Sustainability Certification: Does It Make a Difference In Print Manufacturing?

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Abstract

Sustainability is a term that both consumers and business managers have become increasingly familiar with, even if not thoroughly knowledgeable about. Over the past 15 – 20 years the sustainability focus of the printing industry has been on consumables, and in particular paper/board. This has led most of the industry to seek out alliances with certified sources of fiber products (e.g., FSC, SFI, PEFC, etc.). As sustainability efforts have grown over the past five plus years greater attention has been made to the manufacturing process. In particular, the focus has been upon air and water quality, recycling efforts, reduction of energy and water consumption, as well as reduction of landfill volume. This paper focuses on the efficacy of sustainability certification as a means to improving environmental performance of the print manufacturing sector.

Introduction

Increasingly the term "sustainability" has entered the lexicon of those in business and industry, as well as many consumers. In turn, this has led to a greater interest, in some cases even demand, for companies to adopt practices that qualify them as "green" or sustainable. While there have been questions raised with respect to the benefits of sustainability certification, the move globally is a greater emergence of such initiatives in order to combat destruction of natural resources, protection of the environment, combatting global warming, as well as promoting social fairness (Blackman and Rivera, 2011).

Also what is clear about the pursuit of sustainability is that being a "green" printing company is more than simply incorporating certified sustainable sources of paper into the manufacturing process. Regardless of industry, anyone who manufactures a product and seeks true green/sustainability status must go beyond the "greening" of

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material inputs and address air and water quality, solid wastes, volume of water and energy consumption, recycling/reduction/reuse of materials, process modification, and of course, continuously measuring the impact you are making with respect to each of these environmental variables (Fresner, 1998). Accomplishing all of the foregoing leads to cleaner production, a term which infers that the sum of all these steps lead to environmentally favorable outcomes.

Fundamentally, printing is a manufacturing process that incorporates inputs (paper, ink, plates, etc.) and subjects them to a production process (printing, finishing, logistics, etc.). The print production/manufacturing process has numerous byproducts that have the potential to impact the environment in adverse ways if not systematically analyzed, monitored and managed. While a prototype software tool has been developed that will guide a printing company to achieve favorable environmental performance (Gnonia and Elia, 2012) it doesn't possess the advantage of third party validation that certification provides. Reducing the environmental impact of the production process within the North American printing industry, along with achieving health/safety goals, is the focus of Sustainable Green Printing (SGP) Partnership. SGP, formed within the past decade is committed to reducing the environmental impact made by printers and providing print buyers a more sustainable supply chain. For printing companies certification by SGP is a means to validate to their customers, employees, vendors, lenders, etc. their operational dedication to sustainability.

Via the Sustainability Management System (SMS), the SGP certification process directs printing companies to monitor a number of variables that are a result of systemic analysis of the consumable materials and the production process. Responsibility for monitoring these variables is the charge of the Sustainability Committee. This committee takes on the responsibilities for implementing a system that documents the volume of specified environmental variables being produced during production. In addition, each company seeking certification must have an initial audit performed, provide annual reporting of the monitored results, and be subject to a reaccreditation audit. This third party certification validates to clients, employees, and all other interested parties that management of the company is committed to protection of the environment.

Research Design

The foregoing, however, calls for an answer to the question – does third party certification by SGP of a printing company's manufacturing process succeed (or fail) to reduce the environmental impact of individual plant operations? Existing studies that address this question do not exist. Therefore, an exploratory study was designed to survey SGP certified printers to assess which of three outcomes occurred after achieving certification: was environmental performance better, worse or no different than before certification. Environmental impact was determined

by assessing outcomes for eight environmental variables: VOC emissions, HAP emissions, volume of hazardous waste generated, volume and pollutant loading of wastewater discharge, energy consumption, water consumption, volume of materials recycled and volume of landfilled materials.

At the time the survey was administered there were 57 print operations in the United States and Canada that had pursued and attained SGP certification. As of 2014, the latest year available, PIA reports that there were 27,256 print production facilities. Diffusion of innovation theory defines the first 2.5% who adopt new innovations as "innovators" (Rogers, 2003). Clearly the 57 certified printing companies who were invited to participate in the survey were not only innovators, they are on the leading edge of the innovator group, representing a mere 0.2% of all printing companies who have adopted sustainability certification of their production process.

An invitation to complete the survey was sent to the designated SGP coordinator at each facility of all certified print establishments. A total of 31 usable surveys were completed for a response rate of just over 54%. To assure that the responses received were representative of the entire population of certified facilities a goodness of fit chi square test was administered to one of the demographic questions from the survey. The computed probability was 1, indicating that the answers to this question were representative of the population surveyed.

Survey Results

Table 1 presents the results of the analysis of the environmental variables data. The eight variables assessed were grouped into one of three categories: "Emissions/ Waste", "Energy/Water Consumption" and "Materials Recycled/Landfilled." Of the four environmental variables in the "Emissions/Waste" group no respondent reported "Higher" (unfavorable) outcomes following certification. With the exception of VOC emissions, the responses were close to half reporting "Lower" (favorable) emissions/waste and slightly more than half reporting "No Difference" following certification. For VOC's, however, the reduction of this class of emissions was the highest response within this category.

The "Energy/Water Consumption" group of variables resulted in a small proportion reporting "Higher" (unfavorable) consumption, but the overwhelming majority reported water and/or energy consumption that were either "Lower" (favorable) or "No Difference." Finally, for the "Materials" group of variables most responders (62%) indicated a "Higher" volume of materials recycled, and likewise most respondents (71%) indicated a "Lower" volume of materials landfilled. Both of these responses are favorable outcomes.

In descending order, the four variables that received the greatest number of responses all represented a favorable environmental impact (volume of materials

landfilled – 71%, VOC emissions – 64%, volume of materials recycled – 62%, and energy consumption – 58%). For three other variables the greatest number of responses was "No Difference" since certification (HAP emissions – 56%, volume and pollutant discharge – 54%, and volume of hazardous wasted discharge – 52%). Finally, one variable – water consumption – tied with responses of 48% for a favorable outcome, which is "Lower" and 48% for "No Difference". The foregoing suggests that certification was much more likely to yield a favorable impact on the environment than an unfavorable outcome. In addition, certification was more likely to yield a favorable impact on the environment than making No Difference on the environment. This judgement is based on the fact that four variables were chosen for favorable outcomes versus three variables were chosen as making No Difference. In addition, the four highest respondent choices were all outcomes that are favorable for the environment.

Discussion of Results

Do the foregoing results indicate that the value of SGP certification succeeds or fails? Three considerations will help to answer this question. First, deeper analysis of the data found that no individual responding company selected the response "No Difference" for all environmental variables, which would indicate that certification had failed to make a difference. Additionally, all responding firms reported three or more favorable outcomes since certification, providing evidence that certification did, in fact, improve environmental performance. Second, given that the number of certified printing organizations is approximately 0.2% of all printers, SGP certified companies represent the leading edge of the "innovator" category with respect to sustainable/green practices. Therefore, it is reasonable to believe that this group is more likely to have already implemented some environmental improvements before seeking SGP certification. By extension, later adopters would be less likely to have adopted green/sustainable production practices of the innovators and thus more likely to achieve success at reducing the environmental impact of their production processes.

A third consideration is the economic consequence of certification. Other research has found that 27% of SGP certified printers reported lower labor costs, 30% reported lower material costs and 44% reported lower operating costs following certification (Glisan, 2016). Again, given that these companies were more likely to already have implemented practices to reduce their environmental impact, and yet were able to benefit economically following SGP certification, provides supporting evidence that the structure and monitoring of certification may benefit the environment and the company.

So, does certification succeed or fail? The foregoing results make a case that companies that become SGP certified are more likely to improve environmental performance than to see it worsen. This would be especially true for firms that

have made undertaken no prior efforts to improve environmental performance. Will all companies that pursue certification succeed at improving environmental performance? It is very likely the answer is no. If management is unwilling to commit to the process it will fail. On the other hand, companies that seek, and attain, certification will achieve the benefit of third party validation that can be shared with interested and valued parties (clients, employees, etc.) and, as reported elsewhere, may achieve improve financial results.

Conclusion

In conclusion, it is meaningful to remind ourselves that printing year by year hears the call that questions its existence, which is due in part to its environmental impact. This view sees printing as unneeded and unwanted because it is perceived as not green or sustainable. The advocates of printing have tried to present its case that those arguments are not only wrong, but that printing is a far greener and more sustainable option than electronic alternatives. Printing advocates, however, find their voices are being drowned out, or simply dismissed. It is possible, however, that with wider adoption of sustainable/green certification of print manufacturing practices there would exist a tangible and meaningful rebuttal to its critics. The other option, failure to change from the current course – non-adoption of sustainable/green certification – is more likely to lead to not only more criticism, but potentially, regulatory fiat that obsoletes many in the industry. Does anyone remember the incandescent light bulb? It may be time for the printing industry to recalculate its reluctance to adopt sustainability certification of its manufacturing process.

TABLE 1

Environmental Variable Outcomes

	"Lower"	"ND"*	"Higher"
Emissions/Waste Findings			
VOC	64%	36%	0%
HAP	44%	56%	0%
Vol. hazardous waste generated	48%	52%	0%
Vol. & pollutant loading discharge	46%	54%	0%
Energy/Water Consumption			
Energy consumption	58%	38%	4%
Water consumption	48%	48%	4%
Materials Recycled/Landfilled			
Vol. of materials recycled	7%	31%	62%**
Vol. of materials landfilled	71%	25%	4%

* *"ND" represents proportion of "No Difference" responses*

** *"Higher" response for this variable is the favorable outcome, for all other variables "Lower" is the more favorable outcome*

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