

ANALYSIS

ENHANCING DIGITAL PRINTING WITH CMYK AND CMYK+

APRIL 2021





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Introduction

Production digital color document printing technology has come a long way since it was first introduced in the mid-1990s. Thanks to ongoing technological innovations, today's devices are now capable of faster speeds, longer run capabilities, larger formats, wider color gamuts, and the ability to create eye-catching special effects that enable pieces to attract attention, encourage action, and drive business results.

The primary colors used in the printing process consist of four colors known as CMYK (Cyan, Magenta, Yellow, and Key). "Key" is really black, but it's called key because it's the primary color that determines the outcome of the overall image. Black ink creates depth and shading, while the other colors create different hues on the spectrum depending on how they are mixed together. For example, combining cyan and yellow will produce green.

Some of today's commercially available digital printing solutions have added units beyond CMYK (also called CMYK+) to enable special effects that further enhance digital prints. The new feature sets of today's devices offer big benefits and increased application options for print providers. This document explores how CMYK and CMYK+ can enhance digitally printed applications.

Moving Beyond CMYK

Expanding beyond the confines of CMYK can breathe new life into printed communications. In the past decade, CMYK+ capability has expanded to a much wider range of digital print devices, which most frequently offer a fifth color for effects like clear coatings and special colors. These extra colors/effects, which are sometimes known as print enhancements, are applied in-line with CMYK. In addition, there is also a relatively new class of offline devices that use digital print techniques to add special effects like spot coatings, dimensional effects, and metallic foils.

Metallics

Gold and silver tones are no longer contained to jewelry—they can now be replicated on everything from clothing to smartphones to printed documents. Metallic embellishments suggest value and prestige because people associate them with gold, silver, and other precious metals. As a result, they are a great way to add an elegant touch to printed communications so they can be priced at a premium.



Fluorescent Colors

Fluorescent tones are radiant and eye-popping on their own, but they can also be mixed with standard CMYK tones to create entirely new shades that were never before possible. Marketers use fluorescents in signage, banners, and various types of direct mail to create bold messages that stand out.

White Ink

With digital printing, white inks are much more versatile than people realize. They can be layered on colored stock, applied as a base to bring added appeal to CMYK tones, or mixed with other specialty colors to further expand the gamut of achievable hues.

Clear Ink

Clear ink changes the way in which light reflects from a printed piece to bring an additional level of depth and intensity. It can be used as a spot color to add emphasis and draw the eye to a certain part of the print. Clear ink can also be layered to create textured, raised effects for additional tactile appeal.

Leveraging CMYK+ to Add Value

Unique imaging capabilities can transform printed materials from commodity, price-sensitive offerings to higher-value products that command a premium. There are many techniques for enhancing the value of digitally printed applications, including:

- ♦ **Specialty inks or effects:** This category covers unique inks that are outside of the standard process or spot colors, such as metallics, foils, fluorescents, UV/IR (for security applications), and white (for printing on clear or colored substrates).
- ♦ **In-line spot or flood coating:** For these applications, an imaging unit is capable of applying a spot or flood coat of a clear matte, gloss, or satin finish. Spot coating enables special effects like watermarking, while a flood coating offers a matte or gloss finish and provides a protective layer against scratching.
- ♦ **Spot colors:** An additional imaging unit can apply a standard highlight color (e.g., red, green, blue, or yellow) or a custom color that matches a particular corporate brand or other desired color (such as a Pantone color).
- ♦ **Expanding color gamut:** This can be achieved with a single color where the gamut is expanded in one direction (e.g., toward red, green, or blue), or it may involve multiple colors to more extensively expand the gamut (e.g., by adding orange, violet, and green to cyan, magenta, and yellow). It is also possible to extend the tonal range of process colors by adding light cyan, light magenta, or light black (gray).
- ♦ **Textured effects that capture attention:** Textures produce a tactile, raised effect on printed materials. These embossed/debossed effects are most common on applications like book covers, labels, and greeting cards, but they are now making their way into postcards and packaging.



- ♦ **Enhanced security:** Materials can be printed with infrared (IR) or ultraviolet (UV) inks that only become visible under special lighting conditions. These are typically used for tickets, identity cards, and other secure documents.

Table 1: Categories of CMYK+

Category	Example
Specialty	Metallic, white, and fluorescent toners/inks
Coating	Spot or flood coat of a clear matte, clear gloss, or satin coating; can be used for watermarking or scratch protection
Spot color	Highlight colors or custom mixed colors (Pantone)
Gamut expansion	Red, Green, Blue (RGB); Orange, Green, Violet (OGV); Light Cyan, Light Magenta (Lc, Lm); Light Black/Gray
Textured	Tactile, embossed, or debossed effects
Security	IR, UV
Foil	Shiny/metallic effects using foils



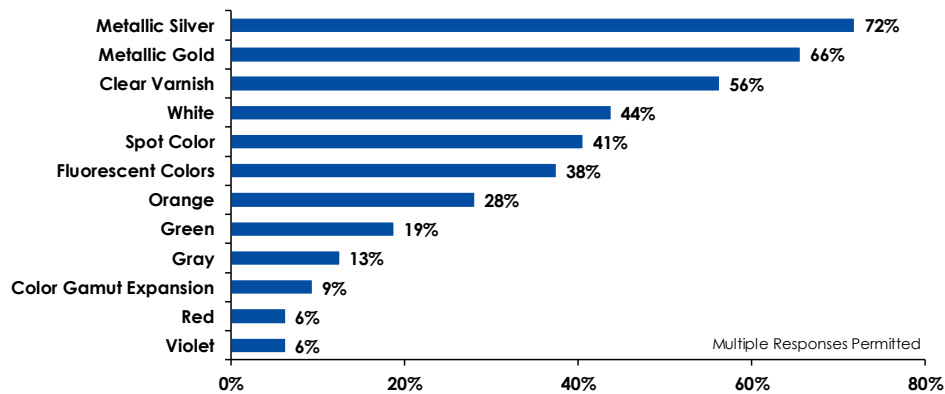
Expanding Market Opportunities

In 2021 and beyond, the growing trend toward CMYK+ and print embellishments will continue. In their efforts to improve customer satisfaction, foster loyalty, and differentiate themselves from competitors, enterprises will increasingly incorporate embellishments like white ink, metallics, foils, and textures into their printed direct mail campaigns.

According to recent research from Keypoint Intelligence, the most desired embellishments among respondents who were considering the purchase of a printer with CMYK+ capabilities included metallics and clear varnish.

Figure 1: Desired Embellishment Capabilities

Which of the following colors or other embellishments would you want to use in-line when producing digital print jobs?



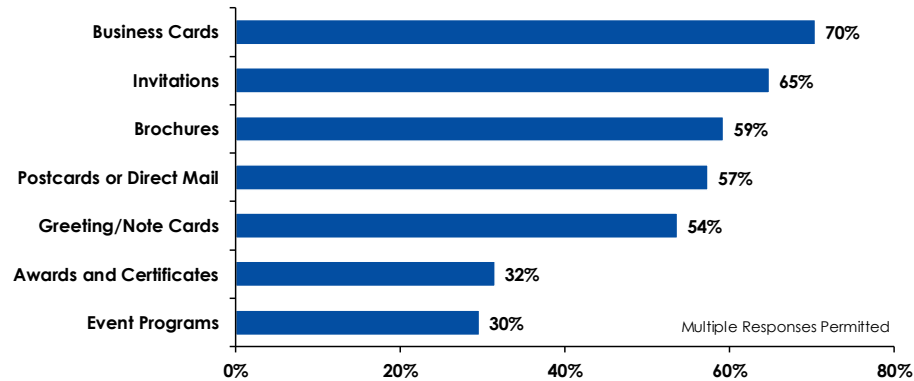
N = 32 Respondents in the US who are considering purchasing a digital printer with an in-line 5th color station or multiple color stations
Source: CMYK+: Commercial Printing Demands, Need, and Opportunity Assessment; Keypoint Intelligence 2021

Among respondents to the same survey who already own digital printers that enable CMYK+, the most common applications that are sold with these embellishments include business cards and invitations. As the market further expands and technologies continue to improve, CMYK+ enhancements will likely be incorporated onto an ever-widening range of applications.



Figure 2: Applications with Embellishments/Specialty Colors

Which of the following digital applications are sold to customers with at least some form of embellishment or specialty color?



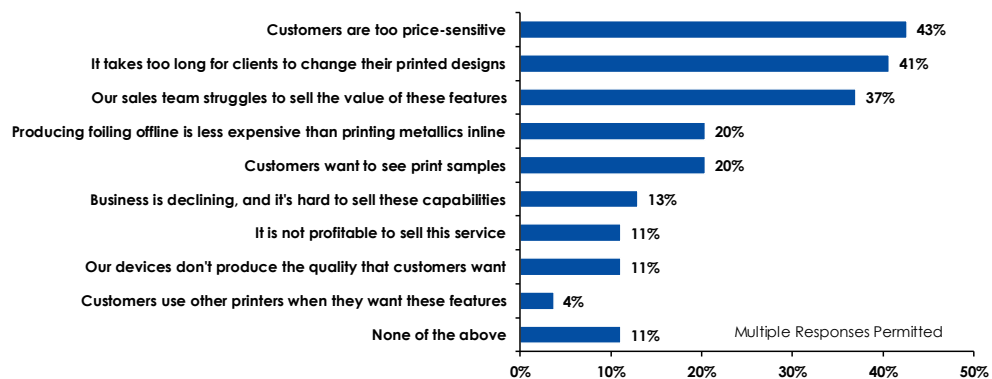
N = 54 Respondents in the United States who own digital printing presses that enable CMYK+
Source: CMYK+: Commercial Printing Demands, Need, and Opportunity Assessment; Keypoint Intelligence 2021

Barriers to Growth

While the idea of print enhancements and color embellishments is certainly exciting, CMYK+ adoption and print volumes have been slow to grow. Respondents to Keypoint Intelligence's research were asked about the challenges they faced when selling digital print jobs that included specialty colors or embellishments. The most commonly-cited challenges included the price-sensitivity of customers, the amount of time it took for clients to change their designs, and the struggles that salespeople faced in selling the value of CMYK+.

Figure 3: Challenges with Selling Specialty Color/Embellishments

What are your top challenges associated with selling digital printing jobs that include specialty color or embellishments?



N = 54 Respondents in the United States who own digital printing presses that enable CMYK+
Source: CMYK+: Commercial Printing Demands, Need, and Opportunity Assessment; Keypoint Intelligence 2021

The first and third challenges in the Figure above are likely related—salespeople struggle to sell the value of these embellishments, so customers become overly price-sensitive because neither party truly understands the value proposition. PSPs should take a double-pronged approach in overcoming these challenges. First, salespeople must be properly informed about the value of CMYK+ so they can in turn educate their clients about the



benefits. When customers are trained to recognize the value that print enhancements and embellishments can bring to their applications, their focus will shift and they will likely become less price-sensitive. Savvy PSPs must coach their salespeople to go beyond explaining what CMYK+ is, and instead teach them to focus on articulating the value it can deliver.

Another reason for the relatively low use of special effects may be that designers and buyers don't realize that digital devices are capable of producing affordable, short-run, personalized pieces that include special effects. Print providers that educate customers on the value that special effects can add to digital print will be better positioned to stand out from their competitors.

Selling the Value

It is more important than ever for PSPs to work with their customers so they can understand the value of print enhancements. CMYK+ can add value in a variety of ways. Here are some tips for success:

- ♦ When seeking applications that can benefit from print enhancements, start with the applications that you already sell. Items like brochures, direct mail, point-of-purchase signage, invitations, and business cards can become much more impactful with embellishments.
- ♦ CMYK+ can be applied to a wide variety of high-value substrates, including rugged synthetics, pressure-sensitive stocks, pre-scored and ready-to-print dimensional stocks, and photo media. Printing unique solutions with special effects can enable you to capture more high-margin work while consistently delighting your customers.
- ♦ Using white toner on dark envelopes can help your customers' mailers stand out. When white is used as a base layer, it helps maintain the integrity of flesh tones while also enabling other colors to pop.
- ♦ Clear toner can be used as a spot coating, or applied as a pattern for security or special effects. Like white, clear toner contributes to the "wow" factor of various applications, adding dimension and making invitations and posters stand out.
- ♦ IR makes it possible to print text and images that are only visible to the human eye under UV light, providing an affordable way to create printed applications that cannot be copied and are difficult to forge.
- ♦ Many of today's marketers are using neon or metallic toners in their promotional materials, invitations, and signage to capture attention and drive response rates. Blending neons and metallics with CMYK can further expand your color gamut, resulting in vibrant applications that really stand out.



The Bottom Line

As we move into the future, PSPs that work to educate and inform their customers will be better positioned to capture the new opportunities associated with digital printing.

Enhanced digital printing techniques offer many benefits, enabling PSPs to differentiate themselves from competitors by offering a broader set of capabilities. Enhanced printing techniques offer many opportunities for creating direct mail pieces and marketing materials that get noticed by adding texture, gloss, watermarks, or a protective coating, all while maintaining high print quality. When combined with other digital print advantages such as short runs, quick turnarounds, personalized print, and just-in-time manufacturing, these enhanced capabilities open up an entirely new world for production digital print.



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