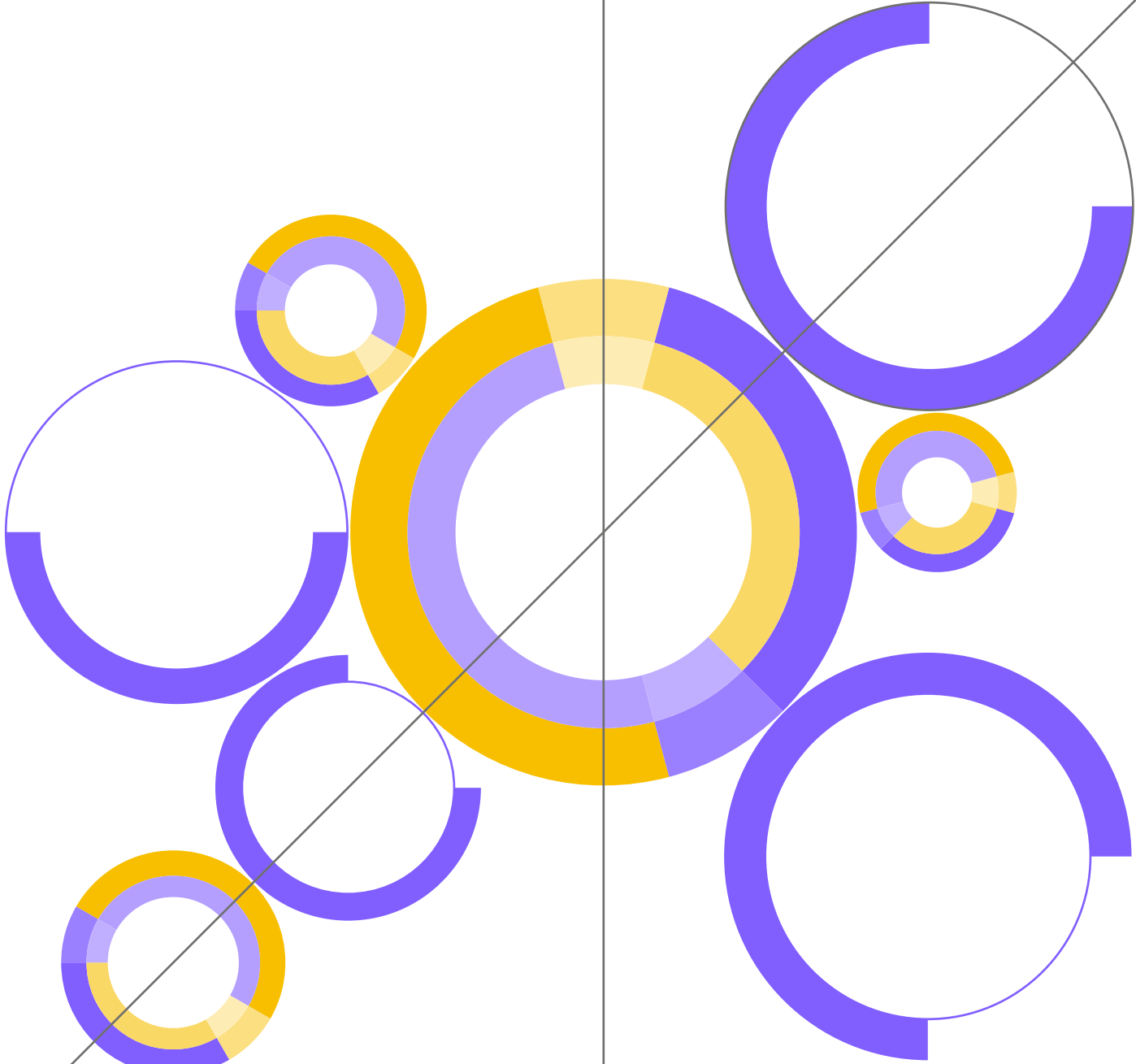


RICOH



Accelerating the Power of Information_ 2025

Industry report
on technology's impact on
commercial printers



Preface

Here's the lead – print is not dead, nor is it dying. However, you and other commercial printers face undeniable challenges on multiple fronts: supply costs, continued pressure from digital-first competitors, changing consumer desires, environmental factors, and perhaps your tallest hurdle, a labor shortage exacerbated by voluntary exits. So, you can't hire fresh recruits and you can't retain your most skilled talent. Sobering, yet we maintain that print's glossiest days are still ahead for those who are making strategic moves today.

For commercial printers, there is no time to waste. The cost, quality, flexibility, and automation advantages of continuous and sheet fed digital printers are tough to argue against. Nonetheless, offset remains viable, with 38% of commercial print work projected to still be traditional in 2026.¹ We see leaders emerging with the focus and drive to develop more well-rounded capabilities than their competition – namely worker skills and an organizational culture that embraces automation, robotics, and AI and makes decisions driven by internal and external data.

Digital printing solutions can help ensure your profitability by increasing offset's efficiency and accounting for a scaled-back labor force. Because we believe future printing plants will absolutely have fewer skilled employees, operating automated offset and digital presses in tandem. You'll find more detail and valuable insights here, in our latest industry report:

Increasing commercial print profitability

Augmenting a workforce with digital presses and automation

“Our industry is resilient, innovative and essential to society. Paper communicates in ways electronic media can't. Yet, the challenges for print are real, chief among them the talent shortage. We hear this almost daily from clients in the space. At the same time, we find commercial printers eager to adopt new technology that helps them optimizes workflows, train and upskill workers, and expand into promising new lines of business.”

— Gavin Jordan-Smith, Senior Vice President and General Manager, Ricoh Graphic Communications



73%
DECLINE IN SKILLED
PRINT TRADESPEOPLE

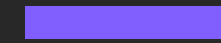
52%
DIGITAL PRINT CAPABILITIES

59%
EXPECT BETTER PROFITABILITY

13%
AUTOMATED WORKFLOW

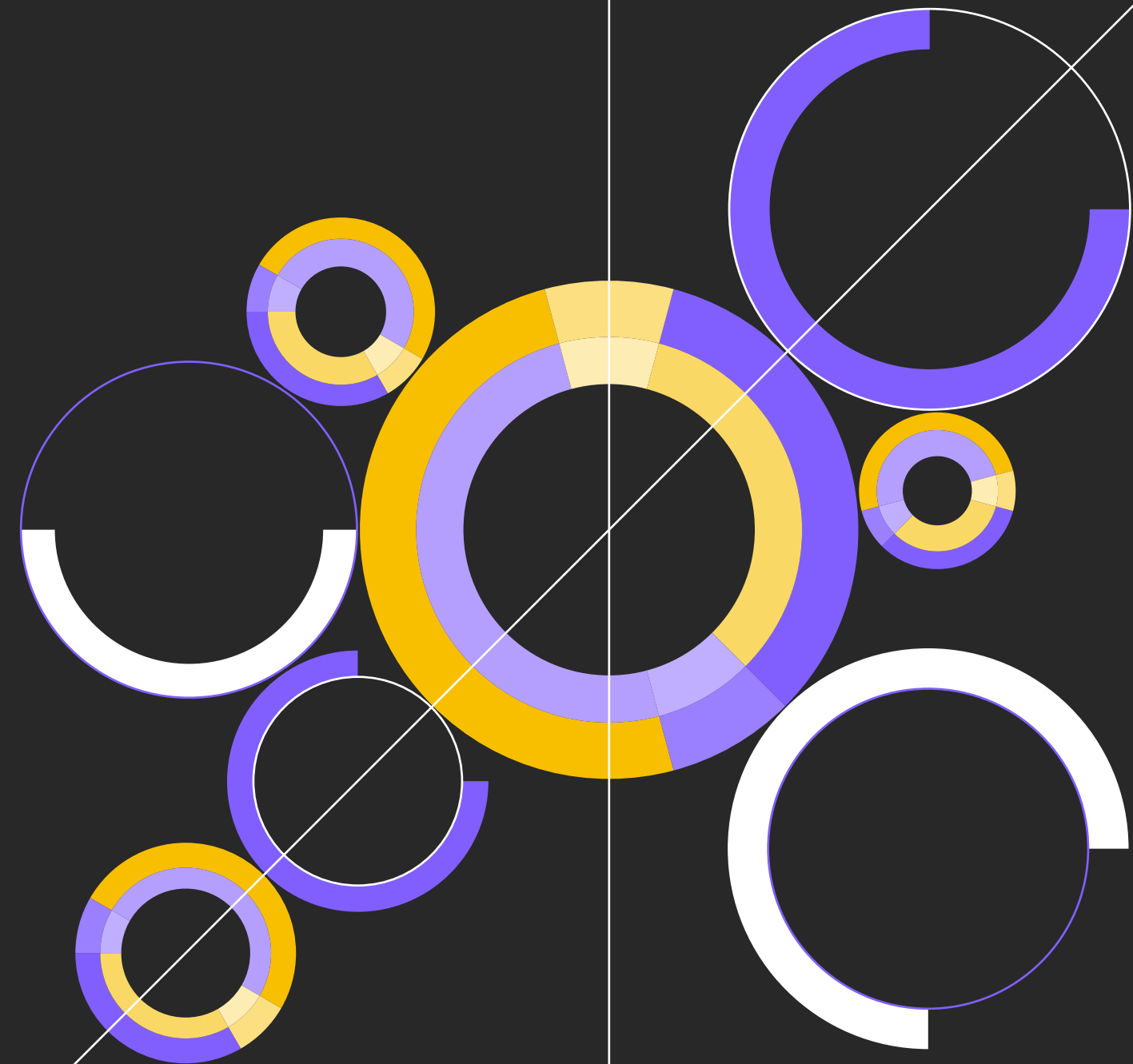
¹ Printing United Alliance, *State of the Industry Report 2024*, April 2024

Today's commercial print reality



73%

Decline in skilled print tradespeople
2006-2021*



* PrintWeek, *Is the Decline in Skilled Print Workers a Cause for Concern?* February 15, 2023

Today's reality: labor shortages, skill gaps and rising wages

1. Voluntary and forced exits

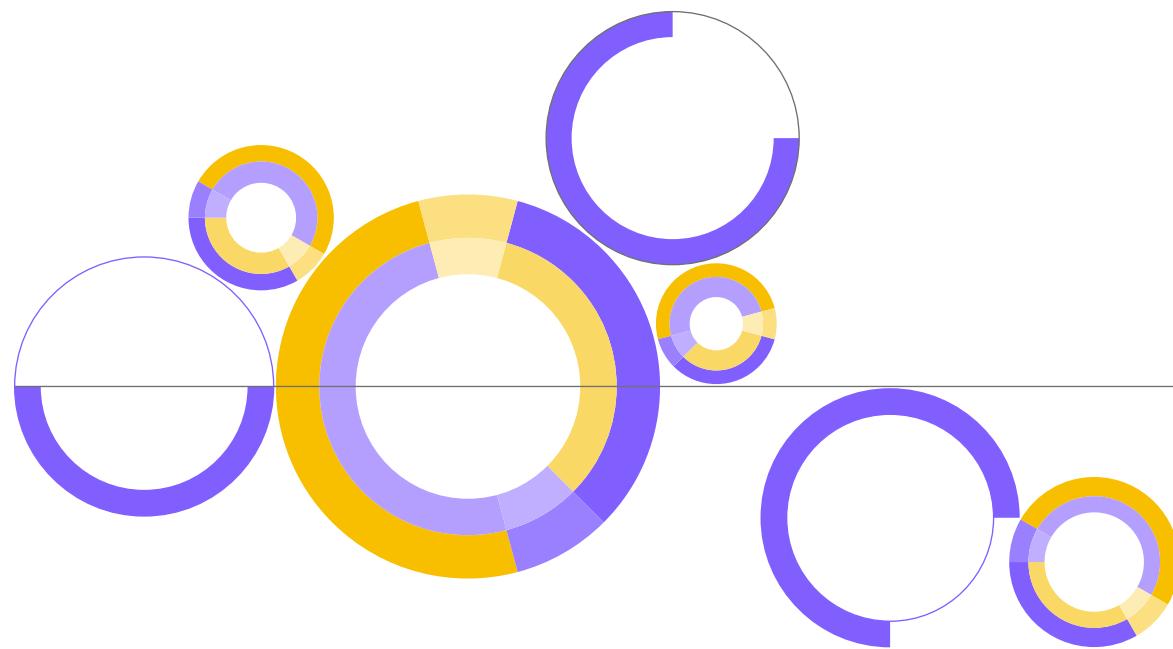
An entire generation is slowly exiting the workforce. In addition to boomers, many younger workers no longer want jobs anywhere in the printing process – pre-press, press floor or bindery – rejecting the hot, dirty, and labor-intensive conditions. Further, lack of succession planning within family-owned businesses means shops are either shutting or folding into larger operations where highly compensated workers are often squeezed out.

2. The vanishing journeyman

Many young people see this respected craft as too analog or mechanical. So, who will take up the torch if there's few skilled tradespeople to teach and fewer still who want to learn it?

3. Rising labor costs

Legacy employees who have been with a company decades are now receiving maximum compensation, with the average Prepress Manager's salary at almost \$77,000 and an Operations Manager topping out \$111,000.² This doesn't imply that these hardworking professionals aren't worth every penny, they are. Especially when you consider in some instances, they might be single-handedly operating a pressroom that once required 10 or more workers.

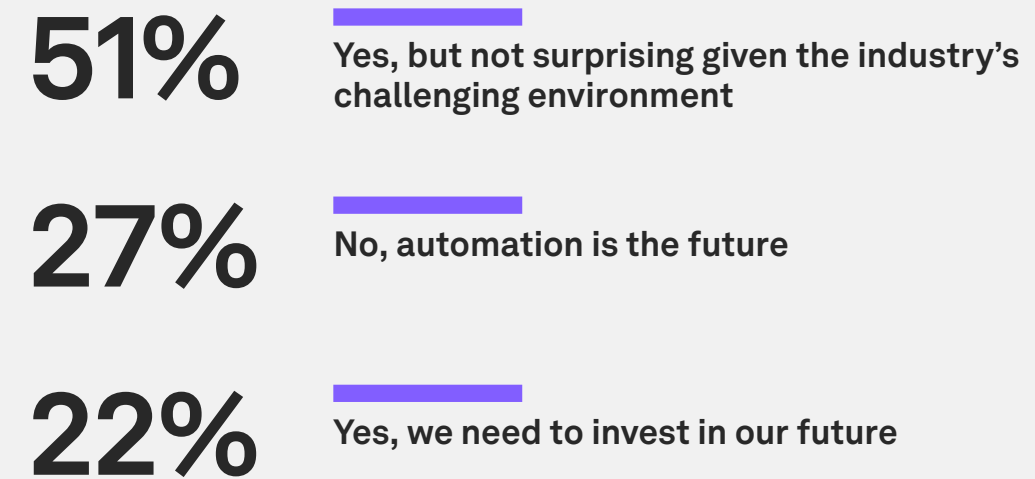


When commercial printers add these factors to rising supply costs and margin squeeze, it's easy to see why many are looking for a way out. We suggest they instead look for ways to lean on their strengths, because there is much room for efficiency, innovation and growth.

The printer's irony

The industry is changing so fast that stereotypes of it being an archaic vocation are no longer valid. Workers today need to understand automation, data, software, and other time-saving smart technologies. Across the printing ecosystem you'll find valuable digital intersections. What's needed is vision to leverage more of these crossover points and communicate advancements to customers and job seekers.

Are printers worried about fewer specialized workers?³



² PayScale, *Salary for Industry: Commercial Printing*, 2024

³ PrintWeek, *Is the Decline in Skilled Print Workers a Cause for Concern*, February 23, 2023

The costs of doing business as usual

In order for commercial printers to survive and thrive, they must pay attention to fundamental risks. The reality is that without adapting, printers will be overtaken by more innovative and nimble competitors, experiencing only mounting challenges where they find advantages.

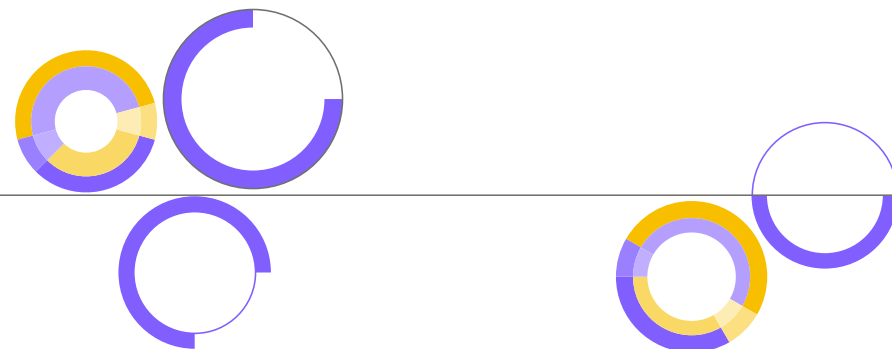
Reduced growth trajectory

The growth numbers tell a good story for print shops that have adopted toner or inkjet printing, with that sector growing at a CAGR of 4.1%.⁴ When you compare that to offset printing's growth of just 1.73%⁵, there's a compelling argument for evaluating and adding digital printing options.

Workforce shrinkage

Today, more than three quarters – 77% – of all organizations say that it's difficult to retain talented employees. Contrast that against organizations with more mature automation and tech initiatives. Just a third – 33% – say they experience the same retention challenges.⁶ It's clear that shops with more digital infrastructure and processes are favored workplaces.

Competition for the best talent is fierce, indeed. In an industry that employs just 357,000, a 3% drop from 2018-2023⁷ despite massive hiring efforts, slow-to-react commercial printers will always lose out to more proactive competitors vying for those few skilled candidates on the market. Conversely, offering workforce development and skills training can boost retention by 2.7X.⁸ Your current workers and potential hires want new skills.



Lack of innovation

Whether or not there are enough workers, we believe there will be continued demand for commercial print providers. But the industry will have to come through with alternatives to the print assets it's offered for decades. Customers know that there have been rapid advances in technology outside of print. That's why 26.7% of printers say losing clients to print alternatives is a major worry.⁹ We hear that too often. So, printers must promote their latest capabilities via marketing communications and brand differentiation.



⁴ Grand View Research, *Commercial Printing Market Size, Share & Trends Analysis Report by Printing Technology*, 2023

⁵ Industry Research, *Offset Printing Press Market Size-Share: Strategies for Growth and Industry Dynamics till 2032*, April 15, 2024

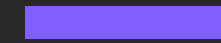
⁶ Formstack, *Use Automation to Reduce Busywork and Turnover*, May 24, 2022

⁷ IBIS World, *Printing in the US - Market Size, Industry Analysis, Trends and Forecasts (2024-2029)*, December 2023

⁸ Manufacturing Institute/Deloitte, *Taking charge: Manufacturers Support Growth with Active Workforce Strategies*, 2024

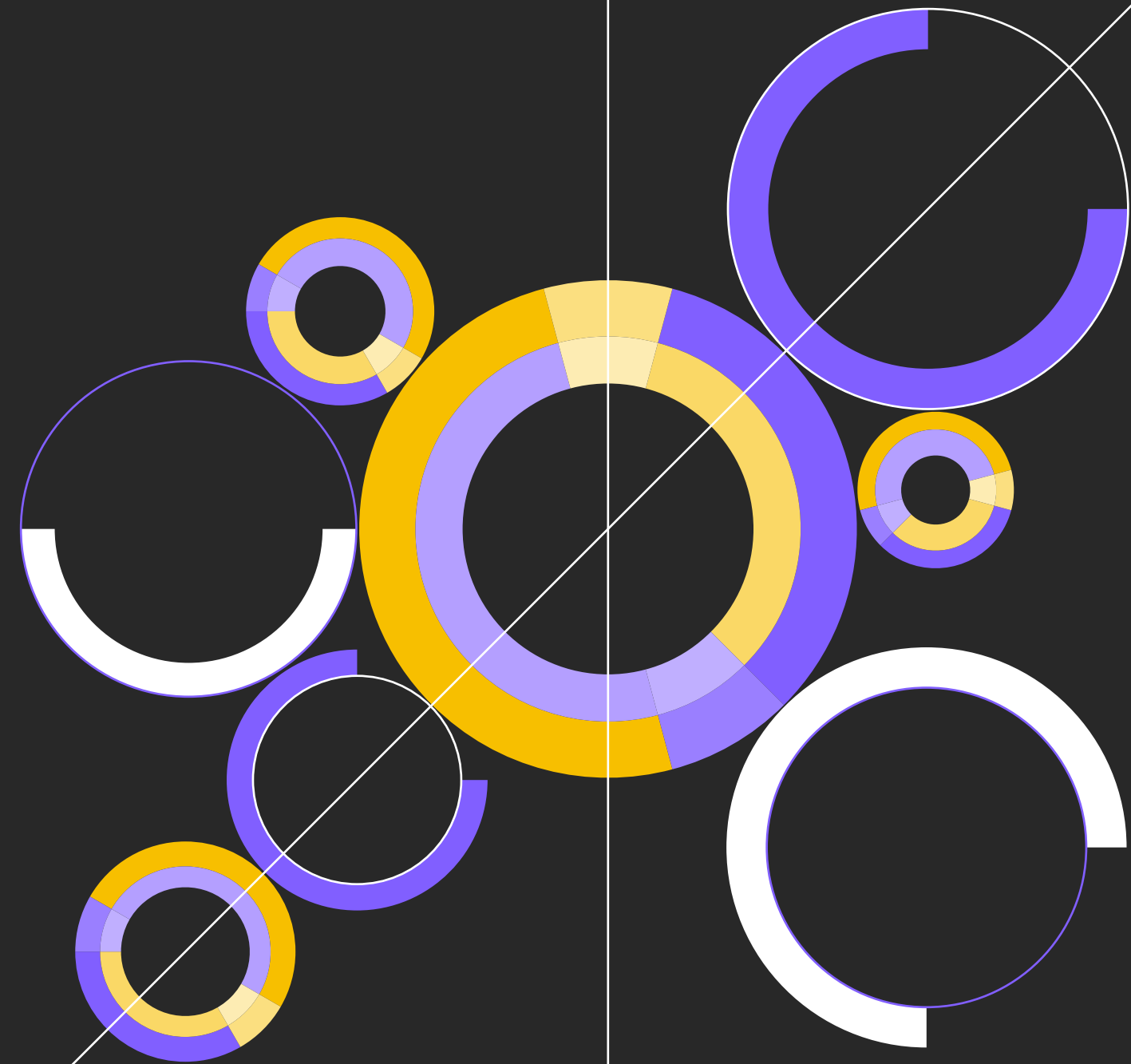
⁹ Printing United Alliance, *State of the Industry Report 2024*, April 2024

Digital printing is fueling growth



52%

Commercial printers with some digital print capabilities today*



* Printing United Alliance, State of the Industry Report 2024, April 2024

Commercial printing today: Facing challenges with humans, hardware and software

A touch of grayscale

The many families and entrepreneurs who have made printing a close-knit community and vital industrial force are getting older. The sector's average age is now 48, 6 years older than the average of total employed.¹⁰ Yes, the pressmen, have left the building or are at least strongly considering doing so. And it's getting harder to fill these deeply skilled artisans ink-stained shoes, with 69% of commercial printers saying it's a key challenge to find and hire qualified staff.¹¹

Offset and digital printing, not mutually exclusive

It's time for more printers to join the 52% of commercial printers who say they have digital print capabilities today¹³. Why? Because there is no other way forward without digital printing's cost savings, production efficiency, turnaround time, and excellence at short runs. Some areas are expected to be predominately digital in a few short years, like wide-format graphic and sign printers who say they will be nearly 91% digital by 2026.¹⁴

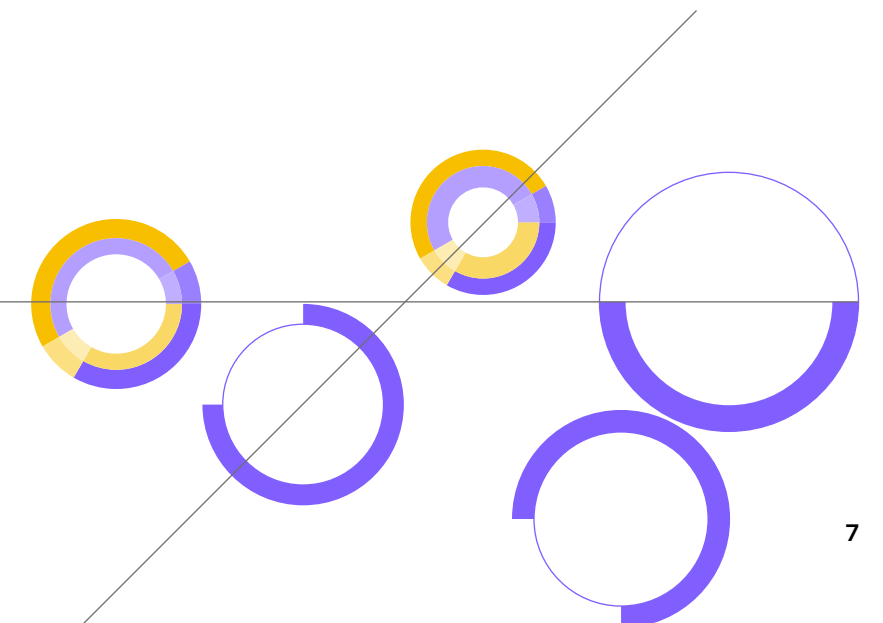
For traditional printers there may always be a question of quality, with many agreeing that offset equipment still holds the edge in both quality and costs with long enough runs. But the evidence shows that continuous-feed and sheet-fed digital presses are gaining ground every year, with high-output, high-quality, and high-ink coverage even on coated offset stock. Sure, press floor veterans have their preferences, but our position is that business is business. So even if digital printers outperformed their traditional counterpart, we would never advise clients with sizable investment in offset equipment to make wholesale changes. We believe there is a better way – complementing offset presses with digital equipment and process automation for workflow optimization and workforce productivity.

Your biggest concerns in 2024¹²



A note on economies of scale

For printers who prefer to operate offset exclusively due to its lower cost over long runs, the days of these large quantity projects are ending as customers ask for more personalization and variability. For profit, the focus must be on higher-value pages, albeit fewer of them.



¹⁰ Bureau of Labor Statistics, *Labor Force Statistics from the Current Population Survey*, January 6, 2024

¹¹ NAPCO Research, *The New Formula for Production Print Success*, 2023

^{12, 13, 14} Printing United Alliance, *State of the Industry Report 2024*, April 2024

Industry growth? For some.

A mixed bag of financials

In terms of market size, the printing industry ranks 14th within the manufacturing sectors. Despite its size, the printing industry remains one of the least understood sectors of the economy by the public. The general perception may be that the industry is shrinking, coming off an annual average decline of 1.9% between 2018 and 2023. But 2023 was a turning point, with modest growth of 0.3%.¹⁵ And further growth of 2.9% CAGR is expected from 2024 - 2030.¹⁶ Who will see that growth? Unsurprisingly, the top 5 largest commercial printers anticipate 9.2% average YOY sales increases.¹⁷ We see the big getting bigger, as well as those with an automation-forward mindset. If you're not thinking of automation, your competitors likely are, with 52% saying automation is top investment objective.¹⁸

Printing money? Not quite.

It may not be news to you that the day-to-day fortunes of commercial printing are anything but straightforward. On one hand, inflation is slowing. On the other, historically tight margins persist. By the numbers, Q1 2024 per-unit costs increased for 44% of printers, yet were unchanged for 49%. Comparative numbers in 2023 rang up as 76% and 15%, respectively.¹⁹ There is less inflationary pressure on the supply side.

The outcome is that profitability continues to be a real issue. Here's how large commercial printers report their 2024 Q1 pre-tax profit vs 2023: 25% say it was the same, 41% say it was lower, but only 34% say it was higher.²⁰ If profit is not growing faster than costs and inflation, profit is actually shrinking. So, who would want to own a printing business today? Cash-flow focused investors.

The private equity effect

As in many industries, industry consolidation means there are fewer players, yet stiffer competition. Let's explain. Today, 6 out of the 25 largest commercial printers are owned by private equity (PE) firms.²¹ Private equity invests in the printing industry for consistent cash flows despite the tight margin pressures. The threat from PE-backed competitors comes from the capital equipment investments they can make, investments that drive automation and other smart-tech efficiencies.

¹⁵ IBISWorld, *Printing in the US - Market Size (2004–2029)*, December 21, 2023


¹⁶ Grand View Research, *Commercial Printing Market Size, Share & Trends Analysis Report by Printing Technology*, 2023


¹⁷ Printing Impressions, *2023 Printing Impressions 300*, December, 2023


¹⁸ NAPCO Research, *The New Formula for Production Print Success*, 2023

^{19, 20, 21, 22} Printing United Alliance, *State of the Industry Report 2024*, April 2024

Tempered optimism in 2024 for commercial printers²²

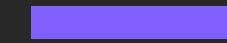
50%  Expect higher sales

32%  Expect similar sales

18%  Expect lower sales

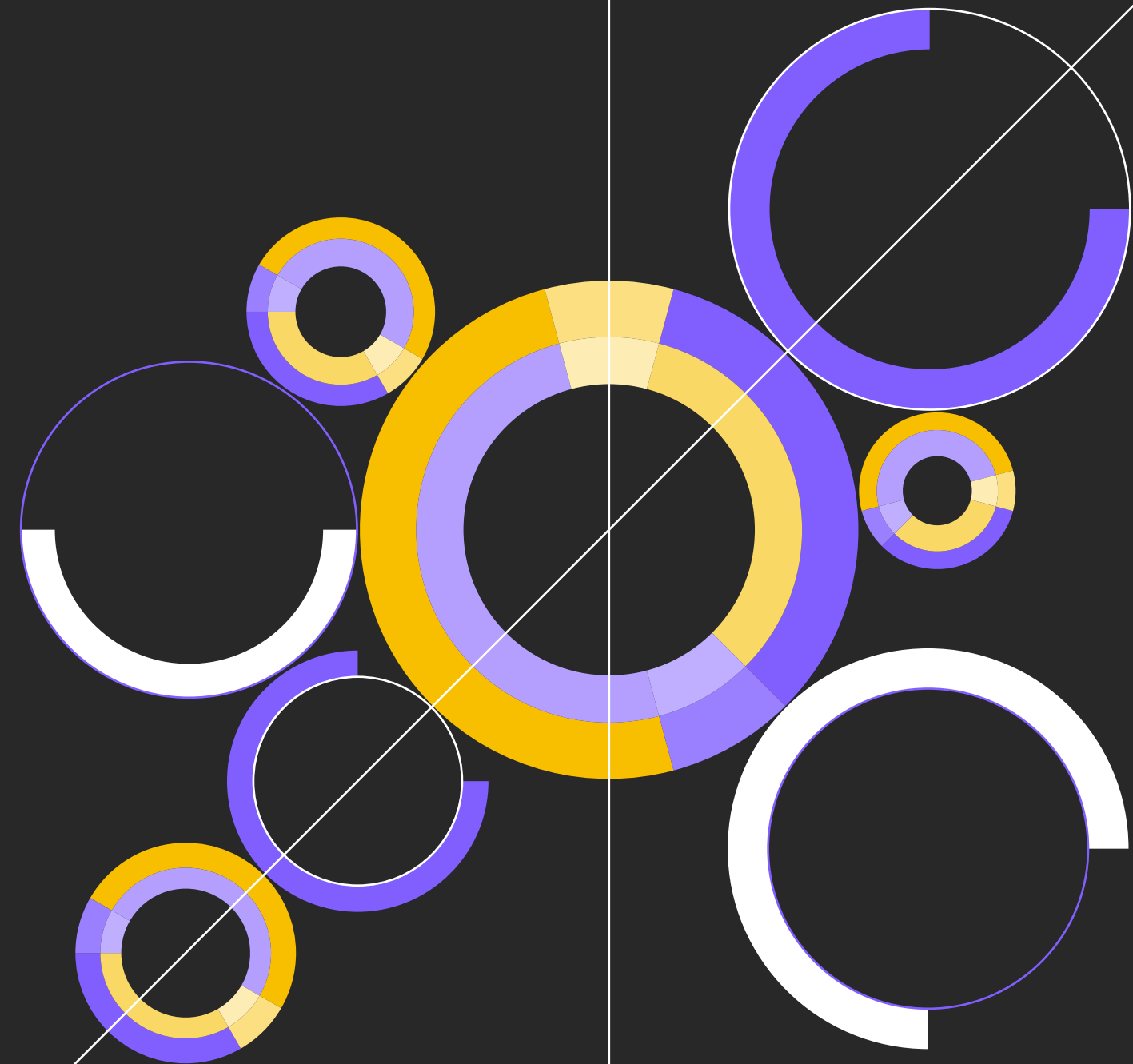


A crossover, not a full stop



59%

Printers who expect better profitability
with investment in automation*



* NAPCO Research, *The New Formula for Production Print Success*, 2023

How commercial printing writes its next chapter

Opportunity comes knocking

Now is the time for the printing industry to demonstrate its resilience in the face of significant challenges, adopting new approaches to overcome declining staff and exciting solutions to attract and retain customers. Automation, a suite of solutions including robotics, AI, IoT, and data processing for workflow optimization, holds incredible promise for this centuries-old industry. The beauty of melding smart technology with print operations is the potential to make up for the pressman’s “lost art” with digital magic. Our view is that print has never been more abuzz with possibility across pre-press, press floor and post. Even existing tools like business intelligence systems (ERP, CRM, MIS, etc.) hold new promise through streamlined systems integration when printers adopt or expand their digital press investment.

Proactively meeting evolving customer needs

Commercial printing customers choose a communication method to achieve an end. If the goal is to build awareness for a company’s product or service, direct mail might be the answer, so too might large format signage. It’s up to printers to help customers understand the benefits of each option and then produce assets for that customer. Likewise, it’s incumbent on printers to branch into adjacent, more profitable lines of work, as well as adopt

innovations, such as digital printing capabilities and automation, that support their overall business strategy. When printers add new solutions or revamp traditional methods at digital intersection points, they widen their offerings and deliver high-quality work quicker, at reduced customer cost – with better margins.

One area of growth is personalization, with marketers requesting more complex customization to better connect with target audiences. Variable data printing (VDP) technology is a game changer, allowing single items throughout large batches to be personalized, without slowing down the run. Personalization is just one way printers are incorporating data. Smart tech creates countless intersection points to make data-driven decisions within existing processes, helping printers solve customer problems from a consultative position beyond just “printing.”

These and other solutions exist right now, and we believe that no company will excel without developing the skills and culture required by the age of automation, AI, and big data. It’s more than incremental gains, it’s about long-term viability. Think of it as the power to supercharge every human touchpoint and remove bottlenecks that improve staff productivity and capability.

Where will your competitors find new profitability?²³

59% Are looking at capital investment to support automation, more efficient workflow and faster job turns

54% Are focusing on employee training, recruitment, and retention

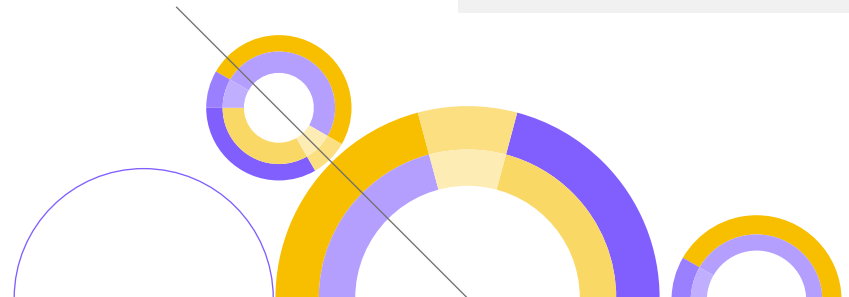
49% Are diversifying into new markets, products, and services

What customers demand today²⁴

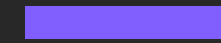
76% Say demand for faster turnaround has increased

66% Say more customers require shorter runs

^{23, 24} NAPCO Research, *The New Formula for Production Print Success*, 2023

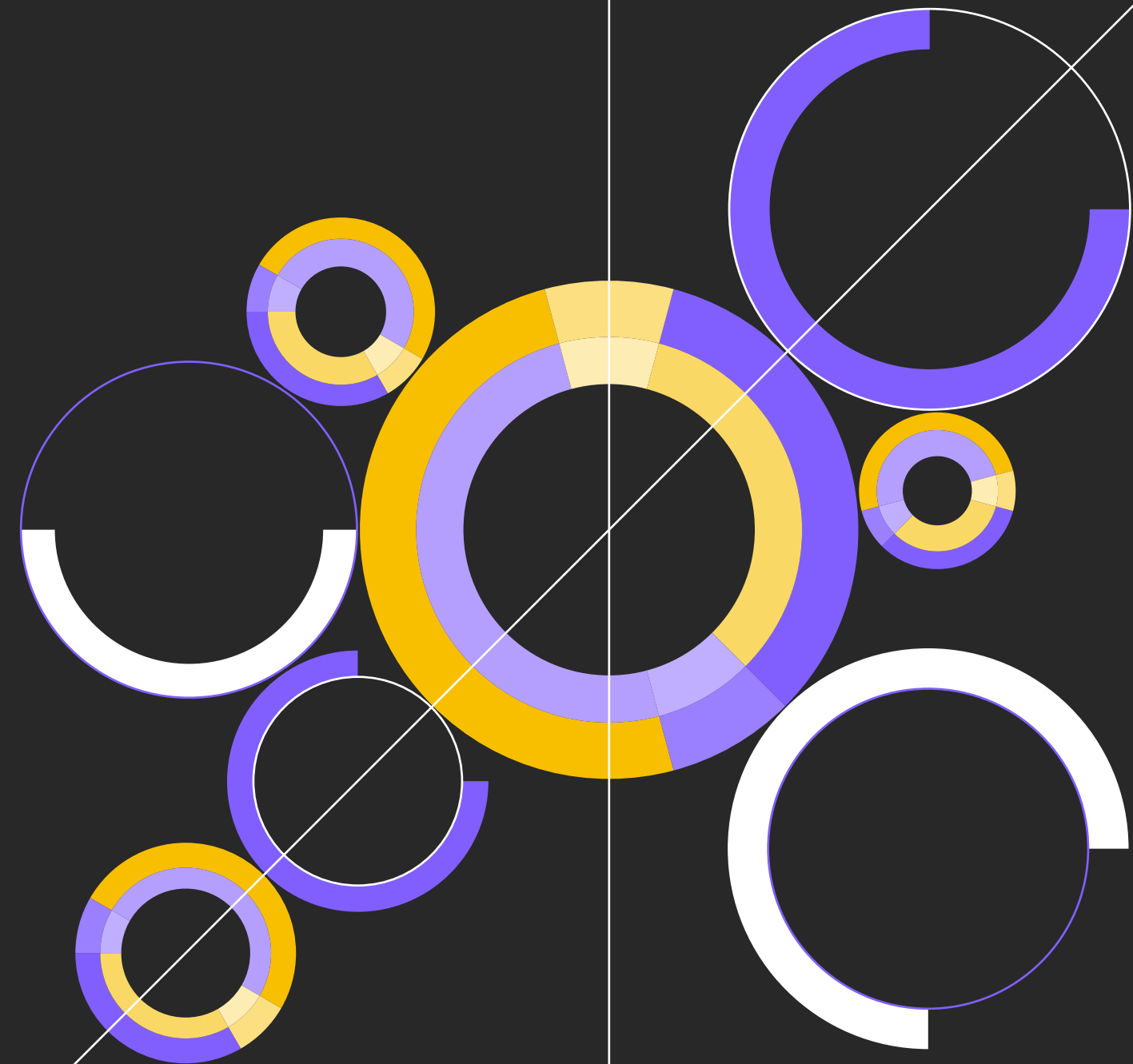


Cover-to-cover automation enhancements



13%

Global commercial printers with a single end-to-end automated workflow*



* drupa, *Print Horizons Report*, March 2024

Improving jobs the moment they walk in

Optimizing pre-press

You could say that the way print spreads ideas between people, tech spreads efficiency across organizations. And efficiency is needed more than ever. Through voluntary separations and attrition, you may have fewer workers in pre-press gathering assets and prepping files, communicating with clients, and scheduling jobs for peak efficiency. Smart technologies can boost productivity, connecting separate functions, increasing visibility and collaboration.

Printers undoubtedly recognize the power of automation. In fact, 38% say comprehensive automation is a priority, yet just 13% have achieved it. Here, we're defining "comprehensive" as automated prepress color managed workflow, an automated press and post-press workflow, and finally end-to-end job definition format workflow. As of March 2024, 29% don't have any of these pieces in place. But interestingly, 54% of printers globally have some form of prepress automation.²⁵

Automation's top 10 benefits in prepress

1. Faster work
2. Increased productivity
3. Enhanced quality
4. More accurate estimating
5. Reduced errors
6. Dedicated packaging functionality
7. Minimization of tedious tasks
8. Integration with business systems and order administrative systems (ERP, MIS, ERP)
9. Visibility to planning, business performance and advanced reporting
10. Streamlined and more accurate inventory management



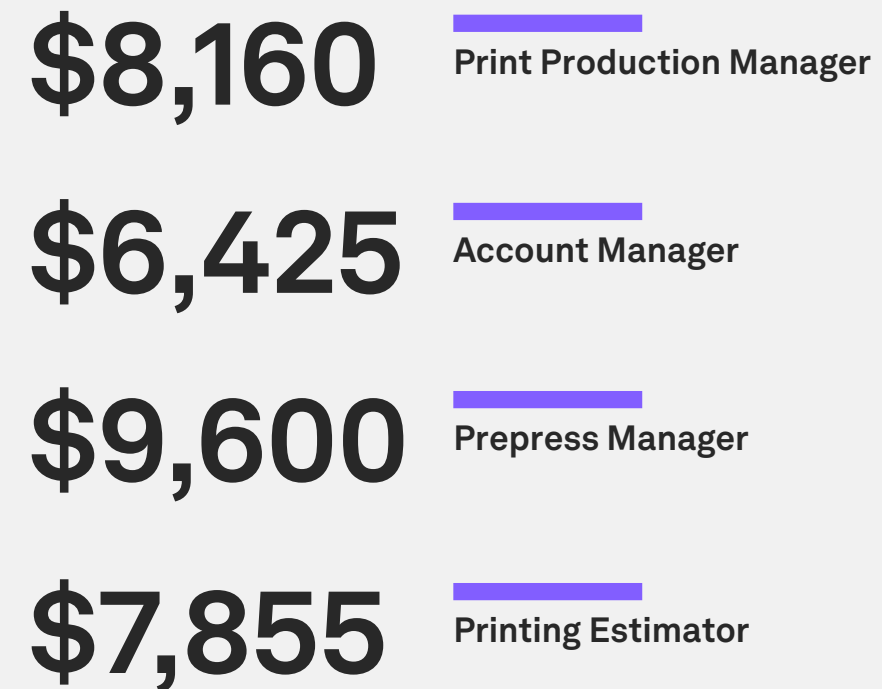
²⁵ drupa, *Print Horizons Report*, March 2024

²⁶ PayScale, *Salary for Industry: Commercial Printing*, 2024

Can you outsource AI?

Artificial Intelligence is an incredibly powerful, quickly evolving tool. There is no need, however, for commercial printers to create homemade solutions since skilled tech providers can tailor systems to their exact specifications. Working with an experienced AI team allows companies to bench test AI for different processes with smaller initial investments and lower risk. That is why we recommend building a solution thoughtfully, with a trusted partner.

Annual value of eliminating one wasted hour per day²⁶



Where tech meets talent: press floor optimization

Optimizing the press floor

The press floor is the most promising place to optimize how your talent spends its time and your money. When you upgrade to digital presses, you inherently increase each team member’s productivity potential. You give them the opportunity to develop new skills and take a fresh look at the work they’ve been doing for so many years. That’s one tack of pressroom optimization. Another is pumping new energy into existing offset presses and processes with automation. Automation optimizes individual processes, listed below, as well as fuels a more cohesive operation between all your offset and digital presses. This interconnectivity has another significant benefit – giving team members visibility into other functions’ processes and needs. By understanding someone else’s reality, you naturally behave more empathetically to them. This builds trust, collaboration, and ultimately greater efficiency.

Technology’s benefits on the press floor

Enhanced efficiency, better quality, lower cost per piece, reduced waste, and the ability to more easily branch out to other services.

Workflow management

A good workflow sets the stage for productivity and in many instances can help you overcome a dearth of skilled hands. Automated and optimized production schedules can prioritize jobs by deadline and material needs, instantly freeing employees from a tedious task. Further, automation can help align workforce ability and availability (with some human guidance at the start) so you have the right team in place for job complexity and timeline. Lastly, automated workflows allow more secure operations by creating user groups that control job and equipment access. Keep in mind, when selecting a print provider, 88% of customers say security of the work is very or moderately important.²⁷

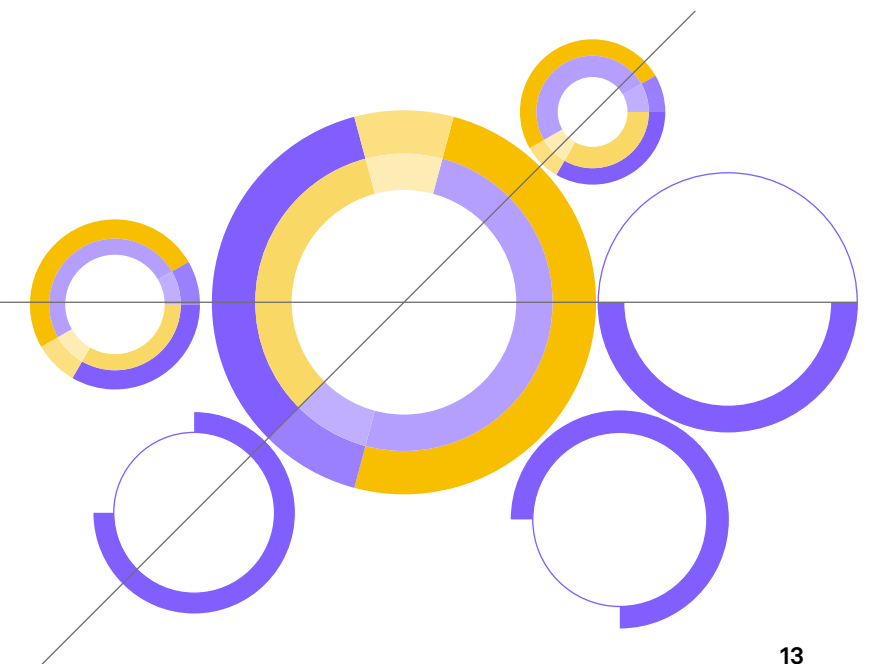
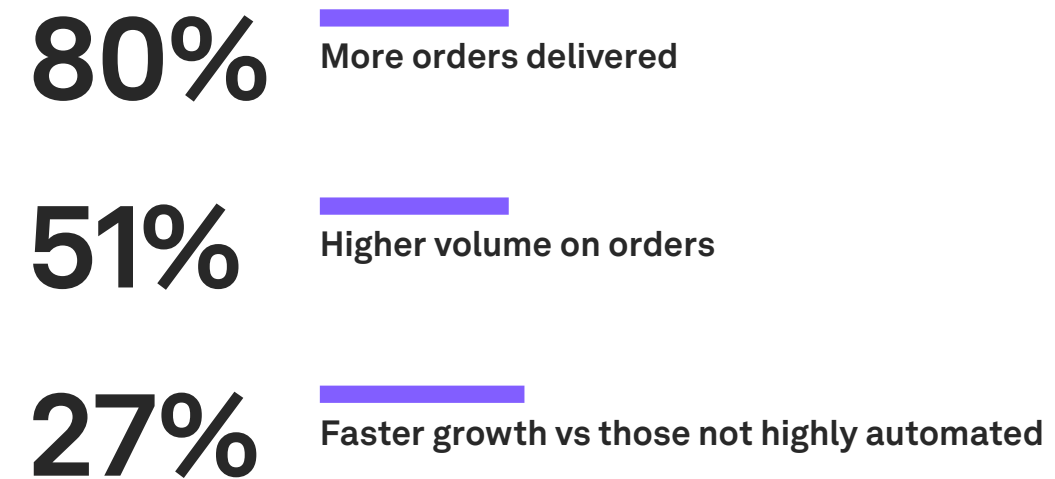
Process improvement

Your skilled workers distinguish themselves with their focus on process precision. Contrary to what some believe, automation supports this aim, helping to bolster consistent print quality and sharper images, and color calibration. It helps people work to a higher level. And automated presses can operate at higher speeds than their non-automated counterparts.

There are some things that machines just do better than human hands, and minds. Such as quickly performing calculations to optimize run length, cost and quality, whether those runs are longer or shorter.

Robotics as an automation solution can efficiently optimize insertions, and loading and unloading presses, performing repetitive and physically demanding tasks with precision. This allows people to perform more skill-based jobs.

How highly automated printers win²⁸



²⁷ NAPCO Research, *The New Formula for Production Print Success*, 2023

²⁸ PrintWeek, *How Intelligent Automation Can Deliver Flexibility and Growth for the Printing Sector*, April 19, 2024

Finishing strong and bringing it all home

Optimizing post-press

The ink is dried, the printing is done, but there's still money to be saved and time to be shaved through smart-tech optimizations. Automation and analytics can streamline manual processes and boost accuracy with more efficient data collection, sharing and deployment.

Quality control (QC)

With automated, predictive QC, teams can create end-to-end audit trails using past and present data, spotting current failure points and anticipating future ones. While skilled workers can spot visual errors in the blink of an eye, AI-powered cameras never blink, spotting and reporting misalignment or color defects in real-time.

Finishing, warehouse and inventory management

Bindery functions easily integrate into a holistic workflow, connecting prepress activities with post-press finishing equipment to produce products of specific lengths, in necessary quantities, without manual make-ready. In the warehouse AI algorithms can forecast changing demand and market prices, ensure adequate supplies are acquired at optimal cost. Once that supply is on hand, automation can help storeroom optimization, a Tetris-like game that smart tech excels at. And when it's time to load up and ship out, automated systems can identify cost- and time-saving delivery schedules and routes.

The warehouse is going digital²⁹

10% Annual spending increase in warehouse automations

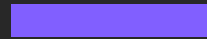
35% Expected amount of capital automation spending in logistics and fulfillment



²⁹ McKinsey, *Getting Warehouse Automation Right*, December 1, 2023



Stronger, smarter, more resilient



We stand with commercial printers fighting to sustain their important role in business and society at large. Despite electronic media's momentum, digital and offset printing will remain financially viable communication options. Commercial printers who have embraced the future may already be all in on inkjet or toner digital printing. But for those operating traditionally or in a hybrid capacity, we encourage ways to optimize processes, bringing automation and digital efficiency to all phases of work.

We are accelerating the power of information in commercial printing today.

Accelerating adoption of digital printing.

Accelerating workflow automation.

Accelerating new revenue streams.

For commercial printing this means that we are accelerating the...

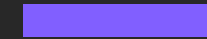
Power to improve productivity.

Power to improve operational efficiency.

Power to improve profitability.

That's how we accelerate the power of information.

Ricoh, turning information into advantage



At Ricoh, we're revamping how businesses around the world collect, use and share information. To us, there's no such thing as too much information. And there is no such thing as too many ways to unlock its power. Partnering with our clients, we're harnessing the insights within information to help teams work more collaboratively. It's how we're using technology to unleash the full power of people.

Our team of commercial printing experts is ready to help transform your information into greater competitive advantage.

