DIGITAL PRINTING 5.0
# BEYOND THE PRESS:
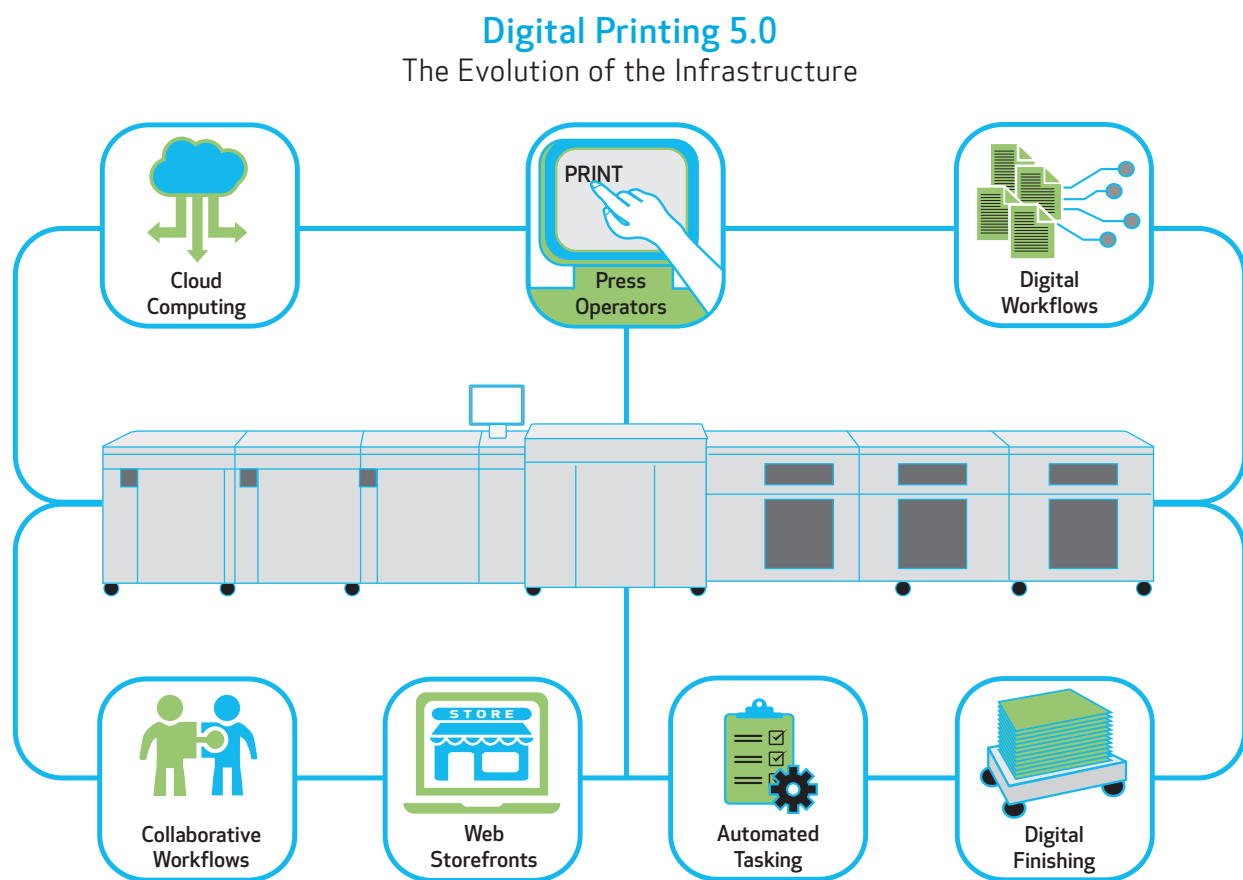## Defining the Infrastructure for Operational Success

A NAPCO Research Study and White Paper
Sponsored by Canon U. S. A., Inc.

# Beyond The Press: Defining the Infrastructure For Operational Success

A key factor in the use, growth, and ongoing innovations in digital color printing is the evolution of the infrastructure that surrounds the press. Essential production components include digital workflows that power printing devices, press operators that understand device capabilities, and equipment that creates finished pieces.
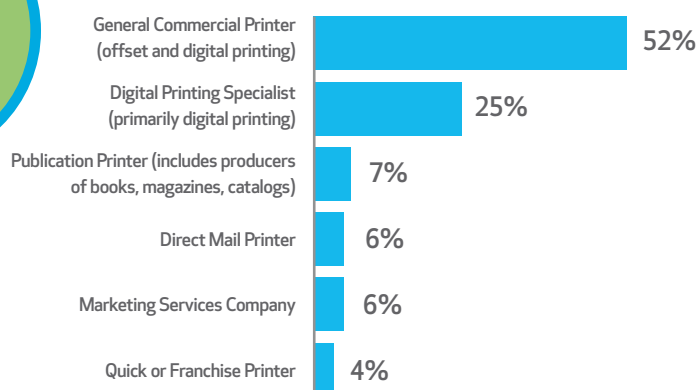
Printing is a manufacturing system that goes beyond the press to encompass all the stages that result in a finished product. As the manufacturing world has moved into "Industry 4.0" and continues to evolve, printing is entering a new phase described as **Digital Printing 5.0**. This is where digital presses are meeting more customer requirements, workflows are becoming more collaborative, communication and revisions are happening in real time, marketing messages are being directed to the individual rather than the group, and tasks are becoming more automated.

## Digital Printing 5.0
### The Evolution of the Infrastructure



Cloud Computing

Press Operators

PRINT

Digital Workflows

Collaborative Workflows

STORE

Web Storefronts

Automated Tasking

Digital Finishing

A new NAPCO Research* study and white paper, sponsored by Canon U. S. A., Inc., offers insights on how print service providers (PSPs) are leveraging digital printing to boost efficiency, better serve customers, and output print products once considered not possible on digital devices. The study, *Digital Printing 5.0*, surveyed 233 commercial printers and 174 in-plants to uncover key and evolving trends that are advancing the use of digital printing. Figures 1 and 2 describe the types of printers participating in this study.

**Figure 1**
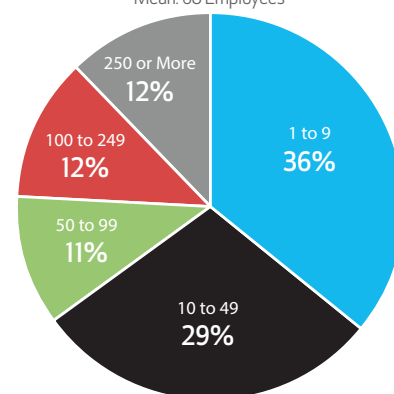Commercial Printer Respondent Base

## Primary Business

| | |
|---|---|
| General Commercial Printer (offset and digital printing) | 52% |
| Digital Printing Specialist (primarily digital printing) | 25% |
| Publication Printer (includes producers of books, magazines, catalogs) | 7% |
| Direct Mail Printer | 6% |
| Marketing Services Company | 6% |
| Quick or Franchise Printer | 4% |

*Q. Which category best describes your company's business? Single response.*
*N = 233 Commercial Printers*

*Source: Digital Printing 5.0 NAPCO Research 2019*
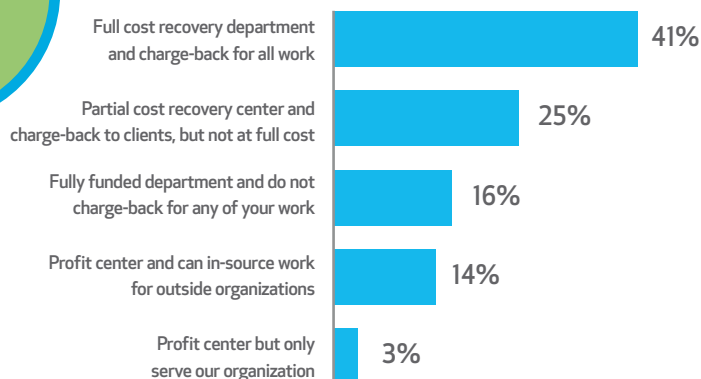
## Number of Employees
Mean: 68 Employees



- 1 to 9: 36%
- 10 to 49: 29%
- 50 to 99: 11%
- 100 to 249: 12%
- 250 or More: 12%

*Q. How many employees work at your company or in-plant?*
*N = 233 Commercial Printers*

**Figure 2**
In-Plant Respondent Base

## Operating Model

| | |
|---|---|
| Full cost recovery department and charge-back for all work | 41% |
| Partial cost recovery center and charge-back to clients, but not at full cost | 25% |
| Fully funded department and do not charge-back for any of your work | 16% |
| Profit center and can in-source work for outside organizations | 14% |
| Profit center but only serve our organization | 3% |

*Q. Which of the following describes your in-plant operation?*
*N = 174 In-Plants*

*Source: Digital Printing 5.0 NAPCO Research 2019*

## Number of Employees
Mean: 33 Employees



- 1 to 9: 61%
- 10 to 49: 27%
- 50 to 99: 2%
- 100 or More: 10%
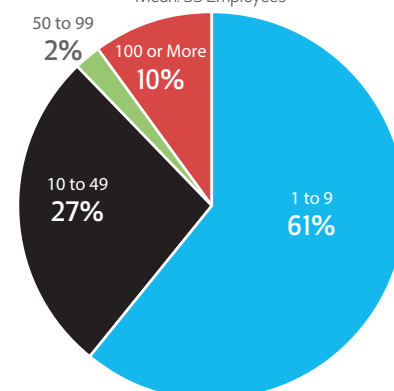
*Q. How many employees work at your company or in-plant?*
*N = 174 In-Plants*

*A unit of NAPCO Media, the parent company of Printing Impressions and In-Plant Impressions.
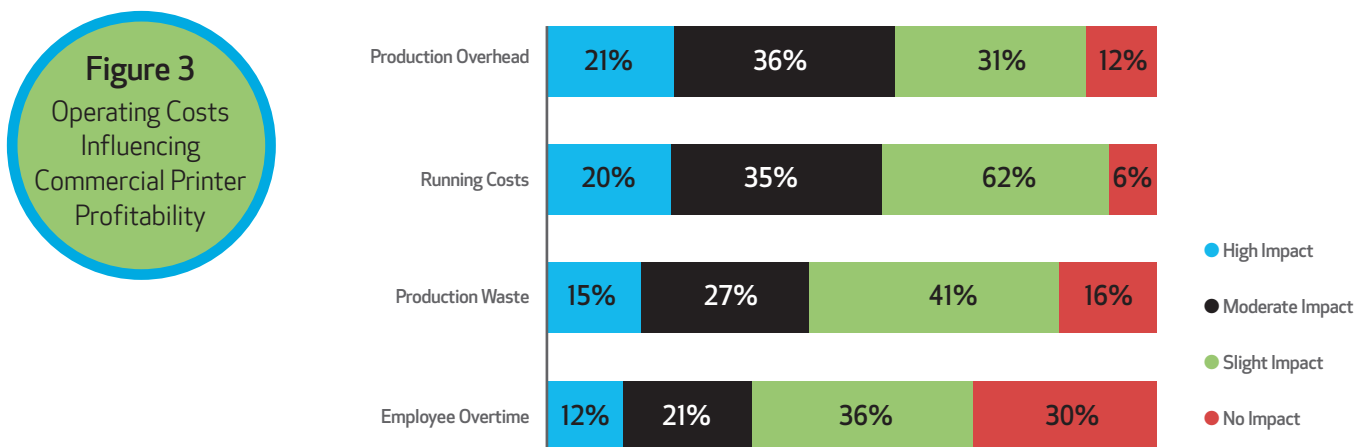
## Successful Firms Embrace Technology

The overarching theme of Digital Printing 5.0 is that successful printing firms are embracing advanced technologies. They're not only investing in digital production devices but also the automated, streamlined workflows necessary to deliver advanced capabilities, including high-value print embellishment, variable-data printing, and expanded finishing. They also want to ensure higher productivity and efficiency. These print providers understand that a successful operation depends on delighting customers at every turn, applying the latest industry innovations to production, and staying agile to adapt to industry trends and disruptions.

The study's survey addressed issues critical to creating and maintaining a successful digital print production system, including:

- What factors influence profitability?

- Where do print providers find qualified digital press operators?

- What workflows are powering growth?

- What are key and profitable finishing services?
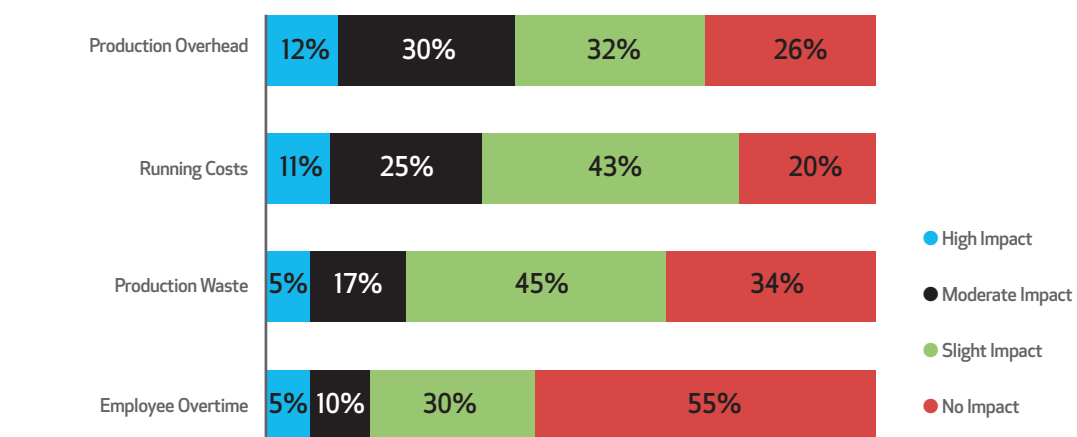
## Addressing Profitability Through Efficiency

Print provider respondents note the key operating factors having an impact on profitability to be production overhead, running costs, waste, and employee overtime. Commercial printer respondents found that production overhead and running costs had the greatest impact on profitability (Figure 3). In-plants note the same key production factors influencing profitability, but to a lesser degree (Figure 4). Each of these profitability influencers can be minimized through more efficient workflows and higher levels of automation. This information points to the importance of making investments in software and hardware that improve automation and productivity.

**Figure 3**
Operating Costs Influencing Commercial Printer Profitability



| | High Impact | Moderate Impact | Slight Impact | No Impact |
|---|---|---|---|---|
| Production Overhead | 21% | 36% | 31% | 12% |
| Running Costs | 20% | 35% | 62% | 6% |
| Production Waste | 15% | 27% | 41% | 16% |
| Employee Overtime | 12% | 21% | 36% | 30% |

*Q. Please rate the impact each of the following has on improving profitability.*
*N = 233 Commercial Printers*

*Source: Digital Printing 5.0 NAPCO Research 2019*

**Figure 4**
Operating Costs Influencing In-Plant Profitability

| | | | | |
|---|---|---|---|---|
| Production Overhead | 12% | 30% | 32% | 26% |
| Running Costs | 11% | 25% | 43% | 20% |
| Production Waste | 5% | 17% | 45% | 34% |
| Employee Overtime | 5% | 10% | 30% | 55% |

- High Impact
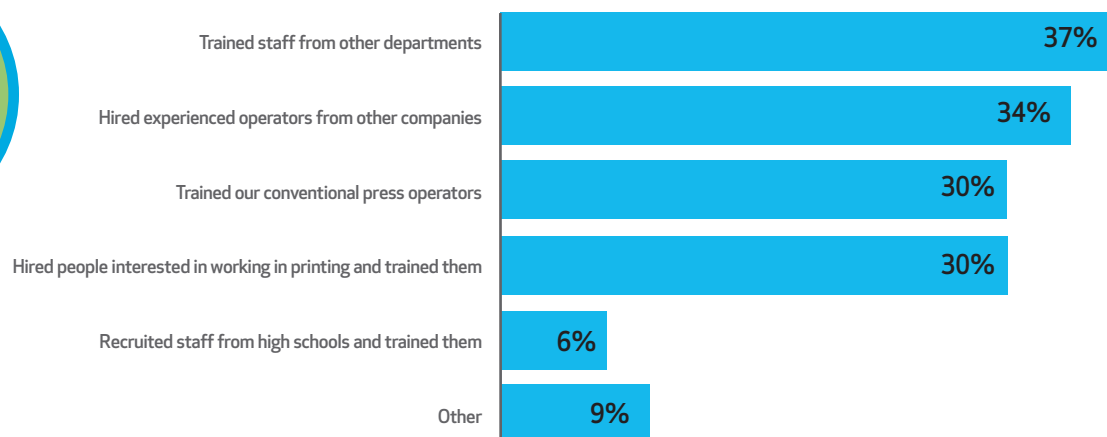- Moderate Impact
- Slight Impact
- No Impact

*Q. Please rate the impact each of the following has on improving profitability.*
*N = 157 In-Plants*

*Source: Digital Printing 5.0 NAPCO Research 2019*

## The Staffing Challenge

An ongoing industry challenge is finding qualified workers to staff operations. Because many commercial printers and in-plants face challenges in recruiting production staff, the NAPCO Research survey asked respondents where they find their digital press operators; commercial printers report they use a variety of methods (Figure 5). While the top method is to train internal staff from other departments, alternate important ways include hiring experienced operators from other companies, training conventional press operators, and hiring individuals interested in printing and then training them. Only 6% of respondents indicate that they recruit from high schools.

**Figure 5**
Sources of Digital Press Operators

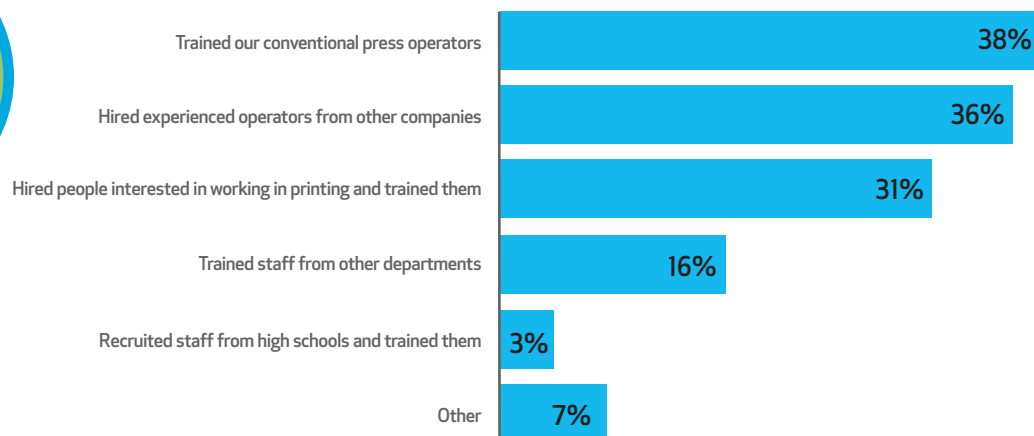| | |
|---|---|
| Trained staff from other departments | 37% |
| Hired experienced operators from other companies | 34% |
| Trained our conventional press operators | 30% |
| Hired people interested in working in printing and trained them | 30% |
| Recruited staff from high schools and trained them | 6% |
| Other | 9% |

*Q. Where did you find your digital printing press operators?*
*N = 233 Commercial Printers*

*Source: Digital Printing 5.0 NAPCO Research 2019*

Meanwhile, in-plants surveyed were most likely to train their conventional press operators to run digital presses, followed by hiring operators from other companies or people interested in working in printing (Figure 6). Only 3% recruit from high schools and teach them the skills they need to become press operators.

**Figure 6**
Sources of Digital Press Operators

| Source | % |
|---|---|
| Trained our conventional press operators | 38% |
| Hired experienced operators from other companies | 36% |
| Hired people interested in working in printing and trained them | 31% |
| Trained staff from other departments | 16% |
| Recruited staff from high schools and trained them | 3% |
| Other | 7% |

*Q. Where did you find your digital printing press operators?*
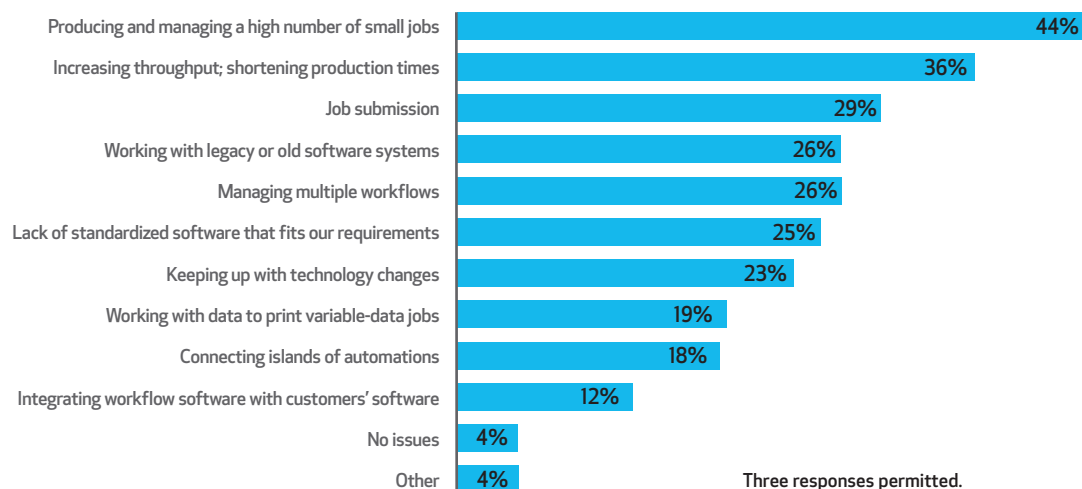*N = 157 In-Plants*

*Source: Digital Printing 5.0 NAPCO Research 2019*

## Workflow Automation Maximizes Digital Printing Benefits

Taking full advantage of digital printing's benefits requires establishing a workflow to ensure that all stages of the production process are performing at peak efficiency. Commercial printers and in-plants participating in NAPCO Research's survey identify producing and managing a high number of small jobs (Figures 7 and 8) as a key workflow challenge. A key benefit of digital printing is the ability to affordably print shorter-run jobs. This finding points to the important role workflow plays in reaping the many benefits of digital printing.

**Figure 7**
Top Commercial Printer Workflow Challenges

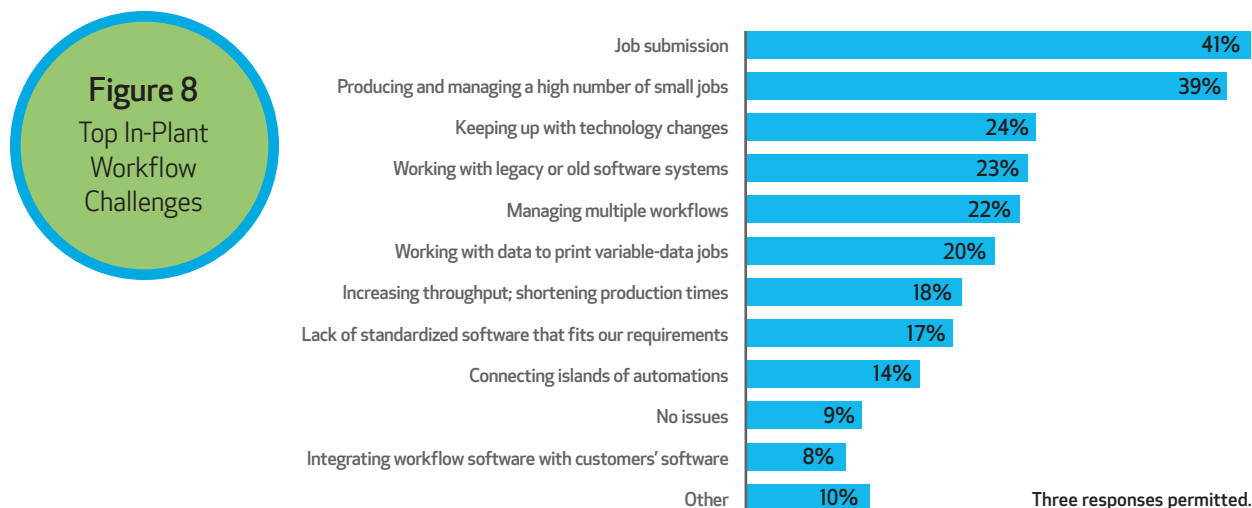| Challenge | % |
|---|---|
| Producing and managing a high number of small jobs | 44% |
| Increasing throughput; shortening production times | 36% |
| Job submission | 29% |
| Working with legacy or old software systems | 26% |
| Managing multiple workflows | 26% |
| Lack of standardized software that fits our requirements | 25% |
| Keeping up with technology changes | 23% |
| Working with data to print variable-data jobs | 19% |
| Connecting islands of automations | 18% |
| Integrating workflow software with customers' software | 12% |
| No issues | 4% |
| Other | 4% |

Three responses permitted.

*Q. Overall, what are your top three biggest pain points or inefficiencies in your current workflow?*
*N = 216 PSPs*

*Source: Digital Printing 5.0 NAPCO Research 2019*

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In addition, commercial printers report that the top workflow challenges include increasing throughput/shortening production times, job submission, working with older/legacy software, managing multiple workflows, and a lack of standardized software.

In-plants cite job submission, producing and managing small jobs, and keeping up with technology changes as top workflow challenges.

**Figure 8**
Top In-Plant Workflow Challenges

| Challenge | Percentage |
|---|---|
| Job submission | 41% |
| Producing and managing a high number of small jobs | 39% |
| Keeping up with technology changes | 24% |
| Working with legacy or old software systems | 23% |
| Managing multiple workflows | 22% |
| Working with data to print variable-data jobs | 20% |
| Increasing throughput; shortening production times | 18% |
| Lack of standardized software that fits our requirements | 17% |
| Connecting islands of automations | 14% |
| No issues | 9% |
| Integrating workflow software with customers' software | 8% |
| Other | 10% |

Three responses permitted.

*Q. Overall, what are your top three biggest pain points or inefficiencies in your current workflow?*
*N = 148 In-Plants*

*Source: Digital Printing 5.0 NAPCO Research 2019*

Respondents' workflow challenges indicate an ongoing struggle among print providers to meet changing customer requirements and the need to take action to automate workflows. For at least two decades, print providers have reported challenges in meeting customer demands for smaller jobs and faster turnaround. A likely culprit for these ongoing challenges is the lack of automation. Many operations either don't understand the benefits or how to best automate their operations. They invest in hardware to produce work but not enough in workflow. Another factor is that many print providers find it easier to rely on legacy workflows or "point tools" than to fully automate their workflows.
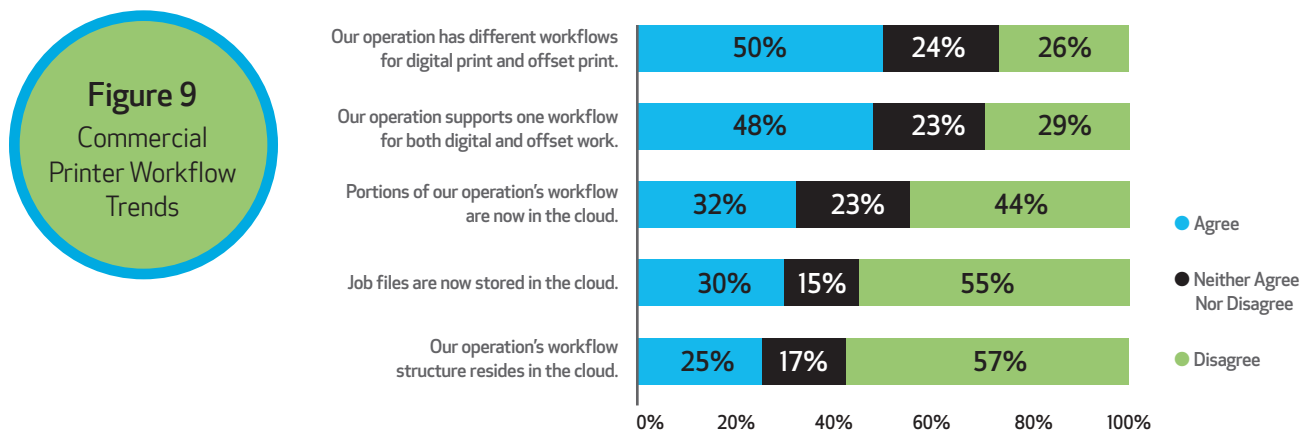
Even of those operations that do invest in software, many see it as a one-and-done investment; they don't continue to invest in the system or stay up to date with training.

**Given the increasing and ongoing challenges in operating an efficient workflow, it's important to stay focused on workflow tools that support producing shorter print runs, more diverse jobs, and managing numerous order submission channels.** Ongoing evaluation of workflow processes — from job receipt to pre-flighting, pre-press, and production — is a best practice to consider.

## Unified Workflows and the Cloud

An ongoing challenge for print providers is meeting customer's budgetary and quality expectations for print work while still driving profitability. One-third of commercial printers participating in NAPCO's Digital 5.0 survey report that competitive pressures to lower pricing have a big impact on profitability. Pressures to improve efficiency call for a focus on improving workflow efficiency.

Commercial printer respondents indicate having both different and unified workflows for digital and offset print work (Figure 9). Given that 48% of respondents report one workflow, as compared to 50% noting different workflows, indicates a movement to unify workflows for digital and conventional presses.

**Figure 9**
Commercial Printer Workflow Trends

| Statement | Agree | Neither Agree Nor Disagree | Disagree |
|---|---|---|---|
| Our operation has different workflows for digital print and offset print. | 50% | 24% | 26% |
| Our operation supports one workflow for both digital and offset work. | 48% | 23% | 29% |
| Portions of our operation's workflow are now in the cloud. | 32% | 23% | 44% |
| Job files are now stored in the cloud. | 30% | 15% | 55% |
| Our operation's workflow structure resides in the cloud. | 25% | 17% | 57% |

*Q. What is your level of agreement with the following statements?*
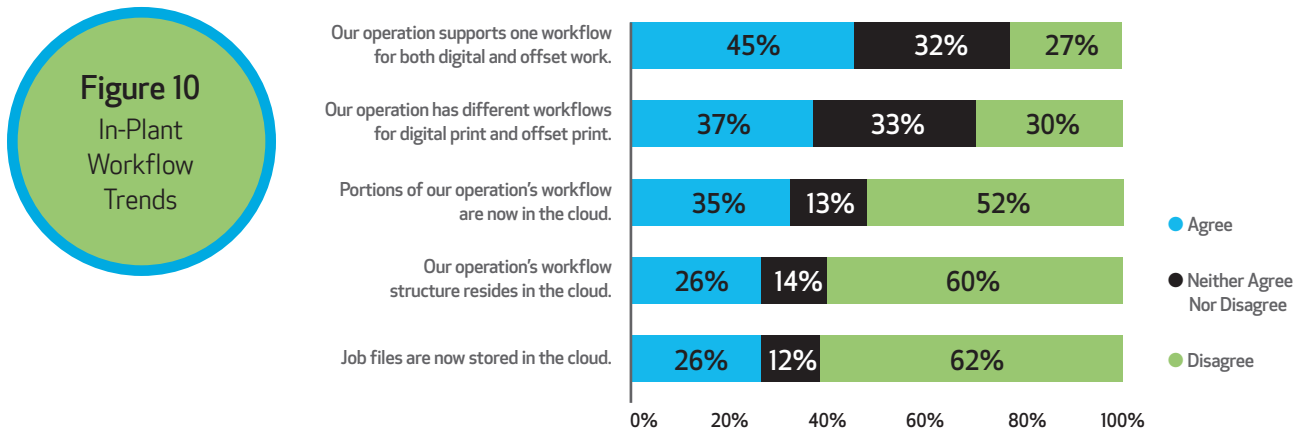*N = 216 Commercial Printers*

*Source: Digital Printing 5.0 NAPCO Research 2019*

Remaining competitive requires establishing a workflow that can easily adapt to the market's changing requirements while maximizing current investments in printing equipment and software. Implementation of a unified offset/digital printing workflow can help enable the agility that can be key to profitability in today's print market. Having one workflow enables print providers to automate many business processes for greater flexibility, fewer touch-points, reduced errors, and more value-added services.

Another interesting finding from the survey is that workflow processes are migrating to the cloud. About one-third of commercial printer respondents report that portions of their workflow are in the cloud and they store job files there, too. About one-quarter say their operation's workflow software resides in the cloud.

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In-plant respondents were more likely to have one workflow for both digital and offset print work versus different workflows (Figure 10). More than one-third of in-plant respondents report their workflow was cloud-based, while at least one-quarter report their workflow software and job files as stored in the cloud.

**Figure 10**
In-Plant Workflow Trends

| Statement | Agree | Neither Agree Nor Disagree | Disagree |
|---|---|---|---|
| Our operation supports one workflow for both digital and offset work. | 45% | 32% | 27% |
| Our operation has different workflows for digital print and offset print. | 37% | 33% | 30% |
| Portions of our operation's workflow are now in the cloud. | 35% | 13% | 52% |
| Our operation's workflow structure resides in the cloud. | 26% | 14% | 60% |
| Job files are now stored in the cloud. | 26% | 12% | 62% |

*Q. What is your level of agreement with the following statements?*
*N = 146 In-Plants*

*Source: Digital Printing 5.0 NAPCO Research 2019*

Using software or workflows hosted in the cloud often reduces costs, including those associated with hardware, software, and communications services required for IT infrastructure. Print service providers can reap the benefits without the headache and expense of maintaining, upgrading, and staffing the infrastructure.
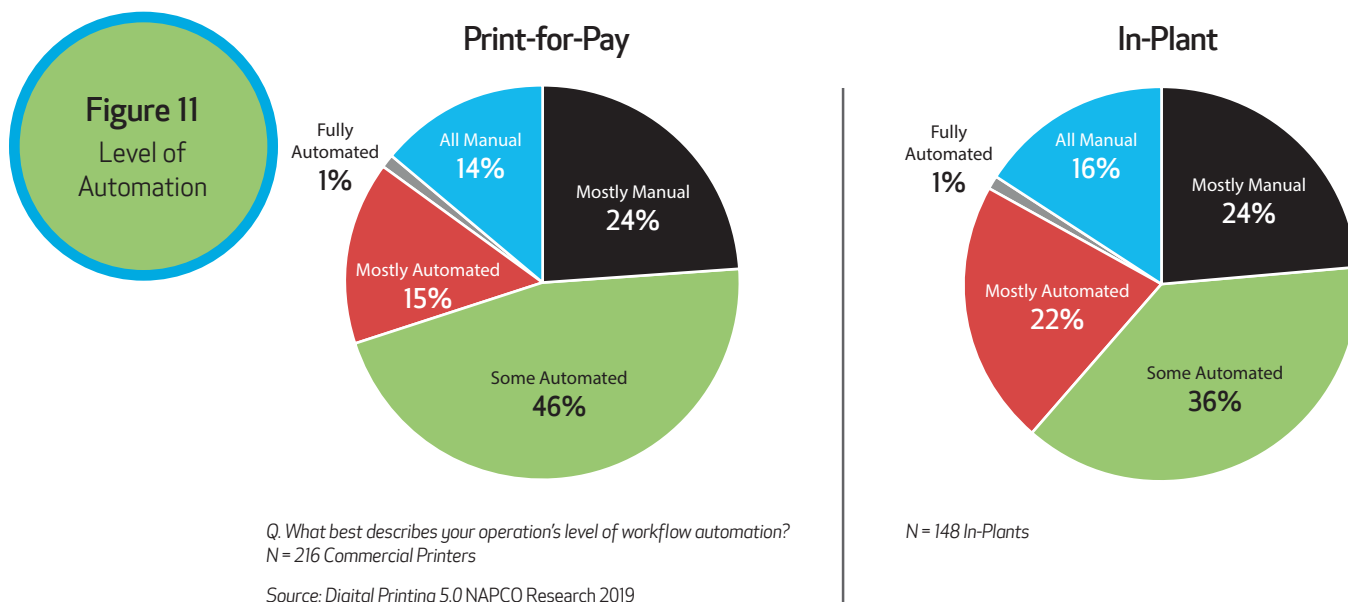
## The Opportunity in Automation

Successful printing organizations are in a never-ending pursuit to increase efficiency, improve quality, and better serve customers. This has made workflow automation an indispensable part of the printing industry. Workflow automation is a tool that can speed up the printing process, reduce errors, and enhance quality. Automation is a critical tool that can help improve efficiency, quality, and profitability, but achieving it is often elusive. Using connectivity and automated processes to streamline workflow can impact the entire print production process — from monitoring print operations, to producing personalized and/or versioned print communications using digital technology, to applying special effects using digital embellishments.

**Another important benefit of automation is that it can help solve respondents' top workflow challenges of managing a high number of small jobs and increasing throughput/shortening production times.**

Automation takes many forms. It can be as simple as a system that handles basic prepress functions such as uploading images and files to the server (e.g., preflighting) or as complex as a cloud-based platform that automates the entire workflow.

Respondents to NAPCO Research's survey indicate there's a significant opportunity to increase workflow automation. Only one percent of both commercial printer and in-plant respondents report that their operation is fully automated (Figure 11). Of commercial printer respondents, 15% describe themselves as being mostly automated, 46% use some automation, and 14% indicated they still use all-manual processes. In-plants report slightly higher levels of automation, as 22% described themselves as being mostly automated, 36% use some automation, and 16% still use all-manual processes.



**Figure 11**
Level of Automation

**Print-for-Pay**

- Fully Automated 1%
- All Manual 14%
- Mostly Manual 24%
- Mostly Automated 15%
- Some Automated 46%

**In-Plant**

- Fully Automated 1%
- All Manual 16%
- Mostly Manual 24%
- Mostly Automated 22%
- Some Automated 36%

*Q. What best describes your operation's level of workflow automation?*
*N = 216 Commercial Printers*

*N = 148 In-Plants*

*Source: Digital Printing 5.0 NAPCO Research 2019*

An interesting survey finding that points to the value workflow automation delivers is that commercial printers reporting double-digit sales growth incorporate higher levels of automation (Figure 12). Of those survey respondents that report sales growth of 10% or more, 3% were fully automated and 20% were mostly automated but not in all departments. These high-sales-growth respondents report higher degrees of automation than the other respondents. Firms that grew sales between 1 - 10% also report higher degrees of automation than those with flat or declining sales, with 16% indicating they were mostly automated. Of the firms that report flat sales, only 11% were mostly automated. And among the establishments where sales have declined, only 5% report they're mostly automated. Alternatively, commercial printer respondents reporting flat or declining sales report the highest incidence of all-manual processes.

**Figure 12**
High-Growth Commercial Print Firms are More Automated
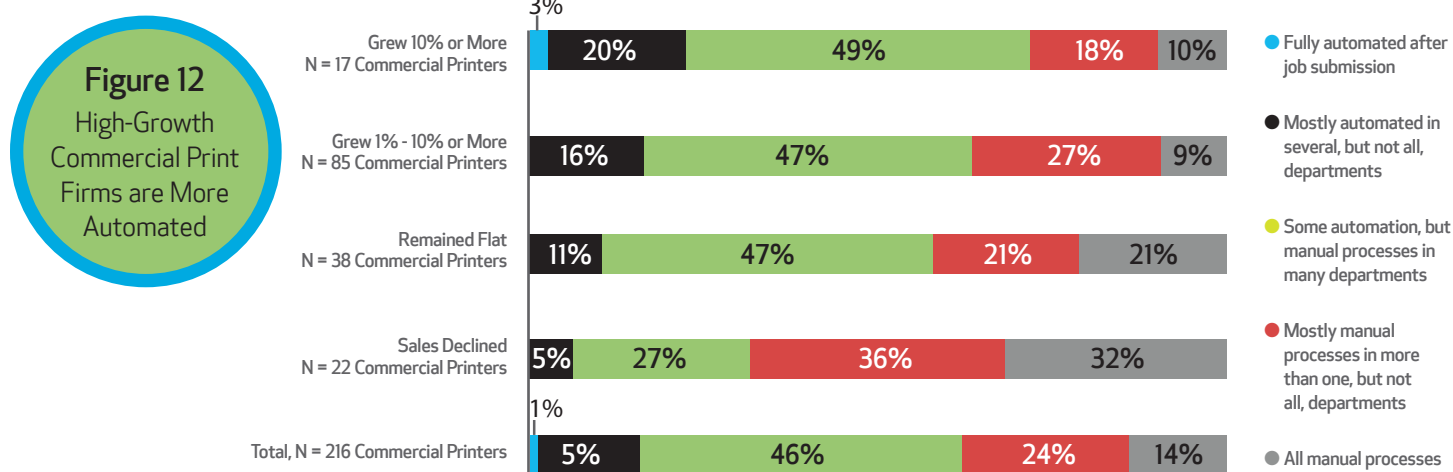


Q. What best describes your operation's level of workflow automation?

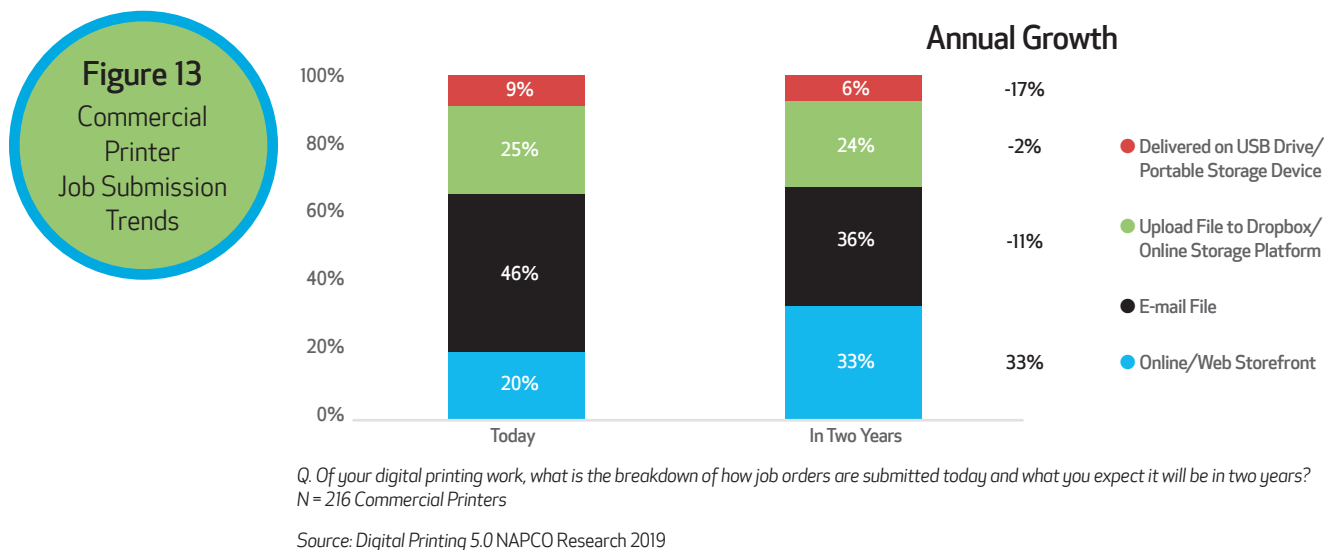Source: Digital Printing 5.0 NAPCO Research 2019

In-plants, too, report benefits from workflow automation. Of those in-plant respondents that report an increase of budget or revenue of 10% or more, 3% indicate they were fully automated and 17% were mostly automated.

Workflow investments have helped bring efficiency gains to in-plants. By automating many of the manual processes, in-plants have improved productivity, cut turnaround times, and ultimately increased customer satisfaction. In addition, it's freed up employees' time, allowing them to do other work, which has made up for decreases in staff.
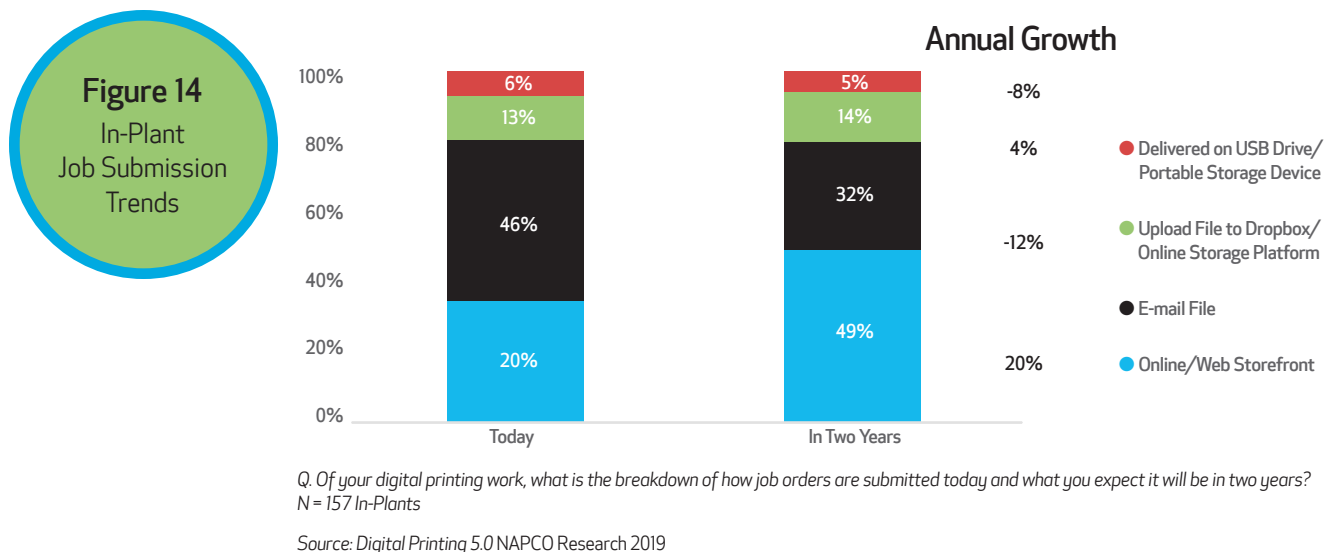
Print providers that are experiencing growing sales and productivity are pursuing higher levels of automation. The goal is to create efficiencies that can lead to more capacity, lower costs, and increase profitability. As the market continues to get more competitive, margins are continuing to shrink. To remain profitable, print providers need to be more efficient. Automation allows shops to remove many touch-points, allowing jobs to move through production. In addition, automation can be crucial for increasing productivity and quality control, decreasing errors and bottlenecks, freeing up staff to do other work, and improving customer satisfaction.

## Automating Job Submission

A key part of workflow automation is the job submission process. When asked how digital printing work is submitted today versus what they expect in two years (Figure 13), commercial printer respondents project an annual decline in files being emailed (-11%) and delivered on a USB drive or portable storage device (-17%). On the other hand, respondents expect their use of online or web-based digital storefronts (e-commerce) to increase 33% annually over the next two years.



**Figure 13**
Commercial Printer Job Submission Trends

**Annual Growth**

| | Today | In Two Years | Annual Growth | |
|---|---|---|---|---|
| Delivered on USB Drive/Portable Storage Device | 9% | 6% | -17% | |
| Upload File to Dropbox/Online Storage Platform | 25% | 24% | -2% | |
| E-mail File | 46% | 36% | -11% | |
| Online/Web Storefront | 20% | 33% | 33% | |

*Q. Of your digital printing work, what is the breakdown of how job orders are submitted today and what you expect it will be in two years?*
*N = 216 Commercial Printers*

*Source: Digital Printing 5.0 NAPCO Research 2019*

In-plant respondents also expect a decline in files being emailed (-12%) and delivered on a USB drive or portable storage device (-8%) (Figure 14). Interestingly, respondents do believe their use of an online or web-based storefront (e-commerce) will increase 20% annually over the next two years as well as files being uploaded to an online storage platform such as Dropbox (4%). As in-plant operations are continually challenged to justify the benefits they bring to parent organizations, online ordering or web-to-print solutions offer many benefits that can enhance value and improve efficiency.



**Figure 14**
In-Plant Job Submission Trends

**Annual Growth**

| | Today | In Two Years | Annual Growth | |
|---|---|---|---|---|
| Delivered on USB Drive/Portable Storage Device | 6% | 5% | -8% | |
| Upload File to Dropbox/Online Storage Platform | 13% | 14% | 4% | |
| E-mail File | 46% | 32% | -12% | |
| Online/Web Storefront | 20% | 49% | 20% | |

*Q. Of your digital printing work, what is the breakdown of how job orders are submitted today and what you expect it will be in two years?*
*N = 157 In-Plants*

*Source: Digital Printing 5.0 NAPCO Research 2019*

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Investing in technologies and processes that enable more efficient job submissions can be a key enabler to a fully automated workflow. Submitting print work through an online ordering interface is a step to automating workflow and reducing manual rekeying of critical order details. Today's web-to-print systems are much more than simple job submission tools and offer features and functionality to improve efficiency and deliver more to customers. The ability to establish a "lights out" workflow and improve overall production efficiency can yield cost savings throughout an organization. The task before many print providers is how to fully leverage software systems to meet customers' ever-changing needs.

## Finishing, The Final Step

Finishing is the last step in the print production process, as all printing requires some type of finishing. It's also an important stage in production and a way to differentiate products and create added value. Given finishing's significance, it's important to consider and evaluate available methods to enhance productivity and quality.

Investing in finishing equipment can lead to significant productivity improvements and help reduce costs. In addition, offering finishing services can boost profits, add value, and separate one printer from the competition. In a world of shorter runs, product customization, faster time to market, shrinking margins, and competitive pricing, astute printers look for ways to differentiate their products.

Post-press, traditionally, has been the most labor-intensive stage of print production — the set of chores with the most paper to handle and the largest number of task-specific machines on which to process it. Slowdowns and backups are hard to avoid, and the "bindery bottleneck," while not as prevalent as it used to be, still challenges printing operations.

Respondents report offering many finishing options for digitally printed work. Folding, saddle-stitching, hole-punching, collating, and booklet-making are popular services offered. More than three-quarters of commercial printers offered their digital printing customers many finishing options, including folding, saddle-stitching, hole-punching, and collating (Figure 15).
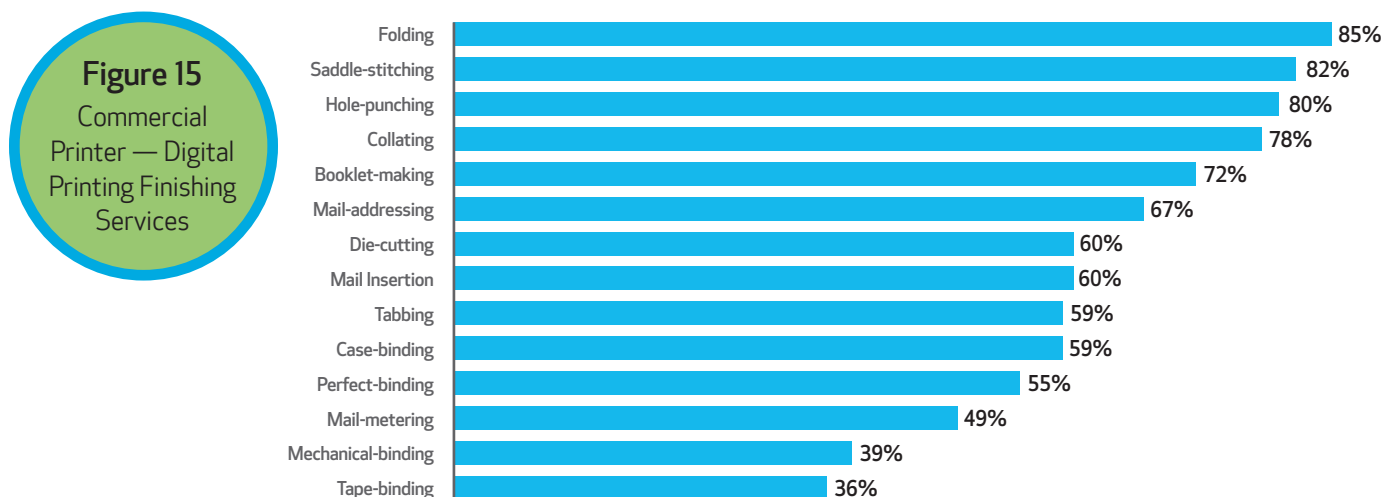
**Figure 15**
Commercial Printer — Digital Printing Finishing Services



| Service | % |
|---|---|
| Folding | 85% |
| Saddle-stitching | 82% |
| Hole-punching | 80% |
| Collating | 78% |
| Booklet-making | 72% |
| Mail-addressing | 67% |
| Die-cutting | 60% |
| Mail Insertion | 60% |
| Tabbing | 59% |
| Case-binding | 59% |
| Perfect-binding | 55% |
| Mail-metering | 49% |
| Mechanical-binding | 39% |
| Tape-binding | 36% |

*Q. Does your operation offer the following finishing processes to your digital printing customers?*
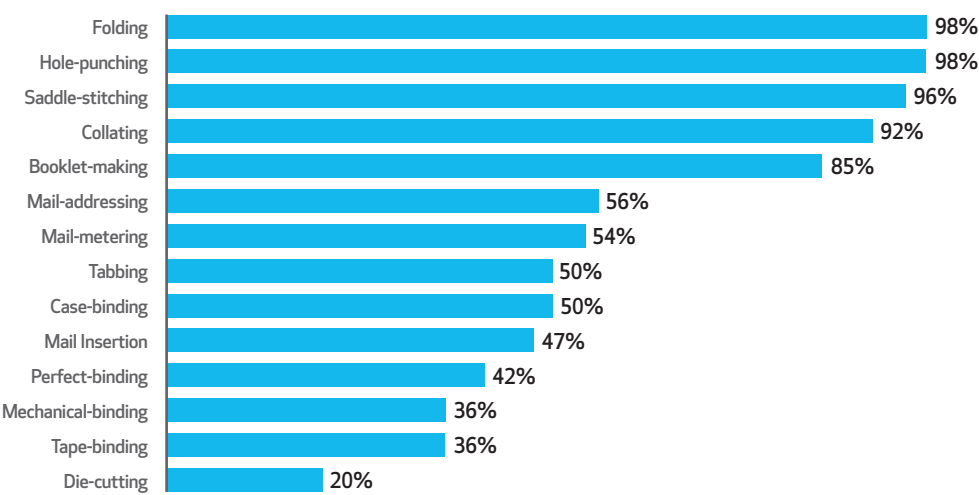*N = 176 Commercial Printers*

*Source: Digital Printing 5.0 NAPCO Research 2019*

Commercial printer respondents identify the following bindery services as extremely/very profitable:

1. Mail-addressing . . . . . . . . . . . . **43%**
2. Perfect-binding . . . . . . . . . . . . . . **41%**
3. Booklet-making . . . . . . . . . . . . . **40%**
4. Die-cutting . . . . . . . . . . . . . . . . . **39%**
5. Saddle-stitching . . . . . . . . . . . . **37%**

6. Mail Insertion . . . . . . . . . . . . . . . **37%**
7. Folding . . . . . . . . . . . . . . . . . . . . . **35%**
8. Mail-metering . . . . . . . . . . . . . . . **35%**
9. Case-binding . . . . . . . . . . . . . . . . **31%**
10. Mechanical-binding . . . . . . . . . **30%**

In-plants also had a high incidence of offering folding, hole-punching, saddle-stitching, collating, and booklet-making (Figure 16).



**Figure 16**
In-Plant — Digital Printing Finishing Services

| | |
|---|---|
| Folding | 98% |
| Hole-punching | 98% |
| Saddle-stitching | 96% |
| Collating | 92% |
| Booklet-making | 85% |
| Mail-addressing | 56% |
| Mail-metering | 54% |
| Tabbing | 50% |
| Case-binding | 50% |
| Mail Insertion | 47% |
| Perfect-binding | 42% |
| Mechanical-binding | 36% |
| Tape-binding | 36% |
| Die-cutting | 20% |

*Q. Does your operation offer the following finishing processes to your digital printing customers?*
*N = 118 In-Plants*

*Source: Digital Printing 5.0 NAPCO Research 2019*

In-plant respondents identify the following bindery services as extremely/very profitable:

1. Booklet-making . . . . . . . . . . . . . **29%**
2. Die-cutting . . . . . . . . . . . . . . . . . **24%**
3. Case-binding . . . . . . . . . . . . . . . **22%**
4. Folding . . . . . . . . . . . . . . . . . . . . . **21%**
5. Mail-addressing . . . . . . . . . . . . . 21%

6. Perfect-binding . . . . . . . . . . . . . . 19%
7. Saddle-stitching . . . . . . . . . . . . . 19%
8. Mail Insertion . . . . . . . . . . . . . . . 19%
9. Collating . . . . . . . . . . . . . . . . . . . . 17%
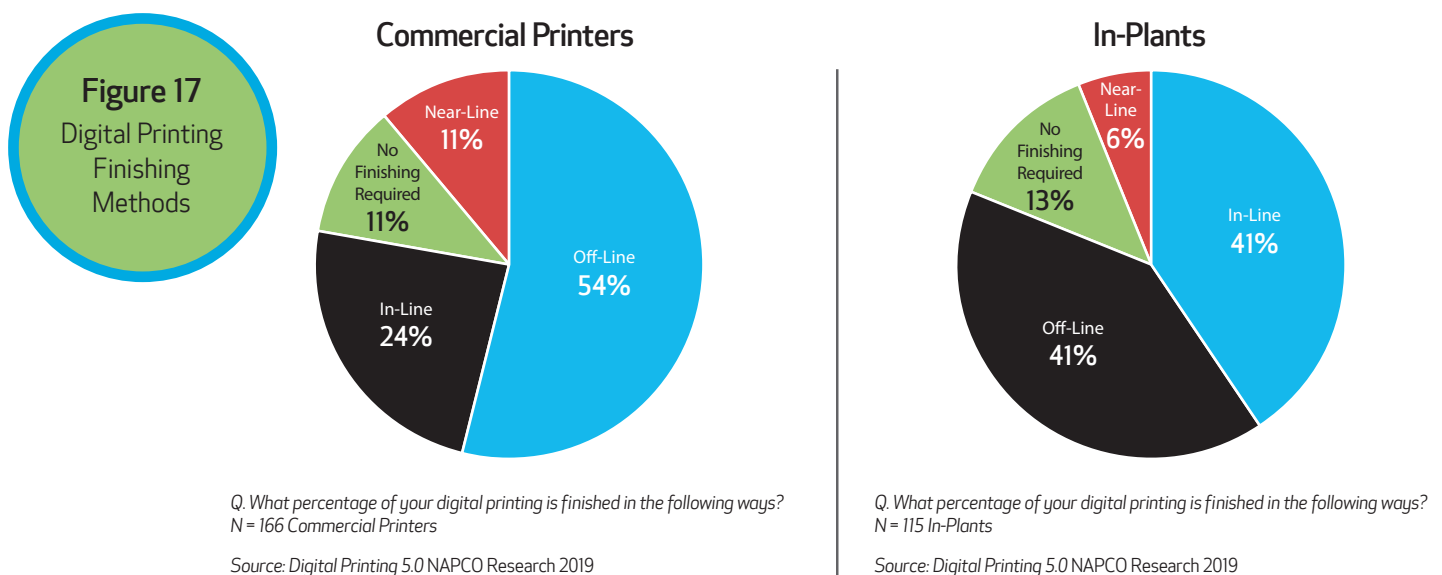10. Hole-punching . . . . . . . . . . . . . . 14%

While the finishing services that print providers offer depend on the type of print work produced, the print volume, and customers' requirements, every operation wants post-press to be a profit center—or at least an activity in which costs are kept under control.

## In-line Versus Off-line

When it comes to finishing digitally printed jobs, an important consideration is either to place the finishing equipment in line with the digital press to complete jobs in a single pass or finish the pieces off-line. Commercial printer respondents report that over half their digital printing is finished off-line while close to a quarter is produced in-line. Alternatively, in-plant respondents indicate that 41% of their digital printing is finished either in-line or off-line.

Commercial printers' high use of off-line finishing likely reflects past investments made for offset production and established workflows, while in-plants' higher use of in-line finishing reflects that segment's early adoption and high use of digital printing.

In-line finishing offers many benefits to digital printing and can make extremely small job quantities practical. It's an option that can help print providers address workflow challenges of producing smaller jobs and shortening production time. Commercial printers maybe accustomed to off-line finishing workflows, but in-line options, in some cases, may reduce costs and improve efficiency.

**Figure 17**
Digital Printing Finishing Methods



**Commercial Printers**

- Near-Line 11%
- No Finishing Required 11%
- Off-Line 54%
- In-Line 24%

*Q. What percentage of your digital printing is finished in the following ways?*
*N = 166 Commercial Printers*

*Source: Digital Printing 5.0 NAPCO Research 2019*

**In-Plants**

- Near-Line 6%
- No Finishing Required 13%
- In-Line 41%
- Off-Line 41%

*Q. What percentage of your digital printing is finished in the following ways?*
*N = 115 In-Plants*

*Source: Digital Printing 5.0 NAPCO Research 2019*

## Conclusion

A major influencer in the growth and success of digital printing is the workflow infrastructure that surrounds the press. As more print providers adopt practices and make investments to improve automation, the innovative use of digital printing will continue to grow and add value. Ongoing improvements in end-to-end workflows that improve productivity — including a unified workflow, more automation, online job submission, and value-added finishing — are enabling print providers to better serve customers, improve profitability, and leverage the benefits of Digital 5.0.

**About Digital Printing 5.0**

Digital Printing 5.0 is a series of thought-leadership content pieces based on a NAPCO Research survey of commercial and in-house printing that was sponsored by Canon.

1. Digital Printing: Where Are We Now?
2. Beyond the Press: Defining the Infrastructure for Operational Success
3. Optimizing Color Across Print Platforms
4. The Rise of the Digital Enhancement Opportunity
5. Best Practices For Digital Finishing

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