Creativity and interactive solutions in the graphic communications

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Abstract: *The application of traditional forms was common while printed products were dominating the exchange of information. New solutions only emerged gradually. However, competition with electronic communication gave new momentum to creativity in graphic communication. Authors now structure and summarize the needs and expectations that 'smartphone-using' consumers have of printed products. They portray creative solutions that were designed to live up to these expectations – solutions that stimulate multiple sensory organs simultaneously and are capable of interactive communication.*

Keywords: *creative solutions, interactive communication, value added print*

1 Introduction

Printed communication is developing quickly, and becoming adapted to the existing demands of the environment and society. Our world today is dominated by technological facilities, threatening traditional printing. The public no longer uses conventional phonebooks, or obtains information exclusively from the papers, but the Internet has become the main source of news and data. Traditional printed products no longer have the same values for the customer, since customers now rely on computers or other appliances, such mobile phones, PDAs and other similar modern tools to send and receive information. This puts strong pressure on the printed communication industry, so it is time to "reinvent" and "re-evaluate" traditional printing via synergies (collaboration), combine the characteristics and benefits of printed and electronic communication [1] [2].

2 The printer tomorrow

The dropping demand for traditional printing calls for our examining the possibilities with which consumer trust in printed communication may be reclaimed. Some technologies bring about new solutions, creating the term "interactive printing". Examples of interactive printing include GossRSVP mobile marketing solution, Radio Frequency Identification (RID) and Persistent Uniform Resource Locators (PURLs) (Figure 1) (Figure 2). Printers need to reinvent printing, develop solutions with which printed media products behave like the NEW MEDIA [3].

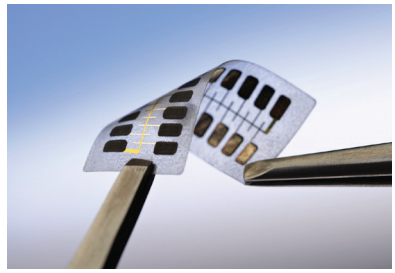

Figure 1: Thinfilm's printed 20-bit memory chip sensor (source: Thinfilm)

Figure 2: GossRSVP mobile marketing solution (source: http://www.gossrsvp.com)

The aims of applying interactive printing solutions are to create added value, generate profit and higher output for both the printers and customers. Interactive printing technologies enable the end-users (consumers) to react and respond, not just simply read the printed products. Interaction results in a higher level of consumer loyalty, increasing reply rates and value offering security. The rate of positive feedbacks from consumers will be higher among the younger generations who are more skilled in using technological novelties. However, the older generations will become apt for being able oriented towards technologies that become more "user friendly" over time. While the "generation gap" potentially delays acceptance in the older generations, printers, publishers and advertisers have to become prepared for future markets instead of standing still with the conventional technologies [5].

Interactive printing is a strategic business solution, a response to the changing society, and it takes printed communication into the future. It is a potential passage way for printers to break away from traditional roles like "one-stop shops", and transform into solution providers.

At the moment the focus for interactive packaging is the QR code, and with more advanced marketing campaigns, augmented reality (AR) systems.

Exploiting the personalisation aspects of QR codes has enhanced the brand awareness of Ethical Bean Coffe (Figure 3).

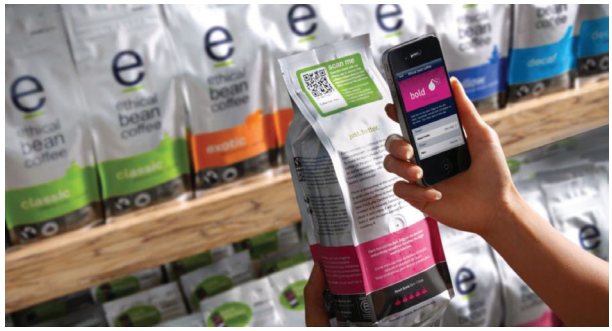

Figure 3: Personalisation aspects of QR codes (source: Ethical Bean Coffe)

AR using the blippar platform is giving Cadbury a chance to test how its costumers interact with its game and marketing messages (Figure 4.)

Figure 4: Interactive packaging of Diary Milk from Catdury (source: Kraft Foods)

Both printed communication and printing companies change. Printing companies are becoming increasingly service-oriented rather than production-oriented. All this is required by ongoing development. The emergence of new technologies and the wider range of media channels for communication and customers have made it obvious that printing companies need to change, as well. The results are organizations differing from conventional company using printing ink and focusing on making the best possible printed products. So what is exactly a printer or – to use the modern term – a printed communication expert today, and how will it develop in the coming year?

A number of printing companies have already taken this route. For instance, Donelly, the largest commercial printing company in the world has described itself as "a global provider of integrated communications" (Figure 5).

Figure 5: RR Donelly website (source: RR Donelly)

Toppan, the largest revenue-generating printing company in the world claims: "With the foundation of its printing technologies [...] Toppan contributes to solutions for social issues by undertaking business in the fields of personal services are provided directly to consumers, and next-generation products, including clean energy and life science-related business".

The president of DaiNippon Printing (DNP) stated: "These days DNP's field of business is no longer simply the printing of books and magazines or commercial materials. We've branched out into a number of fields – such as packaging, decorative materials, electronics, information media supplies, energy, and life science – which appear at first glance to have nothing to do with printing."

Arvato is a member of the Berstelsmann group, which provides service, including global printing. The company characterized itself as "A global business outsourcing provider to the public and private sectors".

They are the four largest printing companies of the world [1].

2 Innovation

Companies that react to market trends and technological changes with innovation do want not only to survive but flourish in the competitive fields.

The packaging industry continues to work on a counterattack in order to shift from the increasingly expensive traditional approach, and get a foothold in the new market technologies. The range of innovation from sustainability to intelligent packaging is broad – however the gap between the concept and the feasible packaging technology is similarly huge.

Besides, more and more elements, e.g. biodegradable packaging materials, integrated electronics and shelf-life enhancing approaches contribute to the real market features. While special technologies come and go in the short run, developers combat the increasingly demanding challenges, while the upcoming years will certainly bring about sufficient innovations for the packaging industry to have hope in the future – despite the rising plastic prices and production costs [5] [2].

Similarly, the printing industry undergoes exciting developments, new, breakthrough technologies are becoming general. The rise of digital technologies is perceptible, for example the Landa company has introduced their nanographic printing system targeted at the key markets.

Recent years have witnessed true convergence in innovation between the printing and the packaging industry. One way was the appearance of digital printing in the production of packaging materials. The option to make short reproduction series for promotional materials, the versatility in label production and personalization corresponds to the large number of demands in packaging industry. Brand owners are enthusiastic, and continue to apply technologies that attract attention, or distinguish their products – especially retailers tend to develop their ranges of own labels in all the price categories. While it is still only a small segment for the printing industry, the digital printing of packaging materials can open up an opportunity for real growth.

Paper manufacturing companies and publishers also struggle with the print versus digital dilemma. While the printed side becomes less attractive, and the content increasingly goes online, well-established corporate models come to the forefront. Both fields endeavour to notice innovation solutions that enable them to avoid limitation of their enterprise, and they apply new models. Paper manufacturers develop various new materials, publishers are on the lookout for new settings for contents. The omnipresent tablets and smartphones attract a lot of readers, mainly the younger generations. It is a must for them to take and read printed products in order to underline that the above-described processes are not fully appropriate.

And at last the challenges of advertising. Advertisers appreciate the palpability of printed products, and are concerned that copyrights cannot be monitored.

The days when the websites of printing companies featured a single image of a printer are now over. Currently, the focus is on marketing services, brands and communication, printing itself is hardly mentioned [6] [1].

3. Creative solutions and innovation

The days when the websites of printing companies featured a single image of a printer are now over. Currently, the focus is on marketing services, brands and communication, printing itself is hardly mentioned. Printing is not seen by future customers and potential investors as sexy or fresh. Nowadays, a lot of traditional printed product is available in electronic forms. However, the printed media product can remain a strong and influential form. The key to the growth of

any brand is to reach as many people as possible at least once a year. A printed product can be personalized, give reference. We only need to find and deploy the new and innovative solutions [7] [8].

3.1 Digital printing

Digital technology has significant influence on the development of the printing industry, and enables personalized, tailor-made printing, differentiation. Print on demand (POD) is widespread in every field of the printing industry, and has led to changes in work processes. Marketing companies order a lot of short-series advertising materials in order to avoid warehousing costs and wastes. The annual growth rate of digital printing is 20%, but only 5% of the total volume of printed products is made with some digital printing technology.

In the early stages of digital printing, the general field of application used to be printing business or advertising products on paper carriers. These markets are still dominated by dry toner technologies, they have not become general or differentiating, and put out low-value prints. With the development of digital printing, it has become more mature, started to attract new market segments with new solutions. A good example here is the signage industry, which is probably the most digitalized segment today. This application is also dominated by the inkjet technology, water ink for indoors and UV ink for outdoors use (Figure 6). Printing is made on a broad range of papers and synthetic printing media. The other field – still in the digital childhood today – is label and packaging material printing. Today, the liquid toner technology dominates these fields, however, one can a growing array of dry toner and inkjet solutions [9] [10].

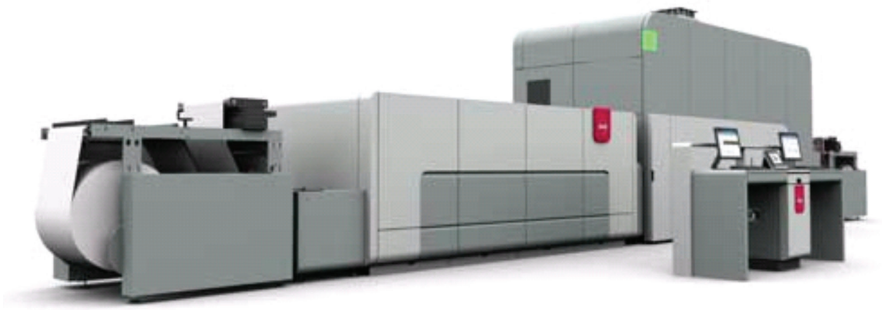

Figure 6: The new liquid toner generation from HP

With the increase of the format and speed of digital printers, flexible packaging materials and cardboard boxes have become more and more digital, too. The share of digital printing is on the rise, but it is of key importance that such printing carriers should become available that can be printed well, and create good quality in comparison with analogue printing.

Digital printers and digital printing systems proved to be the main attractions at the 15th DRUPA exhibition in May 2012. Beni Landa, founder and president of Landa chose DRUPA to introduce the Landa nanographic printing. In nanotechnology, water-based polymer pigment particles are used, as they are significantly smaller than ink drops, and will adhere to all kinds of surfaces with the thinnest ink layer when all types of printing procedures are concerned. The ink tanks are designed to collapse when the ink runs out, and can be recycled (Figure 7).

Figure 7: Landa W50 press (source: SSS)

Landa and Heidelberg announced a global strategic cooperation to develop a nanographic printer in order to extend the scope of the digital offers, including short and medium reproduction series, VIP and fast printing. Heidi plans to develop, manufacture, distribute and service the new generation of digital printers that will be based on the nanographic printing technology of Landa [1] [2].

3.2 Shift into the world of UV-curable technology

Although today wide format inkjet printing is an accepted procedure, applying UV technology in this field of digital printing is a relatively new option. The switch to UV-curable inks seems to be necessary for two reasons. On the one hand, the quality of solvent-based products on hard, closed surface media is not satisfactory. On the other hand, the application of hazardous chemicals in the manufacturing process and the environment of the end-user requires the use of VOC-free inks. The new generation of inks shows that the new developments are successful, with the UV-curable inks small texts with small fonts, photographic pictures, shades of vivid colours can be reproduced. As a result, every sector of the display industry, alongside the special fields, such packaging materials, labels and proof/prototype-making look to this technology, which can be applied on rigid and flexible materials, even digital textiles. The shift from the solvent-based printers to UV-curable printers increases in the case of display, label and ceramic products [1] [10].

3.3 Value added print

PrintCity defined the term "value added print" as something that does not just apparently differ from standard printing, but the customers, advertisers and brand owners can recognize it, and is suitable for attractively high incomes, and/or contributes to differentiation. Based on the techniques of printing service providers and technology distributors, value added printing offers such new value adding opportunities that were impossible before, with the use of traditional printing technologies. Essentially, the term does not only encompass finished product, but the associated printing technologies, services and manufacturing processes, too.

Finally, value added printing increases differentiation by combining unique elements. For example, the message of the designer and the graphic elements can be highlighted by choosing a printing carrier of the right quality, and then infinite combinations of inks, special effects or metal pigments, foiling, holograms, varnishing, finishing and personalizing becomes possible [11].

Today, new and emerging technologies can be used to achieve even greater success in screen printing. Around the world, value-added finishing applications in screen printing have fuelled commercial/graphic-printing markets. Many printing operations specializing in industrial applications are beginning to recognize an extremely lucrative market niche with special-effect

UV inks. These specially formulated UV inks produce high-deposit 3D textures and can be used to create abrasive-feel micro-embossing, bubble effects, wrinkles, icy snow, crystal-encapsulated glitter flake, high gloss and matte, and more. Screen printing for industrial applications can replicate foil-stamping with UV holograph or micro-embossing technology, and doming can be produced with UV crystal or convexity 3D directly from UV screen- printing lines with faster printing rates (Figure 8) [12].

Figure 8: Structured varnishes can bring an image to life and add an extra dimension

3.4 Printed electronics and new special printed products

There will be new printed items relating to the current printed products with more physical and chemical basic research at the academic research centres, together with application development in most of the important electronics companies. The governmental and regional financing funds invest in university researches and projects to develop new materials, secure the potentials (opportunities) of the sector. A lot of research teams and start-up companies try to commercialize their findings, discoveries.

The manufacturing of printed solar cells and photovoltaics is becoming a huge business with specialists and chemical companies, like DuPont, BASF and Merck. Others exploit printing to produce various items, like laminates, flooring and other industrial components; biomedical products and sensors to monitor the environmental conditions of the air, control food quality all through the supply chain. The Thin Film Electronics (Thinfilm) sensor for intelligent packaging is a good example to see where it is regarded as a cutting-edge technology. Based in Norway, this company has established a partnership with Benis, a company manufacturing packaging materials with respect to temperature monitoring and indicator products for packaging materials [1] [13].

Printing technology has the potential to reduce production costs. New tasks – power sources, displays, lighting, circuits as well as identification and interaction – have become the normal products of printers (as specialists or commercial manufacturers). These elements make the packaging more usable in the logistic chain and for end-users. Healthcare takes a continuously increasing share from the global expenditure. It constitutes a formidable part of basic research, the marketing of new technologies and systems, under important statutory regulations.

As a method for development, printing has an increasing proportion in the manufacturing of biomedical devices, the formation of 3D medical models, creation of biosensors and RFID "tattoos". These technologies can be used to identify pets, farm animals as well as drug and cosmetic supplies.

The shift towards digital and everyday technologies is much weightier than a simple shift from printed contents to online contents. These new technological trends change the society,

and alter printing industry from several aspects. As before, companies need to invent new roles and new skills for themselves under these new circumstances.

While traditional printing is struggling with digital printing, the appearance of printed electronics can bring about revolutionary changes. Predicting the future of the printing industry is more difficult now, because printers are in competition with several other communication channels. This is good news, and at the same time opportunity. The threat is that a number of new companies will try to build itself and operate in these emerging markets. Those traditional printing companies that are not preparing themselves for the given changes may face more difficulties in this new competition [1] [5].

4 Conclusions

In graphic communication the aims of applying interactive printing solutions are to create added value, generate profit and higher output for both the printers and customers. Interactive printing enables printers to play a weightier role in relation to the customer and all through the lifecycle of the printed media products, while offering customer services, such as custom-made marketing, keeping of inventory records, security applications, buying habits and information management.

Value added printing has defined it as a product that is visibly different to standard printing and recognised by consumers, advertisers and brand owners and capable of attracting higher revenues and/or adds to differentiation. A successful combination of special effects will generate emotions that are positively projected onto the product itself. If the printed product is perceived as being classy, sophisticated and interesting, this value is also positively projected on to the product or brand

Innovation is the most important component of any healthy, sustainable and profitable printed communication business. Now more than ever, it is vital to communicate that printed products are environmentally, socially responsible, and an effective part of the marketing mix. To advance the core message that printing is vital and a sustainable form of communication, we should keep one of our fingers on the print pulse and develop and provide information and resources to help increase awareness about print.

References

1. Profit through innovation 2013. Published by Atlink Ltd. & Smithers Pira, Match 2013
2. The evolution of the European Graphic Industry.Annual report 2013 INTEGRAF. Published March 2013
3. K. Vehmas, M. Kariniemi, H. Linna, K. Jokiaho, Torniainen, E. Torniainen: Future of European Printing Industry. Espoo.2011. http://www.printpower.eu/userfiles/files/case_studies/Report_Future%20of%20European%20Printing%20Industry.pdf Accessed: 25.05.2013
4. D. Khilnani: Digital Media versus Print Media. 2010 http://tech2.in.com/features/all/digital-media-vs-print-media/130012 Accessed: 05.05.2013
5. Nomikos et al, 2005: Smart packaging printing – what do packaging printers need to know? Athens Technological Educational Institute, Faculty of Graphic Arts Technology Agiou Spyridonos str. GR – 122 10 Egaleo, Greece
6. D. Meoli, T. May-Plumlee: Interactive electronice textile development: A review of technologies. JTATM, Journal of Textile and Apparel, Technology and management, Volume 2 Issue 2, XXIII-XXIV, Noth-Carolina 2002.
7. B. Sharp: How Brands Grow. What marketers don't know. Oxford, Oxford University Press, USA 2010
8. Canon's Insight Report Highlights Importance of Greater Customer Communication. 2012.

9. The digital printing industry is changing. OCÉ Canon group, 2012. http://www7.oce.com/opp/PDF/GA/booklets/Rewriting_the_Book_on_Book_Printing_GA.pdf Accessed: 02.05.2013.
10. UV-curable Inks. The Future of Industrial InkJet Printing. AGFA White paper. http://www.agfagraphics.com/gs/global/en/binaries/wp_uvcurableinks_20070601_tcm601-32658.pdf Accessed: 01.05.2013.
11. Noemi Garcia: The True Value of Value - Added Services in Digital Print. Presented to: California Polytechnic State University Graphic Communication Department College of Liberal Arts Fall 2012 http://digitalcommons.calpoly.edu/grcsp/88 Accessed: 01.05.2013.
12. Ron Hayden: Screen Printing Brings Print to Life with Special Effects. 2012 http://industrial-printing.net/content/screen-printing-brings-print-life-with-special-effects#.UauvctjkyNA Accessed: 02.06.2013.
13. Don Carli: False Dilemmas and Forced Choices. The Institute for Sustainable Communication. 2010. http://www.sustainablecommunication.org/resources/white-papers/false-dilemmas-and-forced-choices Accessed: 20.05.2013.