

# Digital Printing for Folding Carton Converting

An Analysis of User Adoption Practices and Opportunity



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## Introduction

SGIA and its market research partner, Keypoint Intelligence, recently completed a structured survey of folding carton converters in North America. The goal of that research is to understand folding carton converters' printing habits, preferences, and plans, as well as to describe the role and prospect of production-level color digital printing at such companies. This report describes the main findings of our research with folding carton converters, as well as our conclusions and recommendations for use by printing companies and others interested in the folding carton packaging segment.

## Executive Summary

For printers interested in printing packaging, folding carton (FC) printing is an attractive segment to consider. It is a big market, accounting for about \$18 billion in total print value in North America in 2017. Meanwhile, the segment's use of paperboard media and mainly simplex (one-sided), sheet-fed offset printing make folding cartons one of the packaging market's most accessible packaging applications for commercial printers to attempt. As a print market, the folding carton segment also has the advantage that all packaging has—namely that, unlike most print applications, it is a print category that is never displaced by electronic media and that is growing in absolute terms, slowly and persistently, because it is tied to human consumption. Finally, the folding carton segment is attractive because there is now a growing category of production-level digital printing equipment that is allowing established converters and new entrants to offer a new level of service to print customers and in turn to add to their own profitability.

Folding carton printing overall is 99% printed by offset and other analog print technologies, while digital printing is mostly used in folding carton converting as a proofing technology via wide format inkjet. That said, a small share of folding carton converters in North America now have some type of color digital printing for actual print production in their plants for folding cartons or for some other application. The production-level digital printing of folding cartons is growing steadily based on digital printer installations that range from narrow format electrophotographic (EP) label webs that can also print folding carton media up to big EP sheet printers that are specifically designed to print folding cartons.

Our survey results give insights into many aspects of the FC converters' work, their equipment choices and preferences, the industries they serve, and other topics. The results collectively show color digital printing to be a helpful tool for FC converters, one that many now want to include as a complement to their



analog press technology. That, in fact, is how most current color digital printers for folding carton printing are installed — they work side by side with offset or other conventional presses, and are thus ready to print jobs that offset presses either cannot print or cannot print efficiently.

Print jobs with short run lengths are the biggest reason converters are interested in digital printing. As the survey results show, FC converters' individual print jobs vary greatly in length from under 1,000 to over 200,000 square feet; even for the analog printing that dominates folding carton converting, though, print jobs under 1,000 square feet are significant at about 12% of all jobs. Meanwhile, for converters with digital printers, jobs on those printers that are under 1,000 square feet account for the biggest share (38% of all production digital output). Of the two print technology categories, digital technology handles short runs much more easily because its prepress work is all electronic, whereas analog technology sometimes struggles with short runs because all analog printing requires plates and related plate preparation, as well as related costs in time *and* money.

Another finding of the research is that the *incidence* of short runs is now increasing. Close to 55% of folding carton converters say that incidence of short run printing is growing at their companies, which is much more than the 39% who say that incidence of short runs is stable, and *nine-times* the 6% of converters who say that it is declining. Through improved automation, offset presses have greatly enhanced their ability to print short runs, but short runs are still a challenge for most converters that have only analog technology. Color digital printers are, in turn, becoming known as a way to print short runs quickly, simply, and economically.

The pressure on FC converters to print short runs comes from brand owners in various vertical industries, companies that for competitive reasons want to target markets precisely and improve operational efficiency — thus, they tend to order package printing more often and in smaller amounts. Companies making foods, beverages, health and beauty products, as well as pharmaceuticals are the most important drivers of short run folding carton printing jobs, but the survey data shows that companies from several other verticals also drive the printing of short runs of folding cartons, such as consumer electronics and medical products.

Within the total range of vertical industries in North America, there are hundreds or even thousands of brands that buy folding carton printing services, and these many brands are the customers and prospects of FC converters. As a result, FC



converters are good witnesses about brands' buying habits. Of the various insights about brands that come from converters in the survey, an especially important one concerns the willingness of brands to pay a premium for certain print services. FC converters in our survey say, on average, that about 20% of their customers are willing to pay a premium for each of four types of print services:

- ◆ Prototypes
- ◆ Variable data
- ◆ Jobs that include 50 or more versions
- ◆ Jobs with a turnaround of 48 hours or less

These results about the willingness of customers to pay a premium for these value-added services are an important indicator about the prospect for color digital printing at FC converters in North America. That is because each of the four cited services is one where digital printing is essential (variable data printing) or extremely useful (prototypes, jobs with 50 or more versions, or jobs with 48 hour turnaround). Color digital printing is key for converters to provide services that brands are often willing to pay extra for.

Color digital printing for folding cartons is not perfect. The research shows that converters have concerns about color digital printing's ability to replicate spot colors, about its running costs, and its ability to print white. That said, the research also indicates that many FC converters do want to own digital print technology. When asked what they would buy to upgrade their companies' printing operations, assuming cost is not an issue, "production-level color digital printer" is tied with "new conventional press" as the most wanted by folding carton converters in North America. That split is an appropriate one because research indicates that color digital printers will be more likely to work side by side with offset and other analog presses, complementing them 1) by taking over short runs, allowing offset presses to concentrate on the long runs where they are most efficient, and 2) by allowing FC converters to offer new print services, such as personalization, that analog presses cannot provide. Given all these considerations, an overarching resolve from the research is that having production-level digital print technology will be very beneficial to folding carton converters, because they can gain from it in terms of both operational efficiency and overall profitability.



## Methodology

To understand printing preferences, challenges, and plans in the packaging industry, SGIA and Keypoint Intelligence worked together to create a detailed questionnaire for use in telephone interviews with folding carton, flexible packaging, and corrugated packaging converters in the US and Canada. Most of the survey's questions were the same for all three converter types, but several questions were particular to each converter category. The following are the general types of questions in the survey:

- ◆ What print technology does your company use to print packaging?
- ◆ What are your company's technology needs and plans?
- ◆ What are the main challenges to your package printing?
- ◆ Does your company use any color digital printing technology?
- ◆ What are the trends in your company's package printing business?
- ◆ What is the outlook for color digital printing in your industry?

Keypoint Intelligence then conducted interviews with managers at 147 converters in the US and Canada, of which 49 were folding carton converters. These folding carton converters are the focus of this report (SGIA and Keypoint Intelligence will provide separate reports about results for flexible packaging and corrugated segments). All 49 have offset or other analog color printing of paperboard folding carton media, and 14 also have color digital production printing. Like the other converter categories in our survey, all the folding carton converter respondents are decision makers or influencers regarding printing at their companies.

After reviewing the completed interviews, and rejecting a small number that were marginal, Keypoint Intelligence tabulated and charted the aggregated results for folding carton converters and for the other two converter categories. Keypoint Intelligence then focused on the folding carton converter results to create this report — aiming not only to isolate the key findings, but also to explain their meaning and significance as well as make conclusions and recommendations.

## Background Information

For printers interested in printing packaging, folding carton is an attractive segment to consider. It is a big market at about \$18 billion in total print value in North America in 2017. Meanwhile, the segment's paperboard media and



simplex (one-sided), sheet-fed printing makes folding cartons one of the packaging market's most convenient packaging options for a commercial printer to attempt. Finally, as a print market, the folding carton segment has the advantage that all packaging has — namely that it is a print category that is never displaced by electronic media and is instead growing slowly but persistently because it is tied to human consumption.

### Initial Notes about Folding Carton Printing

Folding cartons are packaging made from single ply media, usually paperboard up to about 22 points or 600 microns in thickness. Folding cartons are used as primary packaging for a huge range of goods, from breakfast cereal to cosmetics to consumer electronics.

**Figure 1: Folding Carton Examples**



Source: MOD-PAC

As mentioned earlier, most printing of folding cartons is done on sheet-fed offset presses. While that printing is essentially the same as other commercial printing applications, folding carton finishing is mostly different and specialized. At a minimum, it includes die cutting, folding, and gluing, but it may include other processes as well, such as foiling. As to color digital printing, its most common role is for proofing in folding carton printing. All folding carton converting that has analog color printing also has prepress technology of some type; it is very common for that prepress area to include a wide format inkjet proofer, as well.

Color digital printers for actual production of folding cartons are much rarer than digital proofers, but they are now an established category of printing equipment and their installed base in North America today accounts for about \$180 million in gross print billings from converters to their customers. The digital printer models include a few types of devices and more are coming. The most productive so far are big, sheet-fed electrophotographic (EP) printers from HP Indigo (HP Indigo 30000) and inkjet printers from Fujifilm (Fujifilm JetPress 720S), which print B2-size sheets (19.7" x 27.8"). Two other types of color digital printers are also now installed for printing folding cartons.





- ♦ **Narrow format EP sheet printers:** Printers such as HP Indigo 7900 and Xerox iGen 150 print A3 (11.7" x 16.5") paper and paperboard, or somewhat larger. Although these printers are mainly for commercial printing, some are used to print small folding cartons intensively.

**Figure 2: Xerox Automated Packaging Solution — Xerox iGen, with Finishing**



Source: Xerox

- ♦ **Narrow web EP label printers:** Printers such as HP Indigo WS6800 and Xeikon 3500 are label printers first, but some are used to print folding carton, roll-to-sheet, as a side application or (rarely) as the main application.

**Figure 3: Xeikon Folding Carton Suite — Xeikon 3500, with Finishing**



Source: Xeikon

For both narrow format digital options (i.e., A3 printers and narrow web label printers), the size of the media that they can handle is a key limitation because only small folding cartons can be easily imposed on small digital print frames. The B2 format devices, though, greatly alleviate that problem because a B2 sized sheet can allow imposition of both small and large folding cartons. In



fairness, even a B2 format output device is what folding carton converters call “half-sized” because, for most converters, a standard offset press in North America prints an image twice that size at about 40” across the direction of print.

**Figure 4: HP Indigo 30000 — B2 Sheet Printer**



*Source: HP Indigo*

The good news is that a few color digital printer vendors will soon commercialize “full size” systems, namely color inkjet printers that print B1 size sheets (27.8” x 39.4”), a sheet size that is about equal to the media printed by most folding carton converters on their offset presses. So far, three vendors are expected to introduce such digital printers: Inkjet technology developer Landa, which placed the first beta units of Landa S10 in Israel and the US in 2017, as well as Heidelberg and KBA, two major offset press manufacturers which will place beta units of Heidelberg PrimeFire and KBA VariJET 106 in 2018.



**Figure 5: Heidelberg PrimeFire — B1 Sheet Press**



*Source: Heidelberg*

Color digital printers for production of folding cartons cost from about \$600,000 to \$700,000 for a narrow format model (web or sheet-fed) to \$1.5 million or more for a B2 sheet printer, and still more for the upcoming B1 sheet printers. Pricing for any B1 printer for folding cartons is unknown for now, but a price of \$3 million would be plausible. While this overall range of prices includes some that may be intimidating, color digital printing offers great value to converters and addresses some important and growing needs.



## Survey Results and Analysis

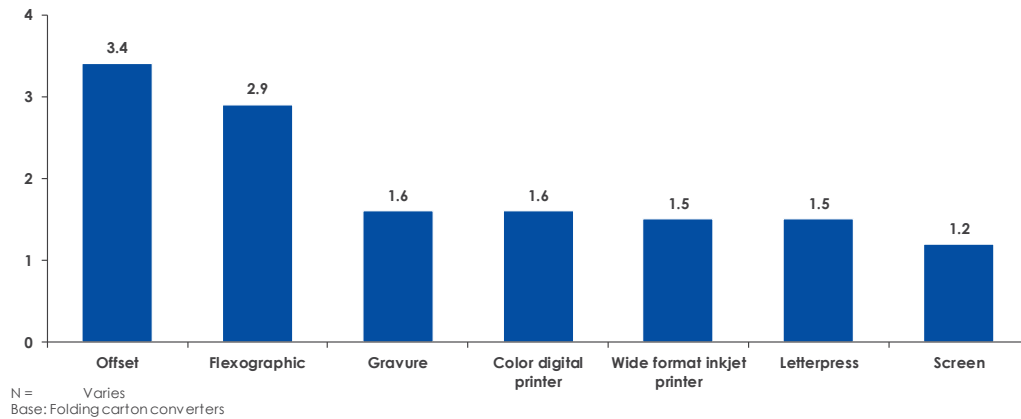
In the following pages, our report will focus on the most important survey results that are based on the folding carton converters' tabulated answers to the survey's questions. These results collectively give a good picture of folding carton converters, their printing, their challenges, and their needs and plans, with many clues about the role and prospect of color digital printing at their companies. What are these companies like, in terms of equipment and software? What do they want? What do they think of digital printing? What are their plans? In the text that follows, our report will use the survey results to answer these sorts of questions.

### *Technology Owned, Technology Wanted*

Figure 6 shows the average numbers of presses or printers at folding carton converters in the survey. Note that the sample size ("N") varies: the average cited for each device type is the average for the companies that have that particular type. That said, each of the 49 folding carton converters in the survey operates at least one conventional press, most often a sheet-fed offset press. Because the survey includes a good share of larger companies, the average (mean) number of offset presses is high at 3.4 units. For color digital printers, the survey specifies that we were concerned with production level equipment such as HP Indigo, Xeikon, and Durst; 14 companies claim to have color digital printers that meet that standard. While wide format inkjet is used by nearly all 49 as a proofing technology, the other press and printer types cited are used by only a minority, often just a small minority. In many cases, these other technologies may be printing other, non-folding carton applications, such as labels.

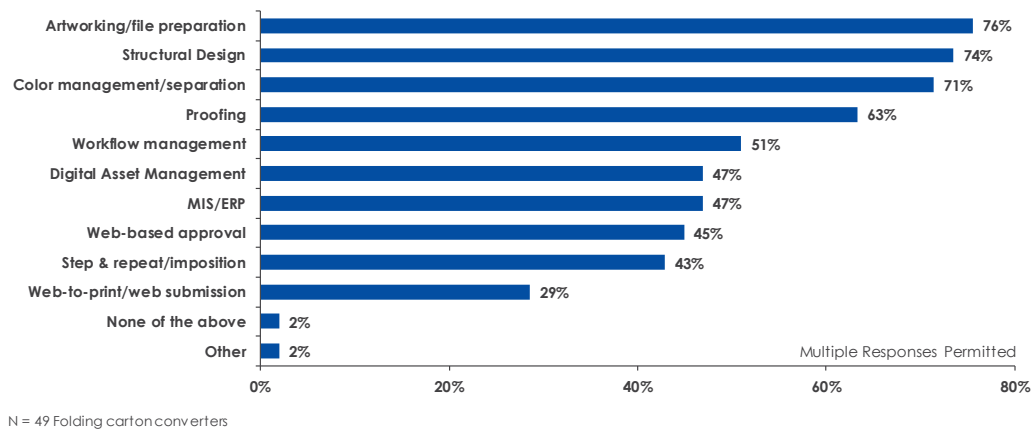


**Figure 6: Average Number of Presses Operated, by Type**



Folding carton converting most often relies on software as well as hardware. As seen in the chart below, most folding carton converters own more than one type of software, and the most owned tools are ones that support prepress: artwork/file preparation (76%), structural design (74%), color management/separation (71%), and proofing (63%). Note, also, that the next tier of software tools, in terms of popularity, all have to do with workflow and business management: workflow management (51%), digital asset management (47%), and MIS/ERP (47%). The two general areas, prepress and workflow, present a range of challenges to folding carton converters — challenges that software tools help them address.

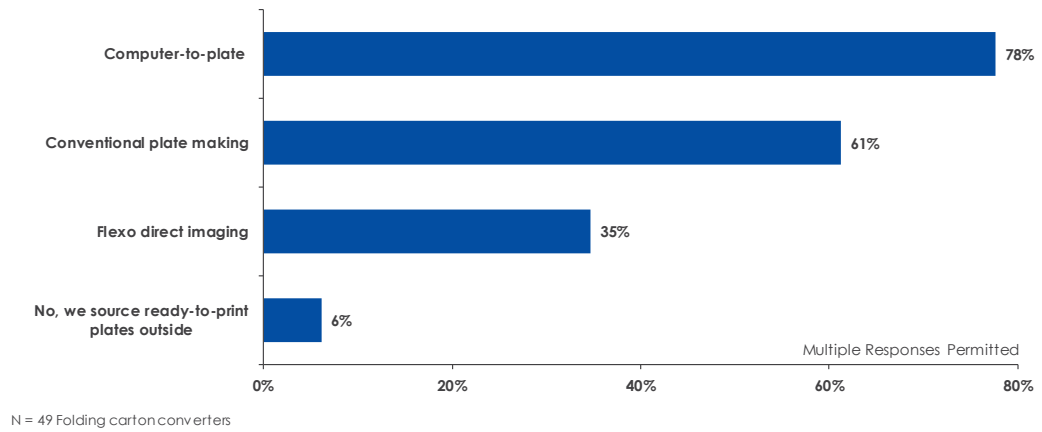
**Figure 7: Types of Software Owned**





Given that all the folding carton converters in the survey operate conventional presses, it follows that nearly all of them also operate some type of technology to create plates or masters. At 78%, folding carton converters' ownership of computer-to-plate (CTP) technology is higher than the rate of CTP ownership by flexible packaging converters (48%) and corrugated converters (20%). Folding carton converters also own conventional platemaking at a higher rate (61%) than is true for flexible packaging (38%) and corrugated converters (18%).

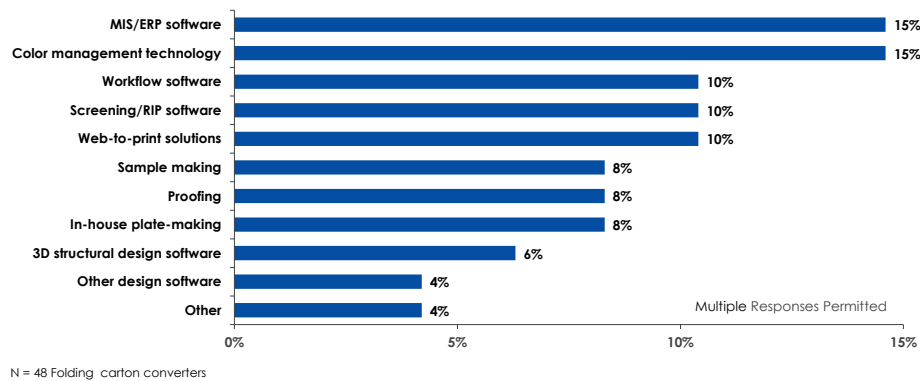
**Figure 8: Prepress Technologies Owned**





Folding carton converters were not enthusiastic about adding software and technologies that could improve their workflows; most consider their workflows adequate. Of the software that was of interest, a few themes emerged: improving the business workflow, streamlining job onboarding, and producing the work consistently.

**Figure 9: Most Wanted Workflow Technology – 1st Choice**



A print management information system (MIS), more commonly referred to as an enterprise resource planning (ERP) solution by converters, was top among the most wanted software solutions. ERP solutions help converters manage customer accounts, generate pricing and quotes, as well as order and track materials, among other business-related tasks. Without an ERP, converters must keep track of customers, jobs, materials, and billing through manual processes, often resulting in mistakes and delays.

As with other types of printers, FC converters can improve their job on-boarding process, which includes capturing the customer's job intent and receiving their artwork and/or data files. Workflow management and web-to-print software can streamline job onboarding by standardizing the information collected at the point of ordering and then using the information and files provided to automate file checking (preflight) and preparation.

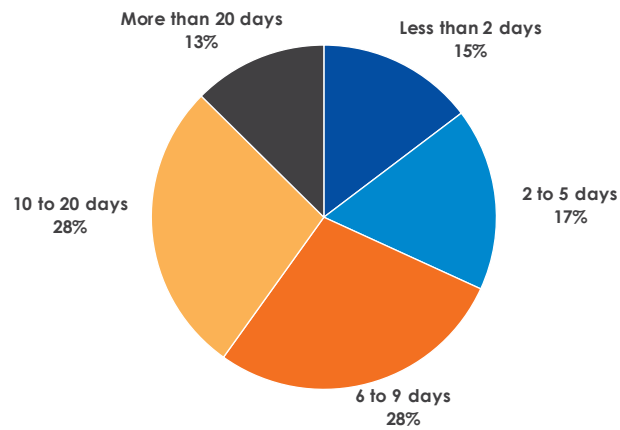
Color management technology and screen/raster image processing (RIP) software rounded out the top five most wanted workflow technologies. Both enable converters to output work consistently and repeatably, while upholding the brand's requirements for color matching.



Another question asks folding carton converters how their jobs are split in terms of required turnaround time, from order receipt to actual delivery, with response options ranging from less than 2 days to more than 20 days. Compared with other types of printing, it appears that FC converters are afforded longer turnaround, but these are likely mitigated when longer run lengths are factored. Over half (56%) of respondents had turnaround times of over 6 days. Nearly a third of converters must complete jobs within 5 days. For work with shorter turnaround, there is an opportunity for digital color printing to augment or replace analog press runs.

**Figure 10: Required Job Turnaround Time**

Mean: 9.8 days  
Median: 7.5 days



N = 49 Folding carton converters

Source: Keypoint Intelligence

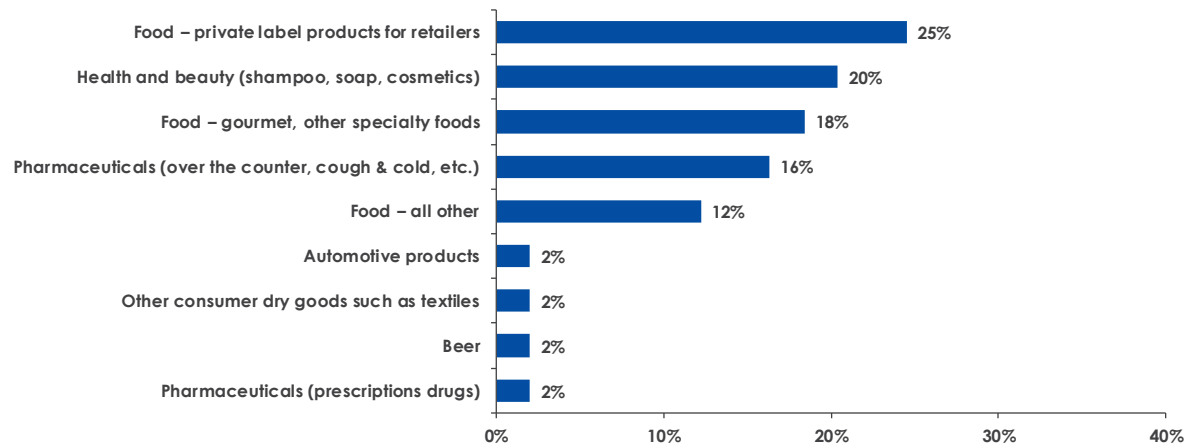




### Markets Served

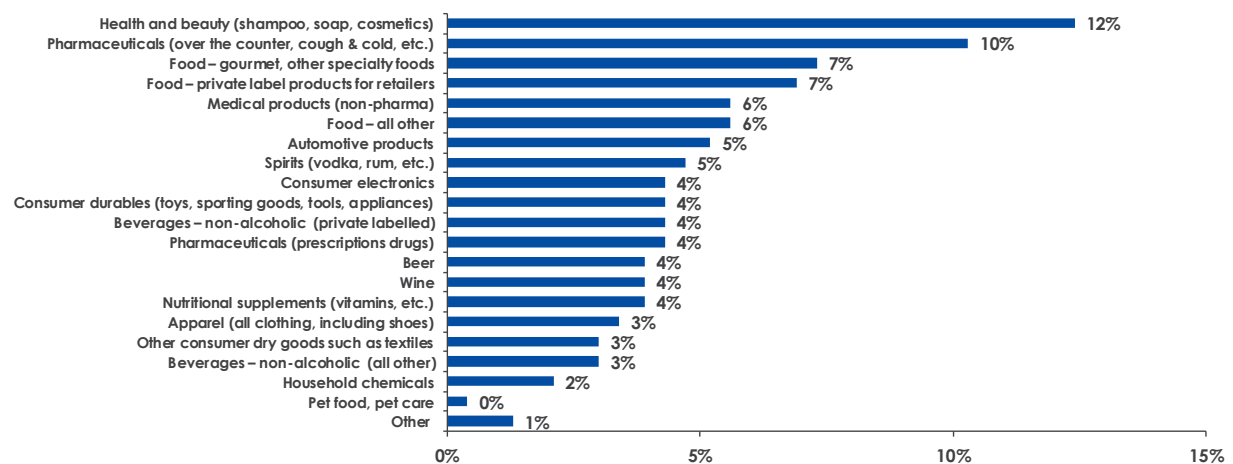
Given that all the folding carton converters in the survey have conventional (analog) presses, the industries that these companies serve with analog technology are a good indication of the overall origins of folding carton print jobs. The survey asks folding carton converters to cite and rank the top three vertical industries that account for most of their print volumes. Food that is private labeled for retailers (25%), health and beauty products (20%), and gourmet and other specialty foods (18%) lead the results for “first choice” (Figure 11). Looked at another way in the next chart, the results are based on total votes for each option as first, second, or third choices (Figure 12).

**Figure 11: Analog Print Volume, by Industry – 1st Choice**



N = 49 Folding carton converters

**Figure 12: Analog Print Volume, By Industry – Most Chosen**



N = 49 Folding carton converters

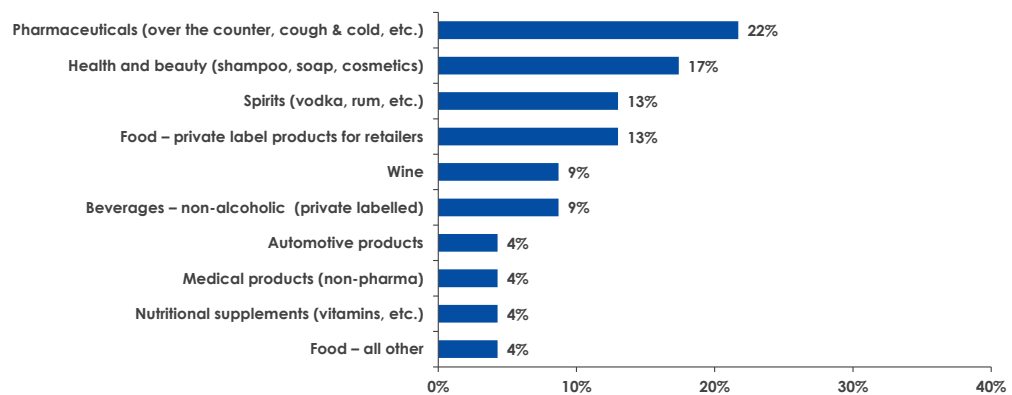


In that view, the results change, and the health and beauty segment has the most votes (12%), followed by over-the-counter pharmaceuticals (10%), as well as gourmet and other specialty foods. The main takeaway from the results to this question is that for the analog technology that prints 99% of folding cartons, a few vertical industries order the most printing — namely foods, health and beauty products, and retail pharmaceuticals.

Only 14 of the folding carton converters in the survey have production color digital printers, which is not enough to be statistically valid (30 is the minimum for statistical validity). That said, this small sample of color digital printer users is enough to be indicative, and the results indicate that the industry verticals are similar for digital and analog presses.

About 22% of folding carton converters with color digital printers choose over-the-counter pharmaceuticals as the vertical industry that accounts for the most volume on those printers, followed by health and beauty (17%) as well as spirits and private label foods (each at 13%) (Figure 13).

**Figure 13: Digital Print Volume, by Industry — 1st Choice**



N = 14 Folding carton converters that operate production level digital printers

Looking at the results by the incidence of total votes for each option as first, second, or third choices (not charted here), the results change slightly to over the counter pharmaceuticals (11%), health and beauty (10%), consumer electronics (8%), as well as non-alcoholic beverages and gourmet foods (7% each). Our main takeaway from the results for this question is that for the digital technology that is becoming a helpful complement to analog for printing folding cartons, the vertical industries that order most digital printing are similar to the ones that account for most analog printing. One refinement to that view is that pharmaceuticals is a good market for digital printing, likely due to the



prevalence there for small format cartons and, for competitive and regulatory compliance reasons, regular adjustments by brands to their packaging designs.

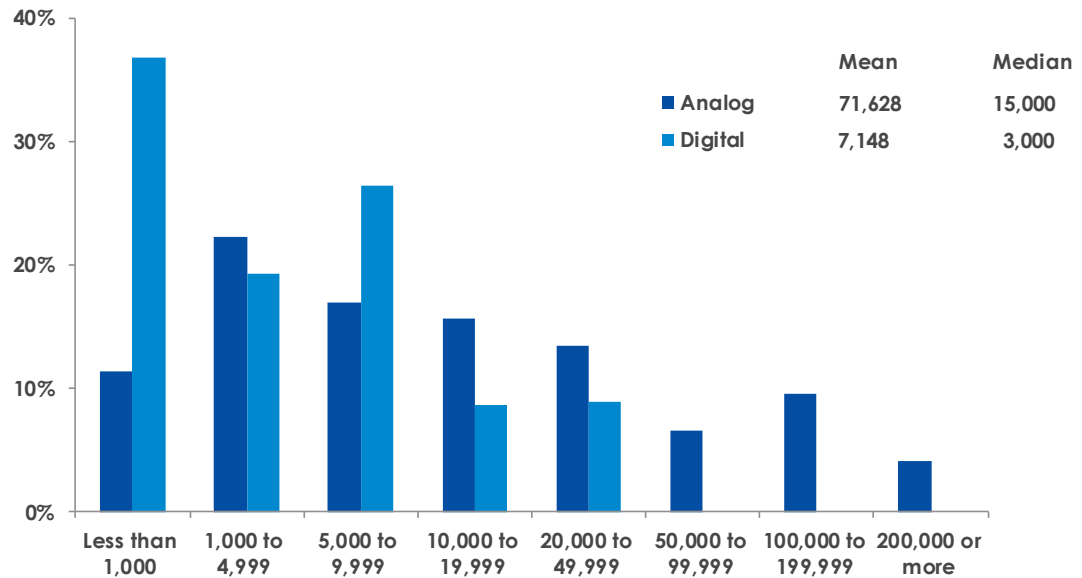
### ***Print Volume: Analog vs. Digital***

Figure 14 is especially important because it compares the run lengths of folding carton jobs printed on conventional presses to those printed on color digital printers. One question on the use of conventional presses and another one on the use of digital printers ask the folding carton converters that use each type of print technology to estimate the shares of their companies' print jobs that fall into each of several volume ranges, from under 1,000 square feet to 200,000 square feet or more. Not surprisingly, the results show that color digital printing is mainly used for short runs, and that conventional printing is used for both short and long runs. A few related points:

- ◆ While 38% of color digital print jobs are less than 1,000 square feet, jobs from 10,000 to 19,999 square feet and 20,000 to 49,999 square feet account for 9% in each case.
- ◆ As indicated by the results for these larger two ranges, color digital printing does print some longer print runs, a view supported by other Keypoint Intelligence research.
- ◆ 11% of conventional print jobs are less than 1,000 square feet and 22% are from 1,000 to 4,999 square feet, so short runs are significant even for analog presses.



**Figure 14: FC Run Lengths, in Square Feet: Analog & Digital**



Base: 49 converters with analog, 14 with digital

Note the reference in the chart to mean (average) results and median results, as cited in the figure's legend. Median results show the level at which half the results are higher and half are lower; regarding run length estimates, medians are likely a better overall indicator than averages. Median estimate of job sizes is 15,000 square feet for conventional presses and 3,000 for digital. Mean results are 71,628 square feet and 7,148 square feet for conventional and digital, respectively.

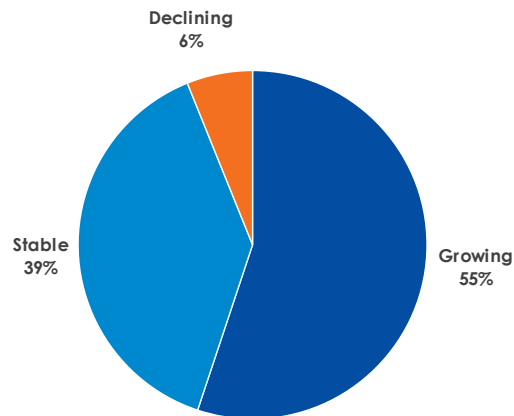
Five years ago, when color digital printing of folding cartons was still only a few years old, there were no digital print runs of more than 20,000 square feet and likely none more than 10,000 square feet. Digital has progressed, though, in the past few years. There are much bigger capacity digital printers in the market now, such as HP Indigo 30000 and Fujifilm JetPress 720S, and there are more folding carton converters who are experienced users and marketers of digital printing than there were five years ago.

In addition, for the overall folding carton market, short print runs are now a significant part of the converting business — one that users with just conventional presses must handle. We note with care that vendors of sheet-fed offset presses have greatly improved the ability of their newer presses to print short runs. That said, short run printing is something that color digital printers naturally excel at, and that is the most important reason the folding carton market tends to welcome new and capable digital entries.



The survey asked folding carton converters whether short run printing is growing, stable, or declining, regardless of how it may be printed and how the respondent defines the term “short run.” As seen in the chart, the share of folding carton converters that believe short run jobs are growing is 55%. That figure is nine-times larger than the number that say such printing is declining; meanwhile, 39% say the incidence of short runs is stable. A follow-up question asks the 27 folding carton converters who say that short runs are growing to estimate the rate of growth in such jobs. Their average (mean) response is 23% annual growth, and the median is 15%.

**Figure 15: General Outlook for Incidence of Short Runs**



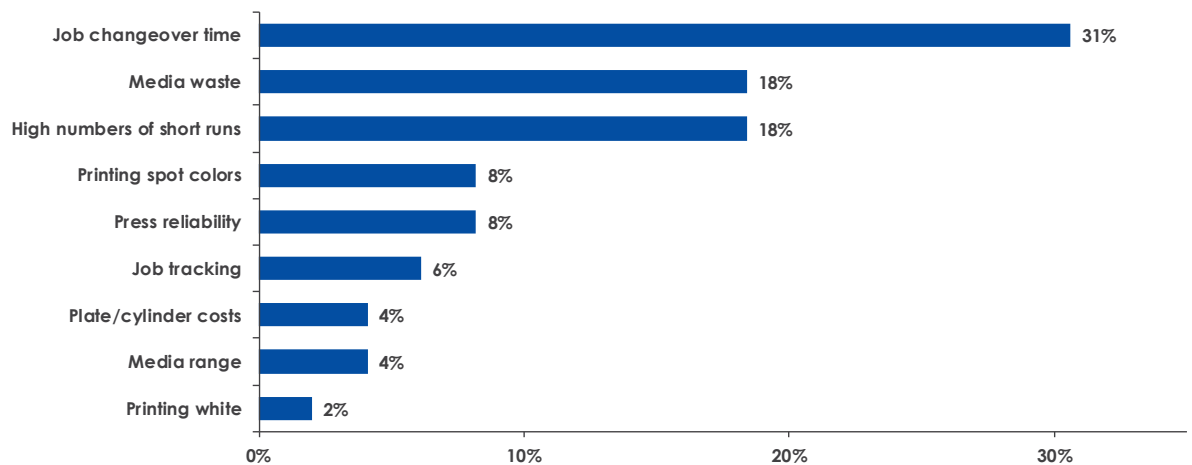
N = 49 Folding carton converters



### Technology Concerns

The survey asks folding carton converters to cite and rank the top three concerns regarding their conventional print technology. As seen in Figure 16, when looking at just the concerns that are ranked first, the top concern is job changeover time (31%), followed by media waste and high numbers of short runs (18% each). Printing spot colors and press reliability (8% each) are followed by smaller concerns about job tracking (6%), plate/cylinder costs and media range (4% each), and printing white (2%). These results reflect the nature of conventional print technology and the challenges of carton converting in 2018. Short run printing is a significant share of business, job changeovers occur more often as a result, and media waste increases with the start-ups needed to handle more print jobs. These challenges are all ones that production digital printing can help address directly or indirectly.

**Figure 16: Analog Print Technology Concerns – 1st Choice**



N = 49 Folding carton converters

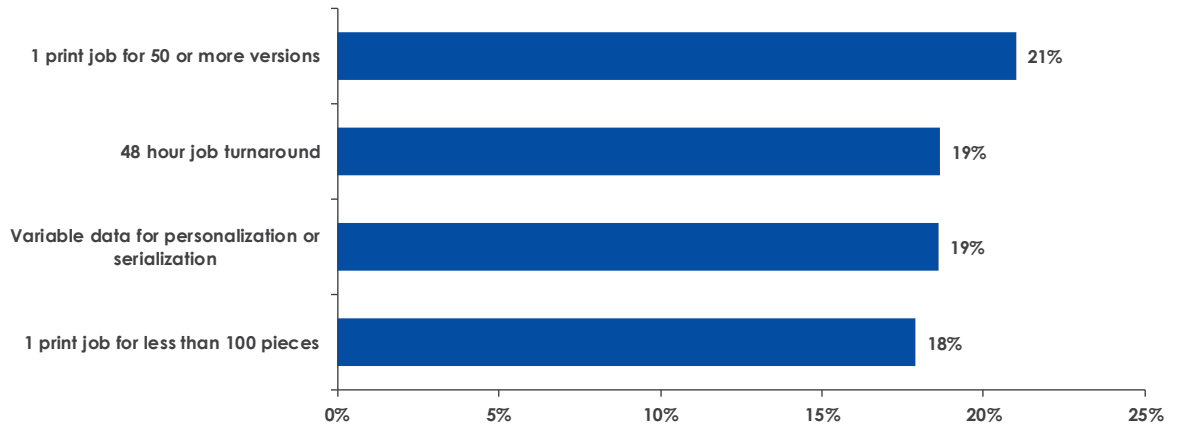
### Print Service Value: Customer Perspective and Printers' Opportunities

Our survey of folding carton converters also asked "for the following print services or features, what share of your clients would be willing to pay a premium?" The response options that we offered for that question included:

- ◆ 1 print job for 50 or more versions
- ◆ 1 print job for less than 100 pieces
- ◆ Variable data for personalization or serialization
- ◆ 48 hour job turnaround



**Figure 17: Shares of Clients Willing to Pay Extra for Certain Services (Means)**



N = 49 Folding carton converters

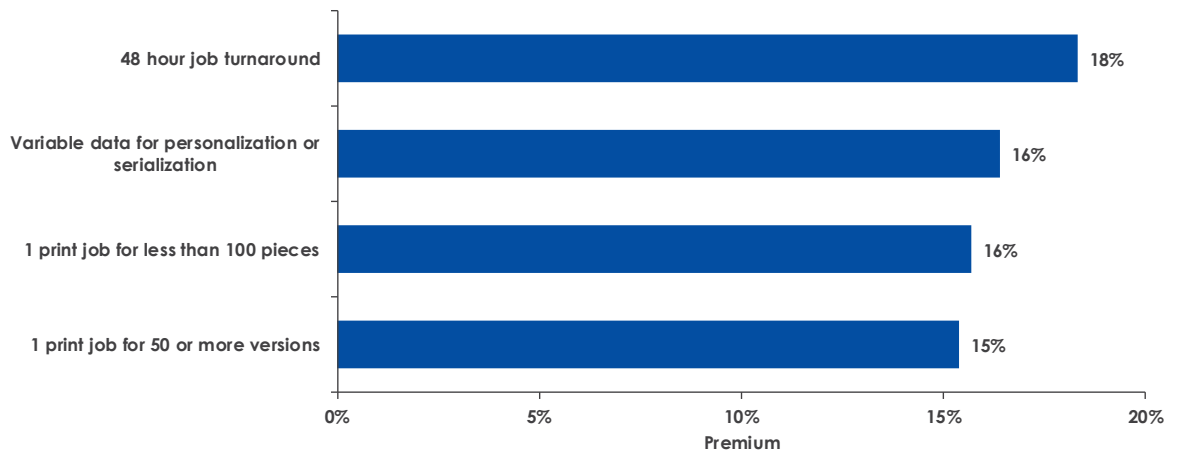
As seen in the chart above, converters of folding cartons say (on average) that some share of their customers are willing to pay extra for one or more of the services that are cited in the response options. Note the especially strong showing for “1 print job for 50 or more versions”, where the survey’s 49 converters together say that 21% of customers are willing to pay a premium; such print jobs are ones that color digital can print readily and that, in contrast, are often difficult to print with conventional technology. Meanwhile, the converters say that the shares of their customers who are willing to pay more for the other services are only a little smaller: 48 hour job turnaround (19%), variable data for personalization or serialization (19%), and one print job for less than 100 pieces (18%).

Why did we pose this question about paying a premium, and why did we offer these response options? The short answer is that we wanted to find out if the market really values the kinds of print services that production digital printing offers. Note that each of the services cited as a response option, from printing many versions to 48 hour job turnaround, is something that color digital printing excels at and the service is often inconvenient or even impossible to do with flexo, offset, or other analog printing.

Where respondents have indicated that their clients are willing to pay a premium for one or more services, the survey further asks *how much* of a premium those clients are willing to pay, with options ranging from “1% to 4%” to “50% or more.” As seen in the chart, the mean or average response is from 15% to 18%, with a median response for all at 15% (Figure 18).



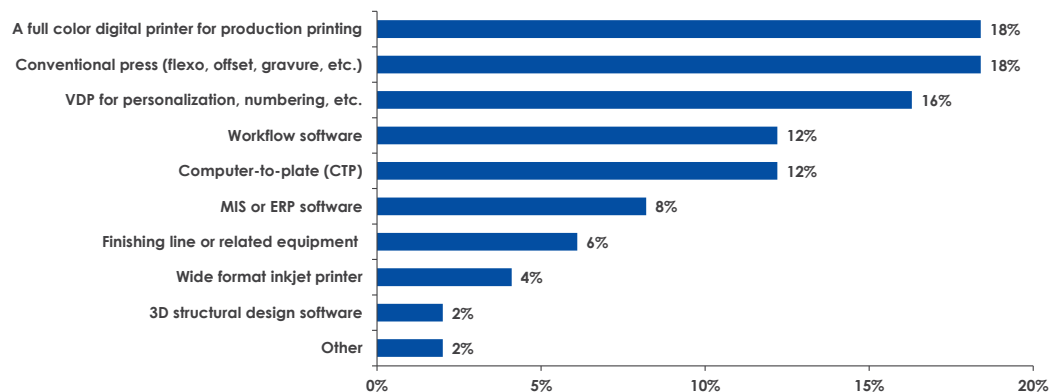
**Figure 18: Print Service Premiums – Amounts (Means)**



N varies, Base: Respondents who believe that clients would be willing to pay a premium for services or features

Another question in the survey asks converters what they would buy for their companies to upgrade their printing capabilities, assuming there is no budget or price consideration. Response options range from MIS/ERP software to conventional presses and digital printers as well as prepress technology. As seen in the chart of "first choice" results, full color digital printer and conventional press together lead the list at 18% each; variable data printing, which only digital printers can do, ranks third at 16%.

**Figure 19: Most Wanted Upgrades – 1st Choice**



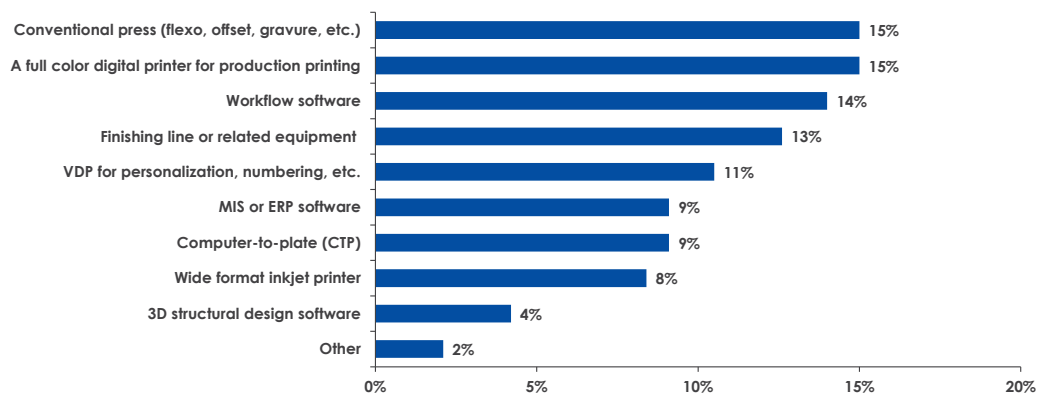
N = 49 Folding carton converters





Looking at the broader results — based on most responses chosen as one, two, or three — conventional press and color digital printer are again in the lead at 15% for digital and conventional. The key takeaway from the results for this question is that color digital printing for folding cartons, while it was nearly unknown in 2010, now holds great attraction for folding carton converters at about equal to that of conventional presses.

**Figure 20: Most Wanted Upgrades – Most Chosen**



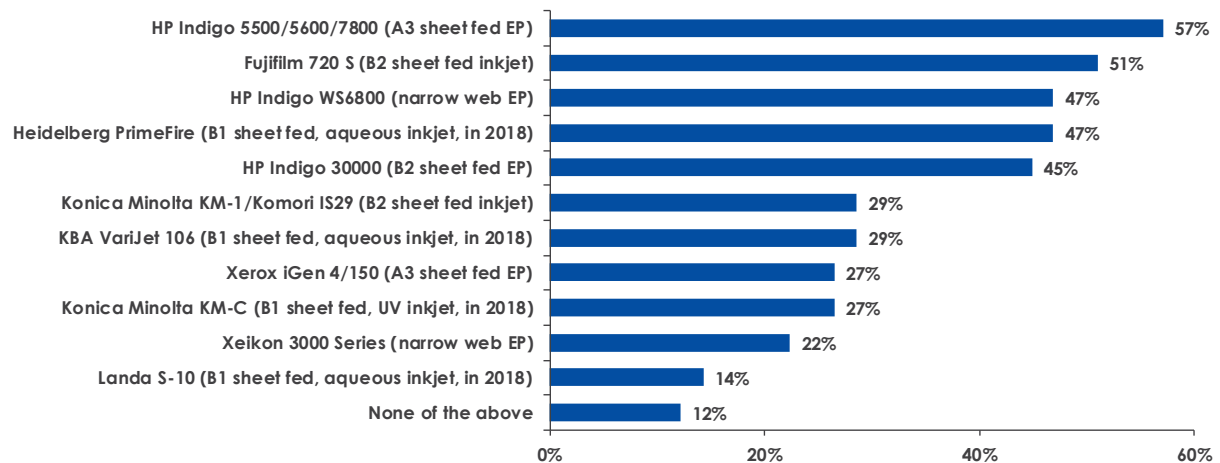
N = 49 Folding carton converters



### Industry Awareness about Digital Printing Equipment

We noted early in this report that a few types of digital printers are now used to print folding cartons, from narrow web label printers to a coming group of B1 sheet printers. One of the survey's last questions asks which printer models folding carton converters are aware of (with the results charted below). Most interesting is the 12% share of converters that say they are not aware of any of digital printer that is listed, which means that 88% are aware of at least one. Another finding is that digital printers that are mainly for commercial printing, such as HP Indigo A3 sheet printers or Fujifilm JetPress 720S, are also known to folding carton converters. A final note is that two of the upcoming B1 printers, Heidelberg PrimeFire (47%) and KBA VariJET 106 (29%), have benefited from advance publicity about them; the fact that Heidelberg and KBA are top suppliers of offset presses to folding carton converters is certainly another reason for the converters' awareness of upcoming digital systems from those two vendors.

Figure 21: Digital Printer Awareness

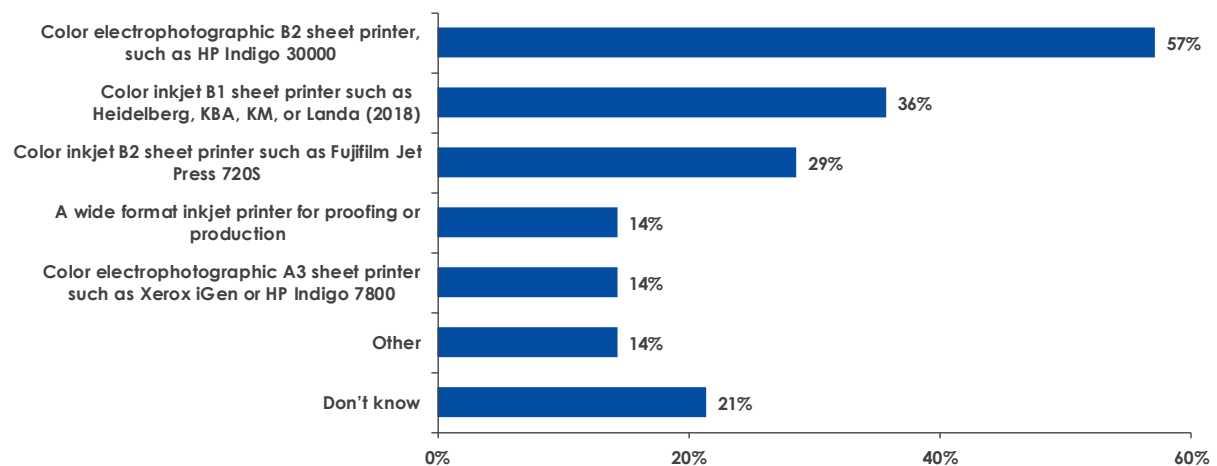


N = 49 Converters of folding cartons



Our survey asked in a subsequent question if folding carton converters plan to buy any color digital printing equipment; 29% say they do versus 69% who say they do not have plans and 2% who say they do not know. Another question then asks the 14 who say their companies do plan to buy digital equipment what types of printer their companies are considering. The results are based on a sample that is tiny and, therefore, it is only indicative. The top choice, a B2 sheet printer based on electrophotography such as HP Indigo 30000 (57%), is a believable one given that this particular printer has had some high-profile successes in North America and in other regions. The second biggest choice, color inkjet B1 printer (36%), is also believable because products from Heidelberg, KBA and Landa have had extensive advance publicity and are on the cusp of full commercialization.

**Figure 22: Digital Printing Equipment Being Considered**



N = 14 Converters of folding cartons who are considering purchasing digital printing equipment

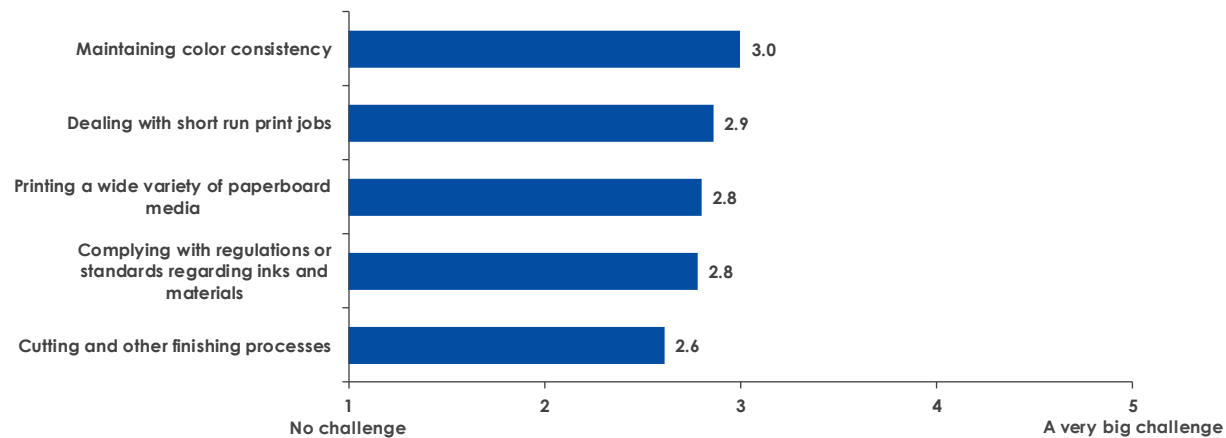
### Industry Challenges

The survey asks folding carton converters to rate a series of options as challenges for folding carton converting on a five-point scale, based on 1 meaning "no challenge" and 5 meaning "a very big challenge." As seen in the chart, maintaining color consistency (mean response of 3.0) and dealing with high numbers of short runs (2.9) are the top challenges (Figure 23). Of those two options, the response for dealing with high numbers of short runs has underlying results that make it more compelling: 51% of respondents rate dealing with short runs either a 4 or a 5, versus 36% who say the same about maintaining color consistency. From that result, we understand that dealing with a high number of short runs and maintaining color consistency are challenging for many folding carton converters. Color digital print can help address the issue of short runs by



taking short runs away from conventional presses, allowing the analog equipment to print the long runs where that technology excels. As to maintaining color consistency, color digital printing has greatly improved its ability to meet that challenge, but is still often not quite the equal of analog printing for spot colors, in particular. Color digital printing continues to improve, though, and will rival the color consistency that analog printing can offer at some point.

**Figure 23: Folding Carton Converting Challenges (Means)**



N = 49 Respondents in folding carton

## Conclusions and Recommendations

There are several main conclusions to take from the survey research with folding carton converters in North America:

- ◆ Folding carton converters depend on a range of equipment and other technology to print folding cartons for a range of clients, mainly brands making consumer products.
- ◆ In that range, analog print technology dominates total print volume, but print jobs vary greatly in length, from sample making to jobs using over 200,000 square feet of media.
- ◆ “Short runs” range from prototypes to runs of up to a few thousand square feet, are a growing share of FC converters’ work, and can be a challenge to print in analog.
- ◆ Folding carton converters value the ability of digital printing to print short runs efficiently and to offer special services, such as variable data printing.



- ◆ Nearly all folding carton converters are at least aware of color digital printing as an option, and some of them use it now for production printing.
- ◆ Folding carton converters with no digital printing for production today often want to own it to offer short runs, personalization, and other new services that brands require.

Keypoint Intelligence also offers several recommendations for printing companies and for product manufacturers.

- ◆ Use this report to understand the overall status of digital printing in folding carton converting in our region, and to understand that digital printing is young but growing.
- ◆ If you have no production digital printing capacity now, but you have a significant incidence of short run printing, consider your options to buy and install digital printing.
- ◆ If you have production digital printing now, consider using it for new services such as personalization, a service for which brands will often pay a premium.
- ◆ Consider attending key trade shows, such as SGIA and Pack Expo, or events hosted by vendors, such as HP and Xeikon, that display the latest digital print systems.

For various reasons, few manufacturers of consumer products — brands — engage in the printing of their own folding cartons and other packaging, but there are rare exceptions, such as the occasional pharmaceuticals companies that install color digital printing for packaging to increase product security. That said, manufacturers in *many* vertical industries benefit from working with converters that have digital printing as part of their technology. For manufacturers in general, we recommend the following:

- ◆ Use this report to understand that production digital printing is an option to analog printing of folding cartons — one that prints short runs and variable data efficiently.
- ◆ If your company relies on a print service provider to print folding cartons, find out if that company has production digital printing of its own or access to it from a third-party.
- ◆ Consider the services that digital printing can offer and, in turn, consider adjustments to your company's packaging that might be possible because of digital print.
- ◆ If your company prints its own packaging, or wants to do so, see the earlier recommendations to print companies, and study your own options to do that printing.

# WHO WE ARE

## **Author**

Robert Leahey has many years of experience in consulting to the peripherals and supplies industries. At InfoTrends, his main work has been to conduct custom research projects, most often on inkjet, thermal, and color laser technologies used for commercial and industrial applications. He is also the main analyst of InfoTrends' Color Digital Label and Package (CDLP) continuous information service.

## **Keypoint Intelligence/InfoTrends**

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# WHO WE ARE

## **SGIA — Supporting the Leaders of the Digital & Screen Printing Community**

Specialty Graphic Imaging Association (SGIA) is the trade association of choice for professionals in the industrial, graphic, garment, textile, electronics, packaging and commercial printing communities looking to grow their business into new market segments through the incorporation of the latest printing technologies. SGIA membership comprises these diverse segments, all of which are moving rapidly towards digital adoption. As long-time champions of digital technologies and techniques, SGIA is the community of peers you are looking for to help navigate the challenges of this process. Additionally, the SGIA Expo is the largest trade show for print technology in North America. “Whatever the medium, whatever the message, print is indispensable. Join the community — SGIA.”

**For more information on SGIA, visit [SGIA.org](http://SGIA.org).**

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