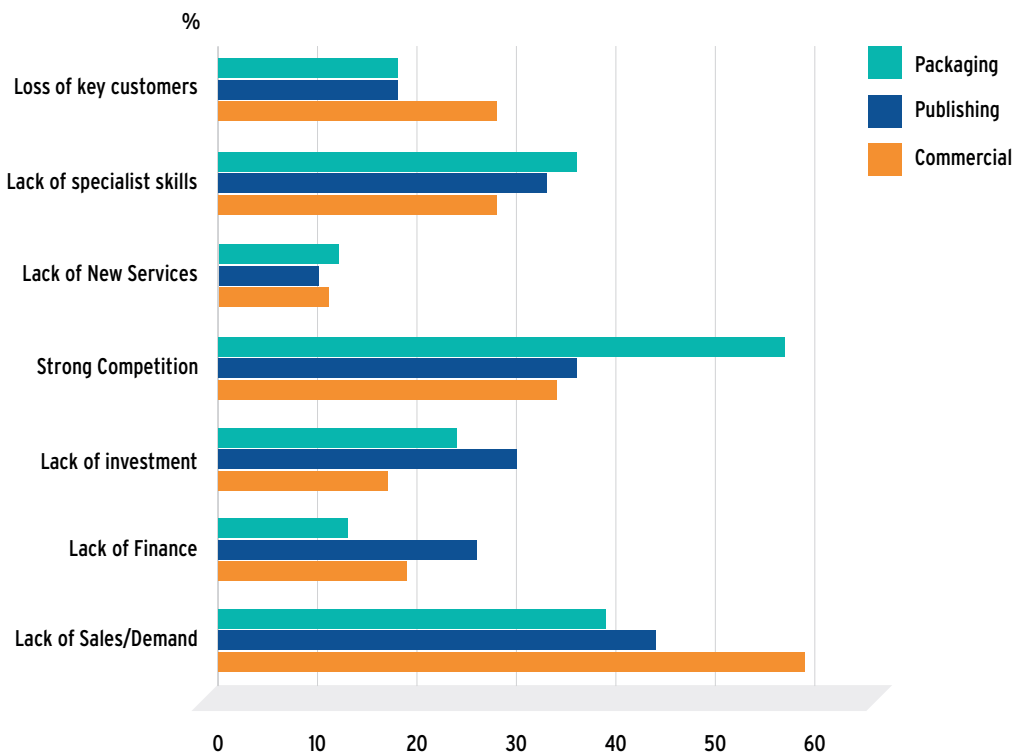


Chart 24: What are the top two print market constraints to growing your revenues over the last 12 months?

Chart 24 shows the top constraints on the print market over the next 12 months. The figures shown are for Printers but the global figures for Suppliers are very similar. Lack of demand and competitive pressures remain the dominant concerns, but there is increasing attention to the lack of specialist skills. Over a longer 5-year period (Chart 25), this becomes an increasingly important issue for both printers and suppliers, with the impact of digital media being the most important.

The biggest threats to the print market over the next 5 years

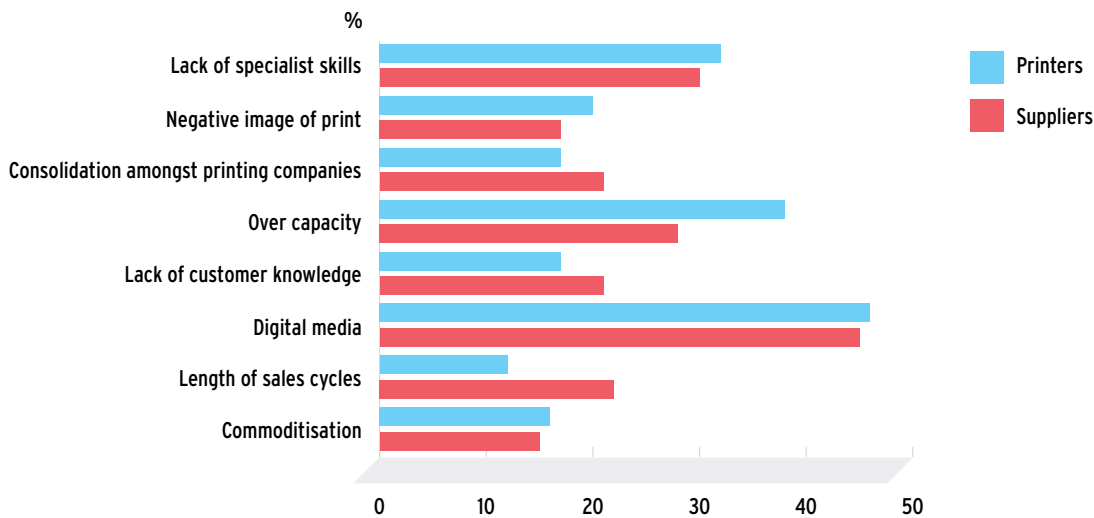


Chart 25: Which of these elements do you consider the greatest threats to the printing industry over the next 5 years?

As to the underlying technology changes that are driving these challenges, there was broad agreement between printers and suppliers that the most important is Automation and data exchange - so called Industry 4.0, followed by Cross media integration with print and the Use and management of 'big data'.

Socio-economic threats

When the Trends series started in 2014, little attention was given to issues beyond the print market itself. Things have changed. The Covid pandemic, Global supply chain challenges, physical wars - e.g. in Ukraine and the Middle East and trade wars e.g. US and China and Brexit: have all

had a severe impact on printers and suppliers. Climate change waits in the wings. Chart 30 shows the impact for printers both globally and for those regions we have adequate data sets. Globally 52% highlighted the impact of pandemics either directly or on the economy and 42% chose Economic recession in their country or region. However there were some noticeable regional variations. For example, 62% of Asian printers chose pandemic impact versus 52% globally; 58% of South/Central American printers chose Economic recession versus 42% globally; and 32% of European printers chose regional physical wars versus 21% globally.

Socio-economic issues impact Printers - by region 2022

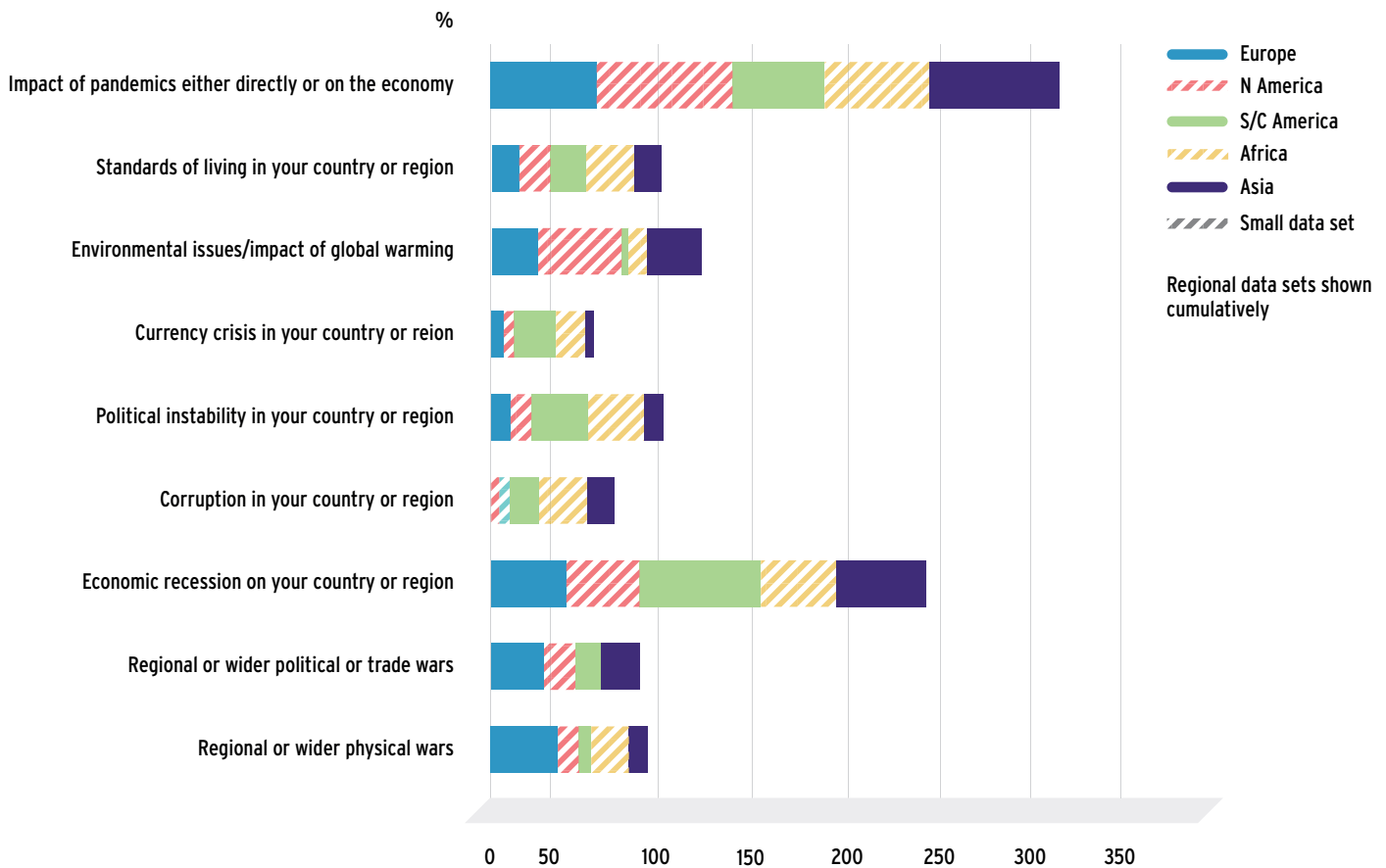


Chart 26: Which two of the following socio-economic issues are having the greatest impact on your print business?

What is more, there was an almost equal balance between those printers and suppliers that thought market pressures were more important (45% printers and 42% suppliers) and those that thought socio-economic and market pressures of equal importance (41% printers and 41% suppliers). The balance thought socio-economic pressures more important, i.e. those who think that market pressures are more important are now in the minority.

"[Biggest threat] Political unrest, Pandemics, war and terror in international scenario."

Publishing printer, Pakistan

"[Biggest threat] War, Covid and supply chain disruption."

Publishing printer, Portugal

Market specific data

The breakdown of the printers' market specialisations is given in the Appendix. This being the first survey since the Covid pandemic, we chose to focus more questions on the challenges

caused to all printers since 2019, instead of examining trends within the specific print markets. We plan to get back to such questioning next year.

Conclusion

The print industry and the world as a whole has been through a very challenging period of over two years since the last survey was conducted in 2019. So, it is useful to take the long view of economic confidence, using the drupa Barometer

back to 2014. We see confidence peaked in 2016/17 and fell subsequently. But it is remarkable given the challenges of the last two years, that confidence levels this year were a little higher than they were pre Covid in 2019.

Global economic confidence over time

% net balance positive v negative

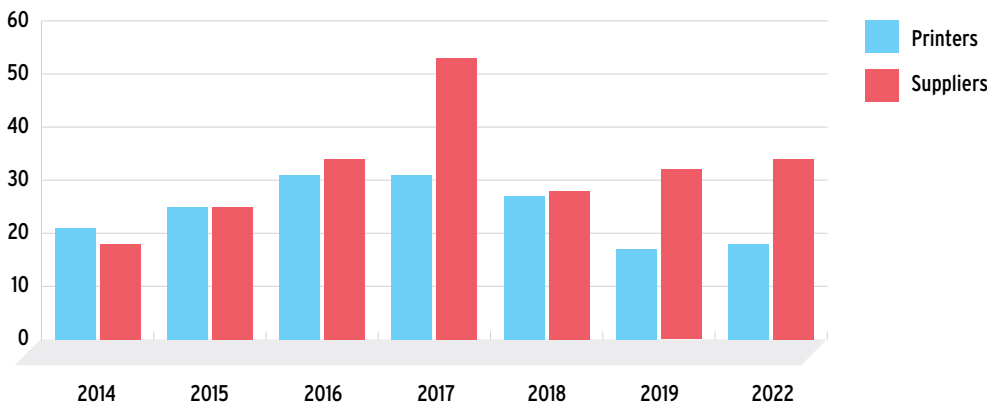


Chart 27: How do you rate your company's current economic situation? What are your expectations for the next 12 months?

What is more, most printers and suppliers forecast better trading in 2023. This is not universal either regionally or by market but bodes well. There are challenging times ahead; the socio-economic issues raised in the survey and the economic commentary are many and severe and the longer-term market issues such as the impact of digital media will continue to erode some print markets. It is clear that those in the

Commercial and Publishing markets in particular must adapt accordingly and the huge increase in diversification since 2019 is testimony to the positive response from many printers and suppliers.

There is no getting away from the truth that however challenging market and broader economic conditions are, companies thrive who

look ahead strategically, invest wisely in both equipment and their people, and seek out and grasp opportunities despite the ever-present threats. Perhaps the balance of opportunity and threat is best expressed in this extended quote from a commercial printer in the United Arab Emirates.

“On the plus side: Printing has evolved from simple ink on paper to a marketing item which attracts a customer towards a product or service. As such every print item, whether it is packaging or promotional display item, is used for promoting product and services. Subsequently we are continuously involving in providing the market with innovative printing without diluting turnaround time. As against illusional marketing methods on digital platforms, print products have tangibility factor which connects well with human physiology.

On the down side: Digital marketing and its direct influence on customers opting to buy goods and services on digital platforms. This would subsequently eliminate the role of print marketing on both commercial printing and commercial packaging, as customers have already made their decision to purchase a product or service from a digital purchasing platform which eliminates any marketing element from a packaging or commercial print item.” **Commercial printer, United Arab Emirates**

The strong supplier bookings for drupa 2024, show that they have confidence that printers will return in very large numbers to use the show and its associated conference programme to seek out those opportunities and delight in getting back together again after such a long and challenging break. See you there!

Appendix

Table 3: drupa expert panel participants by region

	Printers	Suppliers ¹
Europe (Including Russia)	179	94
South and Central America	66	31
North America	20 ³	34
Asia	47	52
Australia/Oceania	5 ²	16
Middle East	16 ²	24
Africa	22 ³	22
Global Total	355	151 ⁴

1. Participants reporting for a region may or may not be based in that region.
2. Data sets too small to be used separated out but included in global data sets
3. Small data set - used but highlighted as small in text and charts
4. Total is less than the sum of the regions as some suppliers reported for multiple regions

Table 4: drupa expert panel printer participants by prime market¹

	Commercial	Publishing	Packaging
Europe	88	31	50
Rest of World	66	30	72
Total	154	61	122

1. There were 27 Functional printer participants (11 in Europe and 16 in the rest of the world). These were included in global data sets but were not used as separated data sets, as it was considered it was too small a sample to adequately represent such a varied market sector.

Printer site turnover - global and by market

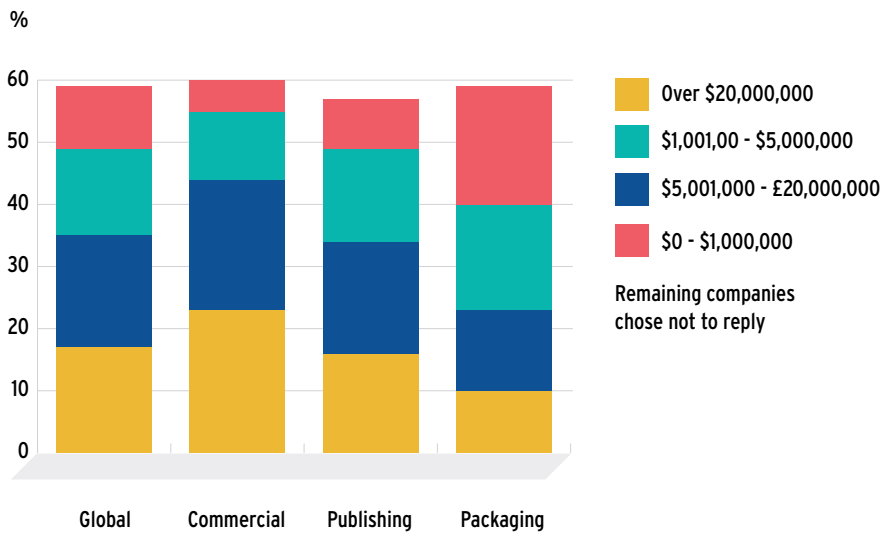


Chart 28: What was the annual turnover at your site in 2021?

Table 5: Printer % Volume change by print process in total and by market (Excludes separate data sets of <20 printers but included in total figures)

	Total	Commercial	Publishing	Packaging
Sheetfed offset	-5	-21	-5	18
Heatset offset	-2	-6		
Coldset offset	-4	-6	-5	
Gravure	0			6
Flexo	10			30
Screen printing	-3	-3		0
Letterpress	-3	-1		
Digital toner rollfed mono	5	6		
Digital toner rollfed colour	6	7		
Digital toner cutsheet mono	5	6		
Digital toner cutsheet colour	18	32	15	2
Digital inkjet rollfed mono	3	3		
Digital inkjet rollfed colour	8	12		11
Digital inkjet cutsheet mono	2	6		
Digital inkjet cutsheet colour	5	6		
Digital inkjet wide format	5	9		
Thermal	1			
Hybrid offset/flexo/digital	4	2		11

How would you assess your printing volume in the following technologies over the last 12 months?

Table 6: Printer investment plans for print technology 2023 - Global and by market

% Planning investment	Global	Commercial	Publishing	Packaging
Sheetfed offset	31	30	27	34
Heatset offset	7	7	15	2
Coldset offset	6	1	24	4
Gravure	6	0	0	14
Flexo	17	6	3	39
Screen printing	6	7	0	7
Letterpress	1	1	3	0
Digital toner rollfed mono	1	1	0	0
Digital toner rollfed colour	4	3	9	4
Digital toner cutsheet mono	9	14	18	0
Digital toner cutsheet colour	18	26	27	4
Digital inkjet rollfed mono	2	1	6	2
Digital inkjet rollfed colour	13	13	12	14
Digital inkjet cutsheet mono	2	0	6	2
Digital inkjet cutsheet colour	12	19	18	4
Digital Inkjet wide format	17	25	9	7
Thermal	3	3	3	4
Hybrid offset/ flexo/ digital	9	4	9	14

In which of the following printing technologies do you plan to invest in the next 12 months?

Glossary

Commercial printer	General printing, Direct Mail, Business forms, Security, Wide-format (rigid and flexible media), Photoproducts, Transactional, Trade finishing for commercial work.
Publishing printer	Newspapers, Magazines, Catalogues and Books (Conventional, Short-run and On-demand), Trade finishing for publications.
Packaging printer	Labels, Cartons & Carton board, Flexible packaging, Corrugated/Secondary, Rigid, Point of Sale/Point of Purchase/Banners.
Functional printer	Industrial/Decorative work - Textiles, Wall coverings, Other decorative printing, Ceramics, Printed electronics, 3D.
Digital toner cutsheet mono	Single colour Electrophotography/Toner machines with sheetfed paper supply. Includes both dry and liquid toner types.
Digital toner cutsheet colour	Multiple colour Electrophotography/Toner machines with sheetfed paper supply. Includes both dry and liquid toner types - dry is limited to SRA3 and long A3 formats, liquid can be made up to B2 and even B2 formats.
Digital toner rollfed mono	Single colour Electrophotography/Toner machines with rollfed paper supply. Includes both dry and liquid toner types.
Digital toner rollfed colour	Multiple colour Electrophotography/Toner machines with rollfed paper supply. Includes both dry and liquid toner types. Most dry toner types are limited to about 330mm wide, but Xeikon (dry) and HP Indigo (liquid) can handle 500+ mm.
Digital inkjet rollfed mono	Mono and colour single-pass inkjet machines with rollfed paper supply. Usually high speed, high volume and Inks are usually aqueous and substrates are usually paper.
Digital inkjet rollfed colour	Multiple colour single-pass inkjet machines with rollfed paper supply. Usually high-speed, high-volume Inks are usually aqueous and substrates are usually paper.
Digital inkjet cutsheet mono	Single colour single-pass inkjet machine with sheetfed paper supply. Inks are usually aqueous and substrates are usually paper.
Digital inkjet cutsheet colour	Multiple colour inkjet machines with sheetfed paper supply. most production-class inkjet "presses" are B2 format, distinguishing them from cutsheet dry toner machines that are usually limited to SRA3 and long A3.

Glossary (cont)

Digital inkjet wide format	Wide format multiple colour inkjet machines either cutsheet (including papers or rigid media) or rollfed. Normally uses multiple pass printheads to build up image more slowly but with higher quality potential than fast single-pass types. Inks may be aqueous, solvent/ecosolvent, latex, UV-cure (or UV-hybrids of two types), plus dye sublimation and specialist textile fluids. The various inks all work with different ranges of media, but include papers, vinyls and other plastics, synthetics, natural and synthetic fibre textiles. Rigid media used with UV inks can include card, corrugated, metals, plastics, wood, glass, etc.
Thermal	Digital print using coated thermochromic paper or a thermal transfer ribbon. Often used for coding and marking.
Hybrid offset/flexo/digital	Multiple print processes included in the same machine.
SKU	Stock Keeping Unit (an individual item/product with a unique reference identifier).
VDP (Variable Data Printing)	A form of digital printing in which elements of text and graphics can be changed from one sheet to another.
Web-to-Print	E-commerce system for the ordering and submission of print jobs online.