

Lecture delivered in the webinar titled ”Future Printing”

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Introduction

Good afternoon all the dignitaries present here. Thank you, Prof. Sandeep Boora, for your kind introduction. Greetings and my wishes to Prof. Tankeshwar Kumar, Hon’ble VC, Central University of Haryana, Prof. Kamal Mohan Chopra, President, AIFMP, & Chairman WPCF, and Dr. Rajesh Kr Dubey, Dean, School of Engg & Tech. Extremely informative and educative presentations by the eminent speakers who spoke prior to me, all stalwarts of academia Prof. Amrutharaj and Prof. Baral.

The topic of today’s webinar is very appropriate at this time when we are seeing a paradigm shift in the world as a whole. Naturally, its effect is visible in the industry and the academia of which we are all part. The pandemic has caused a structural change in the world, and I believe that this is going to have long-term effects on the way we do business, interact with each other, and even teach. The fundamental changes that have already and would most likely occur in the print industry would mean creating a workforce of technocrats that are well suited and armed with the knowledge and skill-set that would make them relevant in these changing times. Based on this premise, I would like to focus my attention on some of the trends that are most likely to make a lasting impression in the coming years in the graphic communication industry.

Industry Changes and Trends

In terms of some changes in the industry and how it operates, this has come in the form of digitization. When I say digitization, I do not mean digitization of the print process only, but an overall digitization of the entire workflow. Going into the production floor and checking the job tickets will soon become a thing of the past, and the adoption of Management Information System

will certainly continue to rise.

No matter how much we see digital media as a threat to print, people would continue to consider print as perhaps their most trusted source of information. For example, WhatsApp giving ads in print media to inform their customers. The tactility of print is something that people are still going to need and feel. There are initiatives already that help in integrating print with digital media. Case in point: The integration of AR and VR with print media is surely a game-changer.

3D printing is another application which will prove to be a major field of innovation and rapid development. Repurposing inkjet heads with different materials to print is the adaptive breakthrough that is a big jump in technology.

Job sizes are getting smaller by the day, and investing in digital presses that are more efficient both in terms of runnability and space are being adopted by printers. Demand for customized jobs with variable runs is going to increase. There are presses based on both toners and liquids that offer choices for large format, wide-gamut, either sheet-based or roll-based technologies that are suitable for almost any type of jobs.

I believe online technologies should not be seen as a threat but rather as an opportunity to develop a symbiotic relationship between themselves. Marketers prefer an omni-channel communications process that takes advantage of multiple mediums to get consumer attention.

Adoption of Industry 4.0

I am amazed by the fast and almost seamless adoption of Industry 4.0 through the incorporation of intelligent technologies by traditional equipment manufacturers. OEMs are surely going to adopt, integrate, and deploy automation, intelligent process control, and iterative methods into their equipment and software to ensure lower downtimes, faster print times, and minimal wastage to maximize business goals for the print owner. Core skill and knowledge on conventional printing operations including prepress, press, machine technology, and post-press along with digital technology should continue to be a major component of emphasis in the coming times.

Packaging and Sustainability

Packaging, being the driver of growth, is certainly going to be a keystone for employability. Apart from package printing technology, a major emphasis on packaging technology should also be given. Newer technological innovations like sustainable packaging, bio-based packaging, high fidelity printing for packaging applications should be emphasized in the curriculum, including the development and some basic technical aspects behind the workings of Intelligent packaging. There is an increasing emphasis on the adoption of sustainable and more environmentally friendly print production. This entails a complete package of consumables and best practices that ensure minimal adverse impact on the environment around. The use of Low migration, Food Safe, NTNK inks, Mineral oil-free inks, water-based barrier coatings, process-free plates, IPA-substitutes, bio-based polymer composites as substrates for packaging applications will help in making the industry more sustainable and eco-friendly.

Standardization and XML-driven Process Control

We should also be aware of some recent developments in the standards world. It not only helps the printer to become leaner and more efficient, cutting down their wastes, but increasing mandates from print buyers, especially from FMCG and beverage industries, regarding standardization in printing is another key development. Publishing, commercial, and packaging printers alike are going for standardizing their pre-media files based on ISO 15930 or PDF/X Suite and their presses based on ISO 12647 or G7. Remote work also means intelligent and automated process control that helps in self-correcting the press to give the best possible outputs against preset parameters. Many of these process control operations and management information systems are XML-driven. This provides uniformity in development and is also interoperable in a true sense. In this regard, I would like to draw your attention to the CIP4 initiative. The JDF library is an excellent platform that provides the basis for developing interoperable solutions for pre-press, press, and post-press automation and MIS systems. Software developers and OEMs are increasingly adopting this standard to build and cater to a smarter and more intelligent workflow system that caters to remote and automated print production experience.

Web-to-Print Technology and eCommerce

Another important growth area will be web-to-print technology. For printers having multiple locations and/or franchisee operations, this is going to remain a reliable technology. With a skillfully designed automated workflow, this opens up an additional advantage for the printer of becoming both customer-facing and business-facing. The eCommerce, along with the rampant use of web-to-print solutions, is all set to reshape the direct-to-consumer technology trend every CEO must know. Lesser intermediates would be required. By 2030, the world will depend on online specifications, and online ordering shall be the norm for both prints and printed packaging. As a result, it motivates investment in web-to-print systems and online ordering. With this, print purchase moves towards a platform economy system, which is as segmented as ride-hailing apps. Buyers find it easier to make price and even service comparisons. Customer loyalty also diminishes, thereby emphasizing services. eCommerce follows a complementary model – shorter orders with great expectation of faster turnaround – such as next-day delivery. It will push the broader adoption of smoother workflows plus efficient digital and automated printing, finishing, and distribution. Moreover, this would also accelerate the continuing changeover from analog print to digital printing technology in various applications, particularly as the latest inkjet print quality improves.

Growth Areas and Conclusion

The strategies followed by remaining PSPs will change as they struggle to replace volume lost in the pandemic. Some print suppliers will move from doing all of the manufacturing and increasingly collaborate with other companies against whom they previously competed. Others will broaden the range of products and services they provide, handling more activities previously outside the realm of print companies. The market potential for customized printed décor has already been shown, but the share for newer inkjet print systems is still small. There are natural synergies with e-commerce and web-to-print. One of the highlight investments of 2020 was Amazon's commitment to buy \$400 million of inkjet equipment for its new Merch business line. Customized print of direct-to-consumer products—like mugs, calendars, or other photo products—will see genuine growth for PSPs that can diversify into this area, including installing direct-to-object systems.

Recently, there has been a number of research endeavors towards the development of the ECG technology. This enables print owners, especially those with 7 color units, to reduce their dependencies on a dedicated ink kitchen, thereby bringing costs down. The technology is not that new; however, it is being reinvented and used in conjunction with software tools that have developed leaps and bounds in recent years. The results published from the School of Graphic Communication at Ryerson University on this domain on digital systems have shown encouraging results. Idealliance's earlier work on the development of XCMYK systems in conjunction with high-chroma inks was especially interesting. Recently, both Idealliance and FOGRA have published their ECG datasets and test targets. FOGRA's process-agnostic characterization data and targets are something I believe will pave the way for a wide adoption of this technology in the future among print owners.

In conclusion, although there certainly have been signs of stagnant growth in some sectors across the industry horizontals, yet the good news is that there is indeed growth in specific segments. Realignment of business priorities based on consumer demands and disruptive technologies is the need of the hour. I would summarize my takeaways now: in a post-pandemic world, high-value print markets will flourish, publication jobs are seeing some decline, e-commerce based packaging jobs will see a massive boom, cloud-based services like SaaS are to be emphasized by OEMs, web-to-print will be key to growth for print owners, packaging will drive growth, digital systems especially inkjet will bring new opportunities and technologies, and the adoption of global quality standards will be key to growing business and catering to a global market.

With this, I would like to end my talk here.

Acknowledgment

I once again thank the organizing department, the departmental professors, and the chair of this webinar at the Department of Printing & Packaging Technology at Central University of Haryana. Thank you for this opportunity.