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R·I·T Printing Industry Center

July 2011
eReview

Center Spotlight

Print in the Mix

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Sample Fast Fact:
More than 184 million American adults read magazines in print or electronic form every month.
Of the 172 magazine brands measured by AMS, the average number of different magazines read by consumers, regardless of the delivery channel, is 8.1.
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Measuring the Environmental Impacts of Print

This month's survey-based research study, *Exploring Existing Measures of Environmental Impacts of Print: A Survey of Existing Practices* (PICRM-2011-06), by Eni Gambeta, Marcos Esterman, Ph. D., and Sandra Rothenberg, Ph.D., explored the state of sustainability measures within the printing industry. The objectives of this study were to:

- Better understand the specific needs and challenges that need to be addressed to standardize the assessment of the environmental impacts of print.

- Establish a baseline for the current state of adoption and implementation of sustainability practices within the printing industry.

Sample Population
The participants in this study were derived from two sources: industry partners of RIT's Printing Industry Center and members from the Society for Imaging Science and Technology (IS&T). The exact number of individuals contacted is not known because the IS&T mailing list was not made visible to the researchers of this study, and there were no restrictions placed on to whom the survey could be forwarded. A total of 120 individuals started the survey, and approximately 87% completed all or some of the questions, resulting in a total sample of 105 respondents.

Methodology

The survey consisted of 31 questions that focused on the following areas:

- Type and state of sustainability policies that the firms have instituted,
- Sustainability programs in which the firms participate,
- Sustainability measurement practices, and
- Sustainability measurement tools and methods awareness.

The survey was distributed using an online tool and was available for approximately 8 weeks.

Results

Most of the respondents were headquartered in the US (77%), with 14% headquartered in Europe and 7% in Asia. However, these companies had global business operations, and most were large companies (41% of the respondents had 1,000 or more employees). Many also had customers from the commercial sector and obtained most of their revenues from print production (see the Limitations section).

Survey respondents were asked to provide a general overview of their company's practice of sustainability policies. Respondents were given the options of indicating the degree of implementation of any sustainability policy in which their company was engaged. No specific policy was pre-indicated to respondents. The responses are summarized in Figure 1.

For those companies that had a formal or informal sustainability policy, 99% of respondents indicated that this policy included environmental areas; 63% indicated that it included economic areas; 75% indicated that it included social areas; and 4% indicated "other."

Figure 1. Presence of sustainability policy
click to view larger image

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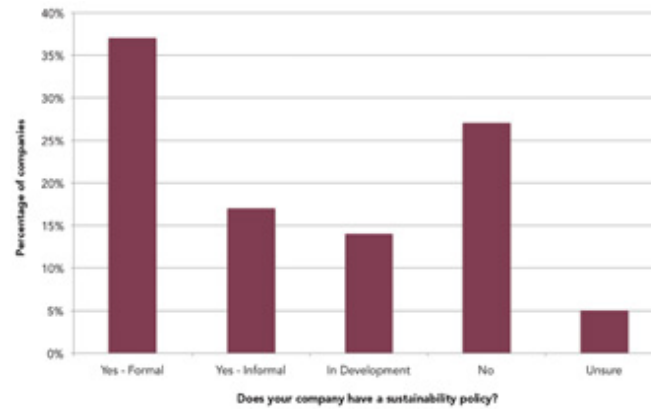
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About the Center

Dedicated to the study of major business environment influences in the printing industry precipitated by new technologies and societal changes, the Printing Industry Center at RIT addresses the concerns of the

Surveyed companies were asked to indicate whether or not they used sustainability measures for one or more of the products they offer. As seen in Table 1, approximately half (54%) of the respondents already had sustainability metrics or they were under development. Most of the companies (68%) developed these metrics internally, as can be seen in Table 2.

Table 1. Use of metrics
click to view larger image

Metric	Yes	Under development	No	Unsure
Sustainability metrics	35%	19%	36%	10%
LCA	23%	15%	49%	13%
Carbon footprint	31%	16%	45%	8%

Table 2. Developers of metrics
click to view larger image

Metric	Internal effort	Collaboration with consulting company	University	Other
Sustainability metrics	68%	18%	12%	4%
LCA	64%	19%	12%	5%
Carbon footprinting	68%	19%	8%	6%

Survey respondents were asked to indicate the degree to which their companies were involved in various environmental certification programs and standards. Respondents were provided with a wide range of certification and standards options, including external certification programs, self-certification programs, and customer-required certification programs. The results are shown in Table 3.

Table 3. Involvement in print-related certification programs
click to view larger image

printing industry through educational outreach and research initiatives.

Support for the Center comes from:

Sloan Foundation

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Hewlett-Packard

NewPage Corporation

NPES

Scripps Howard Foundation

VIGC

Xerox Corporation

Certification program	Have not heard of it	Not planning to implement	Considering	Planning to implement	Implemented in part	Implemented in full
SGP	35%	16%	28%	9%	11%	2%
FSC	23%	20%	12%	8%	15%	22%
SFI	23%	34%	19%	4%	8%	13%
ISO 14000	19%	35%	15%	4%	12%	16%
LEED	50%	30%	15%	0%	2%	3%
Self/Customer Certified	41%	26%	13%	7%	9%	4%
PEFC	47%	29%	11%	2%	5%	7%
The Natural Step	72%	18%	5%	1%	1%	3%
Self	47%	26%	13%	4%	4%	6%
Other	44%	22%	8%	6%	8%	13%

The "other" program responses included the following: ISO 12647, Blue Angel, Nordic Swan, Eco Label, Carbon Disclosure Project, Green Tier, Global Environmental Management Initiative, EPA National Partnership of Environmental Priorities, World Resource Initiative, Forest Landscape Initiative, EPA's SmartWay Transport Partnership, SoySeal Ink Certification, and Green Marketing Coalition.

Survey respondents were asked to indicate the degree to which various factors have influenced the approach toward measuring sustainability within their organizations. The results are shown in Table 4.

**Table 4. Factors that influence the measuring of sustainability**
click to view larger image

Factor	1 - Not at all	2	3	4	5	6 - To a great extent
Supplier pressure	38%	13%	20%	13%	9%	7%
Customer pressure	4%	6%	23%	17%	23%	26%
Regulatory standards	6%	11%	26%	17%	23%	17%
Company image	0%	2%	9%	19%	36%	34%
Our competitor's behavior	17%	6%	28%	30%	15%	4%
Strategic positioning	2%	4%	15%	15%	42%	23%
Leadership's personal interest in sustainability	6%	4%	13%	17%	33%	27%

Survey respondents were asked to indicate the degree to which their use of sustainability, LCA, or carbon footprint measurements influenced the decision-making process within their organizations. The purpose of this question was to gauge the depth of use of measures and metrics on sustainability within the decision-making process of an organization. Responses are shown in Figure 2.

Figure 2. Influence of sustainability measures on decision-making processes
click to view larger image
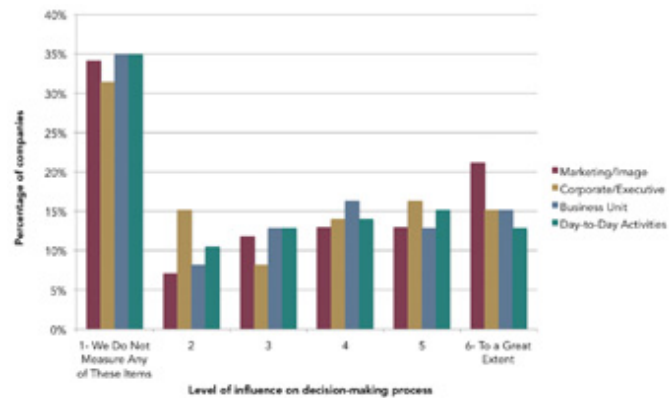
The influence of sustainability measures on the various segments of decision-making provided in the survey seems to be relatively uniform. However, several decision-making segments do exhibit a heavier influence and use of sustainability metrics than others. Marketing and executive-level decision-making seems to make the heaviest use of sustainability measures and metrics.

One of the distinguishing aspects of the printing industry is the high percentage of smaller firms. Thus, given the skewed nature of our sample toward larger firms, we wanted to investigate the impact of firm size on some of our variables. Firm size is an important indicator of the resource-based limitations and opportunities of a company. Based on a wide body of literature, the researchers expected that firm size would be negatively related to the adoption of metrics, policies, and certifications.

Fisher's Exact Test was chosen for analyzing the significance of association between the variables of interest. The statistical analysis conducted on the relationship between firm size and practice of the four major sustainability practices is presented in Table 5.

Table 5. Somer's D values for significant associations between company size and sustainability practices
click to view larger image

Practice	Company Size
Sustainability policy	0.409*
Certifications	-
Sustainability Metrics	0.473*
LCA	0.575*
CF	0.638*

Fisher's Exact Test 2x2 p values - No significant association

$* p < 0.05$

The results indicated a strong positive association between firm size and the presence of an official sustainability policy, the application of sustainability metrics, and the application of impact assessment as measured by LCA and carbon footprint (CF) participation rates. This suggests that larger firms may be better positioned to apply sustainability practices. However, there appears to be no significant association between firm size and participation in certification programs. The large variety of certifications available in the printing industry may allow firms of any size to participate.

Conclusions

- **An unexpectedly large fraction of respondents (27%) did not have a sustainability policy in place.** Of the companies with policies, almost all addressed environmental areas, while the majority addressed economic and social areas. However, the degree to which each of these areas was individually documented varied widely. This suggests that there is a need for a more consistent use and interpretation of the term "sustainability" within the industry.

- With respect to metrics, **a relatively large fraction of respondents (46%) were not actively developing sustainability-related metrics**, while only 35% and 47% had reported activity on LCA and carbon footprinting, respectively. **The lack of familiarity with some of the better-known methods for quantifying environmental impacts and certifications programs was also surprising.**

- **Survey results also indicated a somewhat insular approach to sustainability metric development and use, with a high potential for inconsistency.** This is

important to consider when one looks at how these metrics are being used. While 34% of respondents did not report any influence on decision-making, the remaining fraction of respondents reported a relatively large influence on marketing/image-related decisions. **This suggests that consumers are being given information from competing firms that is most likely being developed in an inconsistent manner.**

Recommendations

These results call for a more detailed look at the processes and standards used to develop sustainability and environmental metrics in the printing industry. The researchers have conducted follow-up interviews with many of the survey respondents, and these interview results will be reported in a future working paper. **However, one thing that was clear from the comments from the survey respondents, as well as the interviews and studies, was the need for unbiased, more standardized metrics, methods, and processes.** This need will also be a focus of future research.

Limitations

The results of this survey should be interpreted with the limitations of the study in mind. These include a relatively large representation of:

- U.S. headquartered companies, though a significant number had operations outside the US,
- Companies with over 1,000 employees,
- Companies with commercial customers, and
- Companies that generate revenues from print production.

Lastly, it should be reiterated that these represent self-reported perspectives, and the largest function represented was management.

Complexity Rating: 2
Rating reflects complexity level of statistical analysis: 1=none, 2=moderate, 3=difficult.

2010-2011 Research Monographs

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