



**Game Changing Advantages of
Single-Pass Direct to Board
Corrugated Printing**



Game Changing Advantages of Single-Pass Direct to Board Corrugated Printing

Corrugated packaging has often been viewed as a utilitarian platform for shipping and transporting items, serving its purpose as a durable brown box with minimal branding. But with the rise of digital printing technology, along with evolving consumer trends, corrugated packaging has developed into one of the most dynamic and high-growth segments of the packaging industry, driven by increasing ecommerce opportunities and emerging single-pass inkjet printing technology.

Now, corrugated has transformed into a high-color, full-graphic branding opportunity for brand owners and retailers, who are delighting consumers with packaging that enhances the overall experience and exudes an element of quality and luxury that was not previously as prevalent in the segment. In this report, the growth opportunities for corrugated, trends driving the rise of single-pass digital printing, and business model strategies for digital corrugated adoption will be highlighted.

TECHNOLOGY AND TRENDS MAKING FOR CORRUGATED'S MOMENT

The corrugated segment of the packaging industry is in the midst of a rapid growth pattern, which is projected to continue over the next several years. According to [research from Smithers](#) in its “The Future of Global Corrugated Packaging to 2027” report, the use of corrugated packaging materials is expected to increase 4% annually from 2022 to 2027. Unsurprisingly, one of the top drivers of this increase in demand is the rapid rise of ecommerce, a retail channel that has been seeing increased usage for years prior to the COVID-19 pandemic, but skyrocketed further as the outbreak spread.

In fact, according to [research from McKinsey](#), ecommerce sales in the United States increased 40% year-over-year in 2021. Since the pandemic has subsided, consumers are still largely leveraging ecommerce channels, for both researching and purchasing products. McKinsey reports that approximately 75% of consumers in the US utilize both online and brick-and-mortar retail platforms for researching products and eventually buying them. [Additional McKinsey reporting](#) provides insight into anticipated consumer behavior as the pandemic subsides. While the quarantines and lockdowns of 2020 and 2021 that led to the shuttering of brick-and-mortar retail locations are no more, the expectation is that because the newcomers to ecommerce have acclimated to online shopping, they will continue to use both ecommerce and in-store shopping.

While the rise of ecommerce is a key factor in the influx of corrugated packaging demand, other elements are impacting corrugated's growth.

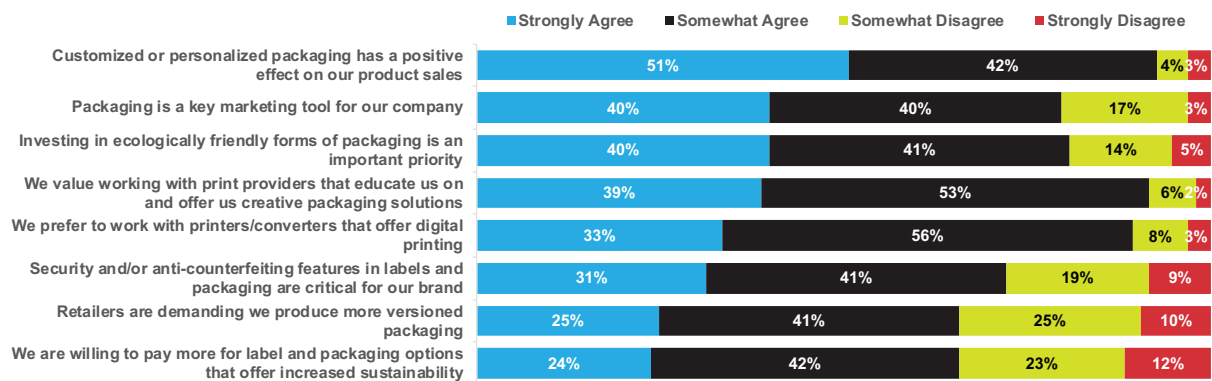


For example, corrugated displays, which are often printed using high graphics and full color, and feature custom cutting to create the desired shape, are an ideal platform for in-store advertising. With the rise of digital corrugated printing and cutting technologies, along with retailers' desire for recyclability, in-store displays made from corrugated board are a growing marketing opportunity.

The customization components that digital printing brings to converters and their customers are providing brands with solutions to their top packaging priorities. According to NAPCO Research's 2023 report, "Digital Packaging: Opportunities to Thrive," 93% of brand owner respondents stated that they agree that customized or personalized packaging has a positive effect on their product sales, with more than half (51%) stating they strongly agree with the statement. Meanwhile, 80% agreed that packaging is a key marketing tool for their company. As digital corrugated platforms continue to lower the barriers to achieving high-graphic, full-color corrugated, brand owners will benefit by being able to transform their previously bland corrugated shipping containers into similarly strong marketing vehicles as their other packaging formats.

Figure 1: Digital Printing Matching Top Brand Owner Desires

Q. Please indicate your level of agreement with the following statements related to your packaging requirements.



n = 93 brand owners

Source: NAPCO Research, 2023, Digital Packaging: Opportunities to Thrive



In recent years, the corrugated printing landscape has been permanently altered, as multiple suppliers to the industry came to market with single-pass, direct-to-board, inkjet corrugated presses. Among these vendors was EFI, which unveiled its Nozomi C18000 Plus, which prints board sizes up to 71"x118" and can reach speeds of up to 246 linear fpm. Since the launch of the Nozomi platform, EFI has also released the Nozomi 14000 LED, which runs a smaller board size of up to 55.12"x94.5" and can reach speeds of up to 328 linear fpm.

While digital printing has maintained a presence in corrugated packaging and display production for many years, for the most part, these digital production systems have consisted of multi-pass scanning-head style platforms. For multi-pass direct-to-board printing, the efficiency of production has been a hindrance, and for digital preprint devices, corrugated packaging providers still needed to factor in time to adhere the printed substrate to corrugated board. According to NAPCO Research's



The EFI Nozomi 14000 LED offers high-speed single-pass corrugated production with print speeds up to 328 linear fpm.

2023 report, “Digital Packaging: Opportunities to Thrive,” the emergence of high-speed single pass corrugated systems has coincided at an ideal time for the industry.

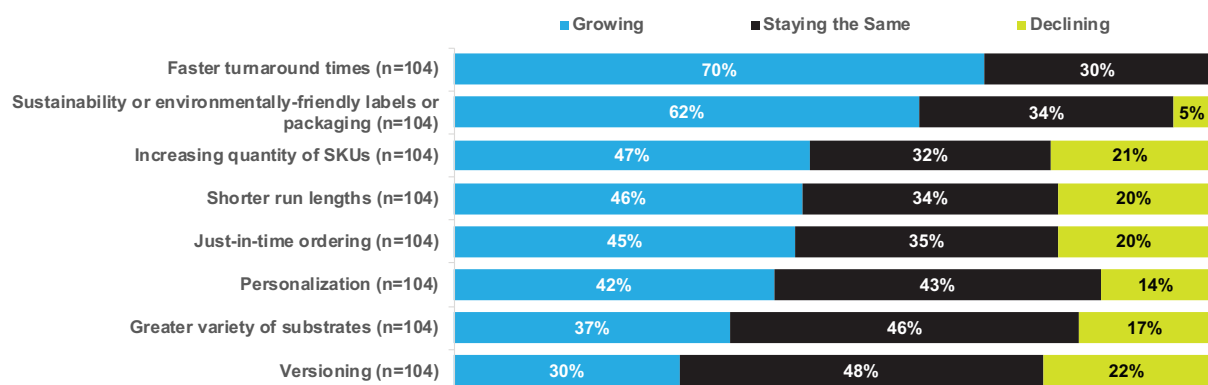
Specifically, demands from brand owners such as fast turnaround times, sustainability in packaging, increasing SKUs, and short run lengths are on the rise. In fact, the following percentage of respondents indicated they had seen an increase in the following customer demands, all of which can be satisfied via digital printing:

- Fast turnaround times: 70%
- Sustainability: 62%
- Increased SKUs: 47%
- Short run lengths: 46%
- Just-in-time ordering: 45%
- Personalization: 42%

With single-pass digital corrugated printing, fast turnaround times can be accomplished due to the removal of plates from the production process, resulting in fast makeready and fewer steps to get on press. Additionally, the fast speeds of the Nozomi platform can ensure that converters and brand owners are not sacrificing productivity by running a job digitally. And with the rise of SKU proliferation, versioning, and personalization trends, converters and brands can cost-effectively produce short run lengths when needed, and provide the design flexibility that brands desire. An added benefit for ecommerce-based brands is that because they can pinpoint the consumer that purchased a product, the corrugated shipping container can now be personalized with a digital platform, thereby enhancing the consumer and brand relationship.

Figure 2: Top Packaging Trends Drive the Need for Digital

Q. Please indicate if demand from your label and packaging customers for the following requirements is growing, staying the same, or declining.



n=104 package printers

Source: NAPCO Research, 2023, Digital Packaging: Opportunities to Thrive



CASE STUDY: MOYY'S DIGITAL DIFFERENTIATION PROVIDES SUSTAINED SUCCESS

When Whitebird, a Hamilton, Ontario-based supplier of corrugated packaging, safety supplies, and maintenance and janitorial items, launched its custom corrugated printing division, it needed to find a way to differentiate itself from its competition in the area. With the combination of growing ecommerce activity, increased short runs, more versioning, and high-color corrugated demand, George Perreira, VP of Whitebird, says that the company began to search for a digital production solution.

As the company explored digital printing options, Perreira explains that most of the products on the market were multi-pass solutions. But when the team was introduced to the EFI Nozomi C18000 Plus, they were impressed by the single-pass technology, print speeds, and print quality, and made the decision in 2019 to become the first company in Canada to install the technology.

“We went to a show, and we stumbled across the EFI Nozomi, and we thought, ‘Wow. That’s game changing technology. We hadn’t seen anything like it,’” Perreira says. “We pulled the trigger. We wanted to be the first to market on a brand-new game changing technology.”

In 2021, in order to differentiate its growing corrugated business, Whitebird rebranded its custom corrugated printing division as Moyy, a name derived from the Dutch word ‘mooi,’ which means beautiful. Now four years into the press being installed, Perreira says digital printing comprises approximately 20% of the company’s corrugated revenue and expects that percentage to increase. As an early adopter, Perreira says Moyy often has to educate customers about the benefits the Nozomi provides. And while there is occasional skepticism from customers about the device’s ability to run 3,000 full-color CMYK sheets per hour at 70 mpm, once they see the results, they are quick to jump on board with digital.

“It actually took a while for people to even consider our technology to displace traditional litho because they just couldn’t believe that our press could run at that speed and our pricing could get to that point,” he says. “It was a fun out of the gate story to tell to walk in [to a customer] and say, ‘I want to show you something you’ve never seen before.’”

Among the many benefits that the Nozomi platform has brought to Moyy, the quick turnarounds it provides have stood out as a key differentiator. For example, Perreira says that the digital equipment has allowed Moyy to come to the rescue in instances where a brand is in a pinch and needs boxes quickly. In a situation where a brand is on a tight deadline to get its products out to consumers or into a retail location, and the boxes arrive with an error or have been damaged in transport, Moyy can step in and quickly provide replacements.

With flexo, Perreira says, turning that job around could take three to four days, factoring in the need to order plates and get the job into production. But when a customer is in a time of great need, the digital equipment allows Moyy to turn a job around the same day and keep that customer’s shipment on track. This capability has also led to Moyy taking in work from the trade, particularly from companies that have not made the digital investment.

“Because people know we have [digital] technology, and we do a lot of trade work, people don’t come to us for what you would consider traditional digital print work,” Perreira says. “The part that I think is really neat that other companies can’t do, or won’t do, or don’t have the capabilities to do, is an example of, ‘Hey we’re in a bind. We have to redo these, and we have to redo them now. How do we do that?’ Well, we can. And we can do it at a fair price, and we can turn it around.”

In addition to the quick turnarounds and versioning capabilities that are well established in digital packaging production, Perreira says another key differentiator the Nozomi provides is its ability to add value to corrugated packaging. He explains that consumers often correlate a perceived value to a product based on the packaging it arrives in, and by enhancing that packaging, consumers will associate an added element of quality to the product and potentially pay more for it.

For example, Perreira says that if a consumer buys a luxury item online, such as expensive jewelry, and it arrives in a plain brown box, that consumer may feel as though the brand does not take pride in its presentation, thus damaging its perceived value. However, if the packaging's appearance matches the brand's luxury messaging, that can help assure the customer of the product quality and keep them loyal for repeat purchases. By educating customers about the increased perceived value high-graphic corrugated packaging can provide, Perreira says the added costs can be justified, as consumers are often willing to pay more for the product.

While the benefits of bringing single-pass digital printing onboard at Moyy have been substantial, Perreira says that there are key considerations that converters should have in place before investing in the technology. First, he says that the high-speed inkjet platform necessitates flat sheets, so it is important to ensure substrate providers can offer that consistency in their board. Additionally, he says that investing in finishing technologies that correlate well with the digital printer is key, along with investing in workflow software that can help manage the digital production process.

At Moyy, Perreira says the company recently installed a high-speed digital cutter, investing in an Elitron Kombo TAV-R, along with workflow automation solutions from Esko, which help connect the Nozomi and Kombo TAV-R, and interface with the company's web-to-print platform.

"Now we have a whole digital experience," Perreira says. "It's not just that we have a digital printer. We have a digital cutter, we have a digital workflow, and it's really helping us streamline our processes to give us a competitive advantage."

CONCLUSIONS AND RECOMMENDATIONS

While the corrugated segment of the packaging industry is often thought of as plain brown boxes, produced in mass quantities and with minimal color and branding, the game changing impacts of single-pass, direct-to-board, inkjet printers are disrupting the corrugated printing landscape. The high-speed production capabilities of these platforms, along with full-color capabilities, versioning and variable printing options, and run length flexibility, are changing how converters and their customers can think about corrugated.

Particularly at a time when retail trends and consumer shopping behavior has driven an influx of ecommerce, corrugated packaging is increasingly in high demand, and the benefits that digital printing provides are a top priority. Specifically, the ability to take on short runs so that brand owners do not get stuck with excess packaging inventory is a significant benefit, but among the strengths of single-pass, direct-to-board inkjet platforms, such as the EFI Nozomi C18000 Plus and 14000 LED, is that it can be used for medium and long runs as well, giving converters and brand owners flexibility.

Additionally, the ongoing rise of ecommerce has made corrugated packaging a high-demand segment, and one that can leverage personalization more so than other packaging formats. For example, because brands that sell online have access to their customers' names, unlike with products that are sold in store, digital printing opens the door to personalization opportunities in which the recipient of the product can have personalized messaging printed on the box. This is ideal for enhancing the consumer and brand relationship, which was identified as a top challenge by 31% of brand owner respondents in NAPCO Research's Digital Packaging: Opportunities to Thrive study.

While single-pass, direct-to-board inkjet corrugated printing is still in its early days of adoption, the technology has proven its value to both converters and brands that have invested in it. With the ongoing shift from brick-and-mortar retail to ecommerce, the need for increased SKUs, and versioning and personalization in packaging, digital printing solutions are poised to continue to spread throughout the packaging industry. With single-pass technology at the ready, the evolution of the corrugated segment will bring clear benefits to converters, brand owners, and consumers, as the plain brown box becomes a canvas for opportunity.

As Perreira says, "There's an uptick in demand for high-graphics packaging, versioning, and all the wonderful things that come with digital. It's growing. And we've got one of the biggest, baddest, fastest presses on the market to help serve the clients that want to explore that."

WHO WE ARE


NAPCORESEARCH

NAPCO Research crafts custom data-centric solutions that leverage our highly engaged audiences across the markets in which we operate, our industry subject matter experts and in-house research expertise. We partner with our clients to identify their unique business problem and create solutions that enable deeply informed decision-making.

NAPCO Research can help with:

- Business goal prioritization
- Opportunity discovery
- Market segmentation
- Landscape insight
- User needs and wants
- Product features and functionality
- Content marketing strategy
- Sales strategy and tactics
- Market conditions
- Benchmarking
- Industry trends
- Brand awareness

Contact research@napco.com to talk with our analysts to find out how we can help you with your research needs.



WHO WE ARE



Let's be brilliant. Together.

EFI™ is a global technology company, leading the worldwide transformation from analog to digital imaging. We understand you want breakthrough technologies to lead you through your digital journey. That's why we're passionate about driving your business growth with a scalable portfolio of products, solutions, services, support, and world-class partnerships for the manufacturing of packaging, sign and display graphics, and textiles with a wide range of printers, inks, digital front ends, and software. Our unwavering commitment is to increase your profits, lower costs, improve productivity, and optimize efficiency — job after job, year after year. We're obsessed with your success. And we definitely believe we have the right people, technology and experience to help your business achieve its goals.

