I previously worked in the packaging industry for 20 years as a package engineer, and as a project engineer. My areas of expertise in packaging are in distribution, data recording, logistics, testing, industrial packaging design, paper, corrugated, and a variety of other packaging materials. I have also done some work in the area of sustainability. I am currently in my second year at the University of Wisconsin-Stout teaching in the packaging program. I am a UW-Stout packaging program graduate. I earned a Master of Business Administration degree from Lakeland College in Sheboygan, WI. I am currently working on my Doctoral degree from Northcentral University.
Abstract

This paper investigates both the current and future packaging sustainability practices and perspectives among a wide variety of companies located in Wisconsin that are engaged in packaging functions. These functions include both packaging suppliers and packaging users. Research was conducted by a questionnaire directed to packaging professionals within companies that are currently active in packaging functions. The questionnaire focused on the definition of packaging sustainability, current state of packaging sustainability, formal strategy, and an identified person to lead. The questionnaire also asked a series of questions related to the measuring and reporting of packaging sustainability. Case studies from each company were requested. The purpose of this research is to provide real world applications through the questionnaire and case studies of packaging sustainability to both Packaging students and Sustainability Design and Development Minor students at the University of Wisconsin-Stout. The research will also provide interdisciplinary activities for the students in the Engineering and Technology Department at the University of Wisconsin-Stout.
Introduction

What is packaging sustainability? How is it measured and recorded? The purpose of this paper is to report on the research conducted through a questionnaire targeted to packaging professionals. The questionnaire focused on the definition of packaging sustainability, how it is measured and recorded for companies located in Wisconsin that are engaged in packaging activities. The questionnaire also requested for case studies related to packaging sustainable activities within these companies. Case studies will not be included in this paper for confidentiality reasons. Information gathered is to be used for the benefit of students in the packaging and sustainability programs, and other areas within the Engineering and Technology Department at the University of Wisconsin-Stout.

Packaging Sustainability Practices and Perspectives

What is sustainability? The Oxford Concise Dictionary of Ecology definition of sustainability is “Economic development that takes full account of the environmental consequences of economic activity and is based on the use of resources that can be replaced or renewed and therefore are not depleted” (Soroka, 2009, p. 20). How does packaging relate to sustainability? “The guiding principles for designing environmentally responsible packaging developed in the early 1990s are embodied in the four Rs hierarchy and are still valid today” (Soroka, 2009, p. 15). The four Rs of packaging, reduce, reuse, recycle and recover can be considered as a starting point or building blocks to packaging sustainability. How packaging materials are selected based on their environmentally friendly status is a very challenging question to answer. “Packagers select appropriate materials to contain, protect/preserve, efficiently transport and sell the product in the most cost-effective manner” (Soroka, 2009, p. 16). Packaging sustainability (this terminology not being used in the past) has actually been
around for quite a long time, as some companies have been concerned and responsible about the resources they use and its impact to the environment. In their book The Triple Bottom Line (2006), Savitz and Weber explain how the sustainability movement has changed over the years.

But the areas that make up today’s sustainability movement—the environment, community relations, labor practices, social responsibility, and others—were historically seen in isolation from one another, with companies addressing specific issues based on their special circumstances or business requirements, or because of the personality of their leaders. (Savitz & Weber, 2006, p. 41)

Packaging historically has been in isolation with other groups within an organization on the issue of sustainability. In the past a packaging sustainability project would have been called a product/process improvement or a cost reduction project. To classify the project as a cost reduction, the project might have reduced or removed packaging materials from the package without sacrificing the performance of the product/package. The recording method was to document a packaging piece price reduction based on an annual production volume. Other items that would have been impacted by the change such as package weight, transportation, and toxic materials, were rarely if ever recorded and documented. The overall big picture of packaging sustainability can actually change the mind set of packaging professionals to capture and record more than just a packaging material reduction. To look at the total impact of a package/product change and how it impacts the environment is becoming more of an industry standard within the packaging profession. The Wal-Mart packaging scorecard is a tool to help capture the total impact of a package/product change. Hagen (2010) reports on the definition of the scorecard from Wal-Mart executive Mario Polozzi.
The scorecard evaluates the sustainability of the supplier’s packaging based on a number of factors, including greenhouse gas emissions from production, the value of the material, product to packing ratio, cube utilization, use of recycled content, innovation, the amount of renewable energy used in manufacturing the packaging, the recovery value of raw materials, and the emissions from transporting the packaging materials. (Hagen, 2010, p. 2)

The ultimate goal of the scorecard is to reduce overall packaging without compromising the integrity and safety of the product.

Is this doing enough by capturing and recording the total impact of the package/product? “Whether it is a matter of cutting the amount of toxic waste created or emitted, or the quantity of raw materials used, or the product size itself (known in business circles as dematerialization), reduction is a central tenet of eco-efficiency” (McDonough & Braungart, 2002, p. 55). The reduction in these areas will not actually stop the depletion of resources but only to slow it down according to McDonough & Braungart (2002). Newcorn (2003) stated that McDonough and Braungart dislike the eco-efficient packaging because it favors the traditional focus of less packaging is simply merely less damaging to the environment. An example of this concept is a plastic bottle that was made with more recycled content, the end result of the plastic bottle is that it still ends up in a landfill. The author’s McDonough and Braungart favor eco-efficient packaging that focuses at the beginning of design to travel in either a biological or technical closed loop. This is the concept of cradle to cradle. The concept of cradle to cradle instead of cradle to grave is the ultimate goal of packaging sustainability but this paper will focus on the research conducted on how packaging professionals are taking new steps toward packaging sustainability. The expanding of the four Rs into sustainability practices will be evaluated.
Do the companies researched have a definition of packaging sustainability? Many companies do not have a formal definition specifically for packaging sustainability. Source reduction, recycling, and improving internal processes to cut down on waste was a recurring theme. Using less energy for transportation and manufacturing was common. The four Rs were the foundation of many of the organizations definitions of packaging sustainability. However, some company’s definition expanded upon the four Rs by having clear objectives and goals to reduce green house gases and to reduce package footprints by certain percentages within a certain time frame. Other organizations focused primarily on the reduction of packaging weight and emphasized the impact of this across business units such as transportation, distribution, and warehousing.

Packaging professional’s opinions varied when asked about their company’s current state of packaging sustainability in both the level of understanding and the level of adoption relative to other companies within their industry. One third of the responses stated that their company was significantly leading and another third stated that they were somewhat leading other companies in both areas. The remaining third of the responses had mixed results in both areas that ranged from being either on par or somewhat lagging other companies. In general, the majority of responses stated that their company’s current state of packaging sustainability was either somewhat or significantly leading other companies in both the level of understanding and the level of adoption.

Has your company developed a formal corporate packaging sustainability strategy? This proved to have interesting responses because many companies identified themselves to be leading other companies in the understanding and in the level of adoption of packaging sustainability. However, some of these company’s did not have a formal strategy. In fact, only
half of the companies participating in the questionnaire have a formal strategy. One of the companies had no specific strategies for packaging but did have goals for sustainability.

Is someone identified to lead packaging sustainability at your company? When a formal strategy was in place, is there a particular person identified to lead? If there was not an identified person to lead was there a formal strategy? Leadership of sustainability comes from the top down along with the overall strategy. “It’s hard to overstate the psychological and cultural impact that can be achieved when the top leaders of a company get personally invested in sustainability” (Savitz & Weber, 2006, p. 232).

To what degree has your company communicated its packaging sustainability goals throughout the organization? About half of the companies communicated the sustainability goals throughout the organization. The other half of the companies communicated the goals to a limited extent.

What are the top five factors that drive an organization’s packaging sustainability initiatives? The most important driving factor proved to be cost reductions. Packaging sustainability and cost reductions are directly linked because this usually involves material reductions. Another important factor was the overall reduction of waste. Corporate image proved to be somewhat important with most of the companies. Pressure from customers, community environmental concern, end-consumer environmental concerns, and regulatory compliance were the least important factors.

The significant barriers involved in developing and implementing sustainable packaging strategies and practices varied between the organizations participating in the questionnaire. There was mixed results with the following statements: the lack of staff, lack of training, and no significant business driver. Half of company’s questioned felt that these three statements were a
significant barrier and just the opposite results were gathered from the remaining half of the other companies questioned. Cost and a perceived lack of return on investment (ROI) had similar results as the majority of companies felt that this was a significant barrier. This relates once again to cost reductions being directly linked to packaging sustainability projects. If there are no financial advantages for perusing a packaging sustainability project, it generally gets put on hold.

How is packaging sustainability measured? Weight reduction proved to be the most popular method to measure packaging sustainability. Weight reduction in packaging materials can be recorded, but is also associated with a reduction in the fuel usage and emissions associated with transportation. The second most popular response was measuring packaging sustainability through cost reductions. Transportation followed as the third popular method and the removal of toxic packaging materials was the least popular method of measuring packaging sustainability.

Are there systems in place for corporate packaging sustainability reporting with the organization? Mixed results prevailed as responses were equally divided between having and not having systems in place. The companies that did not have plans had it in their future plans. There was one response questioning if a comprehensive plan even existed within their organization.

Are there systems in place for the purchasing environmentally preferred sustainable packaging materials? The majority of responses stated that they have systems in place. Only a few responses stated that currently there wasn’t a system in place but their organization plans to. A few responses stated that there were no current plans or efforts in place.

Packaging professionals were asked to predict the future for their organizations with respect to what extent they will be working on packaging sustainability over the next five years.
The responses had mixed results equally balanced between working on packaging sustainability to a great extent and working on this to a limited extent.

Are there current or implemented sustainability initiatives other than packaging? Product redesign to reduce packaging proved to be the most favorable response. Product redesign to use renewable materials and resources was the second most favorable response. Three areas had the same amount of responses: product redesign to improve end of lifecycle, collection, and product manufacturing using renewable energy. It is worthy to note that none of the company’s participating in the questionnaire chooses product life cycle analysis and carbon footprint testing. Both of these are cost prohibitive.

Summary

The definition of packaging sustainability is considered by many packaging professionals working in companies engaging in packaging activities that participated in this questionnaire to be source reduction, recycling, and improving internal processes to cut down on waste. Only a few companies had specific goals to reduce weight, reduce green house gases and to reduce package footprints by certain percentages within a certain time frame. Most companies measured and recorded packaging sustainability by weight reduction first, then by cost reductions and then finally by transportation. Over the next five years, half of the companies stated they would be working on packaging sustainability at least in a limited extent while the remaining half of the participating company responses were going to incorporate sustainability practices in the future. The information gathered from this questionnaire will be used for the benefit of students in packaging, sustainability and other areas within the Engineering and Technology Department at the University of Wisconsin-Stout. Further research needs to be conducted on packaging sustainability to continue to understand current and new industry trends and practices focusing
on cradle to grave and cradle to cradle concepts. Additional research needs to be conducted on industry adoptions of both the eco-efficiency concept (the traditional focus of less packaging) and the eco-efficient packaging concept (focuses at the beginning of design to travel in either a biological or technical closed loop).
References

   


Appendix A:

Packaging Sustainability Practices and Perspectives – Questionnaire

Objective:

The purpose of this survey is to perform a State of the Industry assessment of current packaging sustainability practices and perspectives amongst companies engaged in packaging functions.

Company’s Definition:

What is your company’s definition of packaging sustainability?

Company Profile:

Company name: (Optional)

Number of employees: (Optional)

Current State of Packaging Sustainability:

1. Rate your company’s level of understanding of packaging sustainable principles and practices relative to other companies in your industry.
   - Significantly lagging other companies
   - Somewhat lagging other companies
   - On par with other companies
   - Somewhat leading other companies
   - Significantly leading other companies

2. Rate your company’s level of adoption or implementation of packaging sustainability practices relative to other companies in your industry.
   - Significantly lagging other companies
   - Somewhat lagging other companies
   - On par with other companies
   - Somewhat leading other companies
   - Significantly leading other companies

3. Has your company developed a formal corporate packaging sustainability strategy?
   a. Yes  b. No, but is in the process of doing so  c. No current plans to do so
4. Does your company have **an identified executive to lead** corporate packaging sustainability initiatives?
   a. Yes  
   b. No, but is in the process of doing so  
   c. No current plans to do so

5. To what extent has your company **communicated** its packaging sustainability goals and policies across the organization?
   a. to a great extent  
   b. To a limited extent  
   c. Not at all

6. What are the **top 5 driving factors** behind your organizations packaging sustainability initiatives? (rank on a scale of 1 to 5 where 1 indicates least important factor and 5 indicates most important factor)
   ____ End-consumer environmental concerns
   ____ Pressure from customers (e.g., retailers)
   ____ Regulatory compliance
   ____ Cost reduction
   ____ Corporate image
   ____ Community environmental concern
   ____ Other (______________________________)
   ____ Other (______________________________)

7. What are the **significant barriers** that your company is facing in developing and implementing sustainable packaging strategies and practices? (rank on a scale of 1 to 5 where 1 indicates least significant, 5 indicates most significant)
   ____ Cost/ perceived lack of ROI
   ____ Lack of adequate sustainability-related education/training
   ____ Lack of staff
   ____ No significant business driver
   ____ Other (______________________________)
   ____ Other (______________________________)

8. How does your organization **measure packaging sustainability**?
   ____ Removal of toxic packaging materials
   ____ Weight reduction
   ____ Transportation
   ____ Cost reduction
   ____ Other (______________________________)
   ____ Other (______________________________)
   ____ Other (______________________________)
   ____ Other (______________________________)
   ____ Other (______________________________)

9. Does your organization have **systems in place** for corporate packaging sustainability reporting?
   a. Yes  
   b. No, but plans to  
   c. No current plans/efforts
10. Does your organization have systems in place for environmentally preferred purchasing of sustainable packaging materials?
   a. Yes   b. No, but plans to   c. No current plans/efforts

11. Over the next five years to what extent will your organization be working on packaging sustainability?
   a. to a great extent   b. To a limited extent   c. Not at all

12. Which of the following are current (implemented) sustainability initiatives other than packaging at your company?
   □ Product life cycle analysis & reporting
   □ Product take-back schemes, such as Product Stewardship or Extended Producer Responsibility.
   □ Carbon footprint testing protocols and analysis based on frameworks such as ASTM 6400 and ASTM 6868.
   □ Collection, composting and recycling facilities for your products.
   □ Product redesign to reduce packaging
   □ Product redesign to improve end of lifecycle / reuse
   □ Product redesign to use renewable materials/resources
   □ Product redesign for zero waste
   □ Product manufacturing using renewable energy
   □ Transportation using renewable energy
   □ Other (____________________________________________________________________)
   □ Other (____________________________________________________________________)
   □ Other (____________________________________________________________________)

Packaging Sustainability Case Studies:
Please share examples from your organization. (Please do not include financial data, all information will be confidential. This information will be used for packaging class room discussions at UW-Stout)