FUJI XEROX

High Volume Print and Sustainability

Enabling relevant, responsible and effective communications

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Executive summary

This paper discusses the debate on the environmental impacts of print and online communication. It emphasises that both print and online communication channels have impacts on the environment, and that a popular view of an either/or approach is ultimately not the best long-term approach for printers or their clients.

It is instead more beneficial for both to develop an understanding of the relative strengths and weaknesses of electronic and print communication and the environmental impacts of each. With this and communication objectives in mind, printers and clients can make informed decisions to develop campaigns that are not only environmentally responsible but also deliver effective communication outcomes.

Introduction

In recent years the print industry, and those who require and consume print, has changed due to a number of economic, technological, environmental and social factors.

Governments and corporations have moved to digital communications, citing the environmental performance of print on paper and cost reduction as the major drivers.

While it is acknowledged that paper production has some environmental impacts, definitive answers concerning the comparative environmental benefits of different print technologies versus electronic communication are not conclusive, as no two communication jobs are exactly the same and depend on the receiver.

Some forms of communication are more effective under certain circumstances than others: the mail channel is more likely to result in a successful outcome for senders of transactional communications[1].

Furthermore, even though generators (such as businesses wishing to communicate with their customers) usually choose the mode of communication, it is ultimately up to the consumer how they choose to consume or store that information. This can result in a dilution of environmental benefit or impact regardless of delivery mode.

Both print and online communication have impacts on the environment that can be difficult to quantify and will vary depending on the communication process. To date, much of the sustainability dialogue on these issues has focused on comparing the competing impacts of these vastly different communication processes. However this is largely a futile exercise that fails to move the sustainability agenda forward in relation to high volume communications. Progressive communication providers recognise this and accept responsibility for minimising environmental impacts whilst providing relevant messages to target audiences and maximising outcomes for their clients.

The purpose of this document is to provide Fuji Xerox customers with a pragmatic overview of the sustainability trends affecting the print industry, and the potential opportunities that exist for those willing to embrace relevant, responsible and effective communications.

Advent of more responsible print

In the past 20 years an increased focus on environmental factors has translated to increased pressure for sustainable print. This has meant that printers have begun to take responsibility for their practices, and companies have begun to better understand the impacts of their communications on the environment.

Over two thirds of respondents to a recent survey of 1,900 publishers, creative professionals and graphic arts professionals in North America said they expect the importance of corporate social responsibility and environmental factors in the print-related purchasing decisions of their organisations to increase over the next five years. [2]

Increased awareness of environmental issues has increased the need for printers and papermakers to be aware of their practices and, where necessary, change them to meet customer expectations.

1 http://www.mailmarketing.com.au/files/AuspostDanahersFullReport_1_.pdf
2 Donald Carli, Institute for Sustainable Communications (Nima Hunter Inc)

While the print industry has become more efficient in its processes – with increasing take up of e-commerce and reduction in chemical and energy usage per sales output – these have generally been adopted as internal efficiency gains rather than being driven by changing market and end-user demands for more effective communications and a reduced environmental impact from this large industrial process. In reality, printers have bought environmental improvements as they have purchased new technologies.

Further, the environmental performance of print on paper has been used as a key reason to change to electronic communications by many governments and corporations. The accuracy of this assertion is now being challenged with the 'hidden digital http://www.mailmarketing.com.au/files/AuspostDanahersFullReport_1_.pdf footprint' of online media being brought into the equation.

Australian and state government regulation is also creating drivers to address the sustainability of print. Paper was identified as a waste of concern in New South Wales government policy and 'Do Not Mail' regulation is expected to complement 'Do Not Call' regulation recently legislated. In addition the global drive to decarbonise business and industry growth will reward the least carbon intense communication providers – exactly how that will impact the print industry remains to be seen. The impact (if any) of the agreement drafted in Copenhagen in late 2009 also remains to be determined. However, the carbon footprint of different paper products is already emerging as a concern across print buyers.

In tandem with these regulatory developments, pressure is being applied from a range of stakeholder groups (customers, consumers etc) to reduce emissions and waste and increase sustainable practices across a range of industries. Increasingly, this is a key decision-point for who will win business. Although not a new trend, businesses are seeking relevant, targeted communication materials that achieve their purpose, rather than scattergun, wasteful campaigns.

New products are continually re-defining and reducing impacts across all media, which reflects businesses' increasing emphasis on the integration of sustainability into business models. Coupled with the use of digital workflow to aid manufacturing processes, there have been substantial improvements in speed and waste reduction. However, there remain gaps and improvement is and should be ongoing.

To aid this improvement, in 2009 the Printing Industries Association of Australia launched a new Sustainable Green Print program. This provides a stepped approach for responsible printers to gain environmental certifications (see more on certification below), ranging from a basic "green stamp" program through to ISO14001 and beyond. The program is supported by environmental consultants, with a view to establishing a consistent and credible industry wide program recognised by governments and customers [3].

In the same way as keeping abreast of technological and commercial developments makes business sense, printers need to be across developments in environmental sustainability and ensure they are incorporated into all business processes and practices. Embracing these changes will ensure the continued viability of their business – market opportunities will continue to exist for printers willing to embrace the new business of printing – one that is relevant, responsible and effective.

Evolution of the print industry

Printing is a constantly evolving industry which has undergone fundamental change in the past 30 years in particular, starting with the introduction of the office copier, then the gradual introduction and uptake of digital technologies.

The print sector has also focused on digital workflow as a backbone to printing processes. Workflow provides for management of jobs from creation to final output in the quickest, most efficient way possible, and are applicable to offset and digital environments, as well as any combination of the two.

This has led to many improvements in speed and waste reduction as systems slowly become integrated and are enabled to "talk" to one another.

Environmental impacts of paper production, print and online communication

The environmental credentials of paper are closely linked to the perceived sustainability of print as a communication medium. Paper production has a range of environmental impacts that are not well understood by those outside the industry. Key environmental issues of concern are fibre sourcing and certification, forestry and carbon accounting, water and energy use, and emissions to water, land, and air, as well as waste and the use of recycled content. Conflicting messages from the various activist and apologist voices surrounding paper and the environment have created confusion across consumers of print media – therefore those who are able to answer these questions objectively will offer increased value to those consumers.

These issues have been dealt with in more detail in other Fuji Xerox publications, including The Paper Facts [4] and can be further explored through those resources.

In recent years the print industry has actively sought to minimise its waste and consumption of resources, in conjunction with increasing recycling. Environmental issues have also become a key competitive point as pressure from digital media increases.

The environmental performance of print remains under scrutiny due to its use of energy and water, reliance on trees, oil and soy for inks, and chemicals for cleaning and processing. Print providers have minimised these impacts with advances in more efficient technology and processes and will continue to do so.

Internet-based communication also has environmental impacts as it consumes substantial energy and resources through the production

and operation of servers and generates electronic waste at end-of-life. Although various arguments can be made both for and against print and electronic communication, a critical factor that is often forgotten is how the end consumer uses the communication. Once received, electronic communications are often printed, which simply shifts the cost and environmental burden to the consumer. Printed pieces can be scanned and stored creating an ongoing energy cost. Communications can 'cycle' through many modes through multiple hands thus constantly changing the ultimate cost formula.

This indicates that both print and online communication have impacts on the environment that can be difficult to quantify and will vary depending on the communication process. Much of the sustainability dialogue on these issues has focused on comparing the competing impacts of these vastly different communication processes. However this is largely a futile exercise which fails to move the sustainability agenda forward in relation to high volume communications. Progressive communication providers recognise this and accept responsibility for minimising environmental impacts whilst providing relevant messages to target audiences and maximising outcomes for their clients.

Monitoring environmental impact of paper

A range of tools have been developed to help businesses understand the sustainability of the paper they are purchasing. While no one tool is capable of providing definitive answers, they can provide valuable guidance on how the paper was produced and its impacts.

Pulp and paper producers must consider responsible fibre sourcing as well as energy use and carbon emissions, air and water pollutant emissions, natural resource depletion, biodiversity, and other issues such as human rights and labour practices.

Fibre certification and product life cycle analysis allow communication providers to evaluate the efforts their paper suppliers are taking to reduce those impacts.

Life Cycle Analysis

Life Cycle Analysis (LCA) takes a 'cradle to grave' view of the environmental impacts of a product, process or service across its life cycle. It is utilised to measure the inputs and outputs of all stages of manufacture, use and disposal, including all the ancillary impacts associated with transport, storage etc. Along with risk analysis, LCA is a useful tool when considering the impacts of a product and comparing alternative products. It is also a useful tool in product design to analyse impacts (and waste) of various production options. With regard to paper, LCAs are often used to determine and compare the carbon footprint of different product types. However, these studies need to adopt a common methodology and apply a similar boundary at the scoping stage if comparisons are to be fairly made.

Fibre certification

Illegal logging and protection of forests remains a prominent environmental concern associated with paper. Certification of forests addresses this issue and allows for independent auditing of operations against credible standards promulgated by international bodies such as the Forest Stewardship Council (FSC) and the Program for Endorsement of Forest Certification (PEFC). Each has specific strengths and weaknesses but both of use 'chain of custody' systems. FSC forest certification covers issues such as:

- Compliance with legal requirements
- Protection of biodiversity
- Protection of high conservation value areas
- Prevention of deforestation
- Community relations, and
- Indigenous peoples' rights.

Chain of custody follows the legal ownership of wood and paper products through the supply chain and seeks to ensure that all members of the supply chain are certified. This approach is one way to provide customers with certainty that their paper has been manufactured from responsibly sourced fibre made from sustainably managed forests.

The PEFC has certified the most area of forested land because it has greater flexibility in allowing for the recognition of existing national forestry standards. The FSC is known to have more stringent standards and has become better recognised by consumers in many markets. Brand identification and acceptance of FSC products in the marketplace is often perceived as a strength of the FSC.

Monitoring environmental impact of digital media

Digital communication also has a range of environmental impacts that are generated mostly through carbon emissions, the use of electricity and production of e-waste.

Awareness is growing that increased use of the internet has significant environmental implications in terms of the production, use, and disposal of information and communication technology (ICT) equipment, and although numerous attempts have been made to estimate the environmental footprint of the internet, none have been universally accepted.

Journalist and blogger Nicholas Carr noted that 4,000 servers power the virtual world Second Life, and that an average 10,000 - 15,000 avatars live there. He examined whether Second Life citizens consume more energy than real people and found that the average avatar uses 1,752 kilowatt hours per year — about the same amount as the average Brazilian[5].

A 2007 estimate of total electricity use for the internet indicated that up to 5.3 per cent of global electricity consumption could be

5 www.roughtype.com/archives/2006/12/avatars_consume.php

attributed to the internet. However, this number has been disputed as computers themselves account for a fraction of electrical use; a larger proportion of energy is required for cooling computers with air conditioning/refrigeration.

However, in places such as Finland and Switzerland some of the heat generated from the banks of servers in data centres is being recycled to help generate energy and deliver hot water to surrounding towns. Others such as Google's data centre at Saint-Ghislain in Belgium are removing chillers altogether, and relying instead on outside air when the temperature is cool, and redirecting its workload on warmer days. In Australia, NAB and News Corporation are examples of companies that are utilising excess heat for power and warmth.

Online services to monitor web site environmental footprints are offered through web sites such as CO2 stats[6]. These sites certify that steps have been taken to reduce environmental impacts and a Green Certified Site "trustmark" placed on the site.

This indicates that the site is energy efficient and purchases renewable energy, which in turn demonstrates a commitment to reduction of environmental impacts. It is also a way of conveying to consumers that the business is taking responsibility for its consumption and impacts.

In addition to energy use, the life-cycle environmental impacts of electronics are significant. While innovations bring efficiency gains, frequent product upgrades and sometimes unnecessarily short life span of ICT equipment also have environmental side-effects[3].

The term 'e-waste' encompasses all old electrical appliances either in a state of disrepair or simply obsolete. This includes everything from fridges and microwaves to mobile phones and computers.

According to the Environment, Protection and Heritage Council (EPHC), Australians discarded 16.8 million electronic devices in 2007-08. Nine per cent of this was recycled while 88 per cent (14.7 million devices) was sent to landfill[7]. Disposal of e-waste into landfill increases the chances of hazardous substances such as lead and mercury leaching into the environment.

The small proportion of recycled e-waste is of increasing concern to industry and government in various countries across the world, but there are no consistent policies and regulations concerning recycling.

The Australian government recently announced the implementation of a national product stewardship policy to regulate the disposal of e-waste in Australia. The new policy will require manufacturers and importers of television and computer equipment into Australia to join government-accredited producer responsibility organisations, which will manage e-waste collection and resource recovery in line with established criteria.

So given the range of issues involved, printers should therefore not argue print versus online, or whether one medium is more environmentally sustainable that the other. Instead, it is important to identify what is most *Relevant, Responsible and Effective* for a customer's needs and focus on how to achieve that outcome.

Therefore the decision for businesses should instead be about how to develop high volume communication that is relevant to their audiences and generate effective response whilst being as responsible as possible. This requires an understanding of the relative strengths and weaknesses of each channel, and the benefits of combined media approaches.

Determining the effectiveness of print and online communication and targets

The choice for consumers is often presented as either/or: you must choose between print or online communication, with hardcopy print often viewed as environmentally less desirable.

However, the prime concern should be the overall effectiveness of the communication and thus there must be greater levels of sophistication in discussion and decision-making process, as both print and online communication channels have environmental strengths and weaknesses, which are difficult to fully evaluate. Each 'camp' will find a convenient data-set to serve its purpose. Leaders in the communications industry will focus instead on minimising the impacts of the media that provides their clients with the best outcomes.

In terms of communication outcomes, both are best considered as tools in the communication toolkit to be used together for greatest effect. In the same way as a communication strategy is concerned with determining the best strategy and tactics to achieve to achieve specific business objectives, the decision whether to use print, online communication or both should also be outcome-focused.

6 http://www.co2stats.com
7 http://www.ephc.gov.au/sites/default/files/PS_TV_Comp__Decision_RIS__Televisions_and_Computers__200911_0.pdf

When is it more effective to use print?

Effective communications leave a strong impression or provoke a strong response, accomplish a purpose and result in the desired outcome e.g. decision to purchase, enquire, test, trial. The way to achieve this will vary according to the campaign, but there are times when print is a very effective medium.

Readers have very different relationships with print and online publications, and each person has a preference for reading articles online or in print.

Print is particularly suited to situations that require depth, analysis and perspective. It is portable and aids readability, accessibility, graphics quality and consistency.

For example, unlike web sites and e-mails, a newsletter provides a sense of permanence and carries more credibility.

Bond University in Queensland has examined the differences in recall for print and computer messages, and have found that individuals have a better ability to recall information after viewing materials in print rather than on screen. For sales activities which require consumers to remember information off-line at a decision point or purchase point, print generally outperforms screen. Where being able to retrieve information from memory matters less, such as in on-line shopping, screen and print seem equally suitable[8].

A 1999 study[9] examined the use of personalised printed studies in the published behavioural medicine literature. Although the studies varied by behavioural topic, type of tailoring, and measurement of behavioural outcomes, compared to their non-tailored counterparts, tailored print communications were better remembered, read, and perceived as relevant and/or credible. Since then, personalised health communications have become more sophisticated with the further incorporation of demographic, psychological and psychosocial characteristics that has made information more relevant to individuals.

Fuji Xerox has long promoted the power of customised or personalised printed communications, and research (eg. Xerox Corporation 1:1 Lab) has shown the power of these printed documents, especially when also offered online.

When is it more effective to use digital communication?

Electronic communication has many advantages as it is timely, interactive and efficient. Information can be added and updated almost immediately. It provides almost limitless information space and offers video and audio capabilities – which print cannot.

Another major feature of the internet is that mass communication is more interactive and more democratic – it helps facilitate genuine two-way communication.

Channels such as Twitter™, blogs, Facebook™, pdf versions of documents from web sites, specific-purpose web sites can have great reach with the right audiences, with the ability to be searched for, stumbled upon, retweeted, recommended, liked, and available to anyone who might be interested.

What about both?

Given current media and information consumption patterns, the use of online and print media makes a lot of sense. Consumers engage with a range of different media, often at the same time, so the use of more than one medium is familiar. It is now commonplace to implement campaigns using multiple channels, as each serves to reinforce the other.

A well-integrated communication campaign that uses multiple channels (print, intranet and e-mail) can leverage the strengths of each and minimise their weaknesses.

A clear example of effective multi-channel communication is that of modern direct marketing. In this context, it is not unusual for a large campaign to combine direct mail, telemarketing, radio and broadcast television, as well as online channels such as e-mail, search marketing, social networking, and video. Marketers typically use an average of four media channels per campaign, but this can increase to nine for large, complex campaigns.

Example: Mail-driven direct marketing

Direct marketing has traditionally been driven through hardcopy catalogues and other offline materials delivered to homes or individuals.

However a study conducted by the American Direct Marketing Association found that in 2008, four out of five marketers integrated their marketing campaigns[10]. While digital media has grown exponentially in recent years, the use of offline media remains strong.

Of the campaigns examined, 79 per cent used e-mail which led all other media, but 75.4 per cent also used direct mail. Of those, almost half launched with a direct mail campaign, and often followed with e-mail and then telemarketing.

One of the findings of a recent social media survey of U.S. marketing executives is that 48 per cent believe that direct marketing is expected to have the most impact on the success of companies and brands in the next year[11].

The success of print direct marketing response rates largely depends on the quality of the target list. Response rates can be as high as five times that of a traditional campaign for a compelling offer and using a very targeted list, but average one to two times for less-targeted campaigns.

By way of comparison, online click-throughs for "banner ads," the ubiquitous interactive posters that run in fixed places on sites, are generally not particularly effective. The click-through rate for those

8 Jones, J. et al 2005, Memory for Advertising and Information content: Comparing the Printed page to the Computer screen, Psychology of Marketing, Vol 22(8), 623-648
9 http://www.springerlink.com/content/x38467811t6j1806/
10 http://www.btobonline.com/section/intro?where=http % 3A % 2F % 2Fwww.btobonline.com % 2Fapps % 2Fpbcs.dll % 2Farticle % 3FAID % 3D % 2F20080714 % 2FFREE % 2F204064025
11 http://www.mslworldwide.com/social-media-survey

ads have declined to 0.4 per cent, according to Eyeblaster, a New York-based online ad serving and monitoring firm. Even though internet penetration is around 66 per cent for many countries, these same countries still predominantly use traditional media for marketing communication and transactional mail.

Indeed, some American companies have found that ceasing hardcopy direct mailings altogether in favour of electronic communication had a significant detrimental effect on their income. Although their costs were greatly reduced, the experience indicates that e-mails are too easily ignored, deleted or lost, whereas a personalised direct mail item, integrated with other web-based tools had greater impact and thus represented a more effective tactic for their businesses[12].

The Australian context

Peter J Danaher (University of Auckland) and John R Rossiter (University of Wollongong) examined the Australian situation in 2006[13] and found that receivers of direct-response marketing communications continue to be most receptive to traditional media, such as mail and television. The internet and mobile phones were much less effective as channels for generating a response to a marketing communication.

Specifically, they found that:

- younger people in both the consumer and business segments are not more likely to act on an offer sent by e-mail or SMS

- receivers in the consumer segment are less likely to act on an offer from a particular channel if there is already a lot of material sent to them via that channel

- For B-to-B recipients, their purchase intentions were equivalent, and highest, for printed direct media and mass media. E-mail, telephone, SMS and door-to-door channels performed consistently the lowest.

This illustrates that understanding your target and carefully structuring a communication campaign that uses multiple channels will provide more effective results than using one channel alone or not targeting the campaign.

Danaher and Rossiter concluded that above all other considerations, "senders need to be cognisant of receivers' preferences and adjust their message and model of delivery accordingly."

Cross-media marketing

The Australian Direct Marketing Association estimates that 74 per cent of consumers are happy to receive direct marketing when the approach is relevant. Cross-media marketing is designed so that every piece of communication is personalised for a particular individual - and industry research shows this approach resonates.

A modern cross-media campaign might begin with a full colour postcard that is personalised for every recipient. They are then directed to a personalised website through their own unique URL for specific information relevant to their needs and/or interests.

Being able to send out fewer, more targeted mailings that elicit a stronger response means that resources usage is substantially decreased and efficiency increased. It also provides the opportunity to work more closely with clients and customers.

Emerging opportunities

The proliferation of digital cameras, either as standalone technology or as an element of mobile telephones, has created a significant opportunity for print. Many print providers have already created successful models for the production of customised gifting such as photobooks, with these items printed on modern digital printing technology.

As the cost of digital print continues to attract new opportunities, the market will accelerate for products such as personalised books, calendars and other low production cost items. The benefit of these opportunities is that they are created in the on-line world, where the combination of web-based ordering systems and automated workflows lead to low cost/high value items.

Emerging social media will further create opportunities for smart business operators, and the market is already seeing evidence of printers using the power of traditional and video-based search engines, social networking pages and the like to win new business. Rather than seeing these technologies as threats, printers are using their reach to find new customers throughout the world.

Conclusion

Printers should not pit print against online, nor argue whether one medium is more environmentally sustainable than the other. They should instead be seeking the best outcomes for their customers and to act responsibly to benefit the environment.

Market opportunities exist for printers willing to embrace the new business of printing – one that is relevant, responsible and effective. The discussion printers should be having with their clients is how to use electronic or print communication (or a combination of the two) to develop communication that is not only responsible but also applicable to customer needs by delivering an impression or response.

To fully develop communications effectiveness, the relative strengths and weaknesses of each medium must be understood, along with the strengths of combined media approaches. None of catalogue, direct mail, television, radio, e-mail, mobile, or billboard delivery provides a one-size fits all medium, and often deliver the most effective outcomes when used together.

Effective communication generates a deep and vivid impression or strong responses, and this can be achieved using a number of media to accomplish the desired outcome e.g. decision to purchase, enquire, test, trial etc. The winners in this market will offer a communication solution that is environmentally responsible, relevant to the market and effectively delivers results.

12 http://online.wsj.com/article_email/SB2000142405274870348100457464690423486 0412-lMyQjAyMTAwMDEwMjExNDIyWj.html
13 http://www.mailmarketing.com.au/files/AuspostDanahersFullReport_1_.pdf

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