

Sustainable Packaging and Application

by  
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## Sustainability

What is sustainability? The concept of sustainability has been defined by the World Commission on Environment and Development as “meeting the needs of the present without compromising the ability of future generations to meet their own needs.”<sup>1</sup> However, this definition continues to expand to include actions that have neutral or positive impact on the environment. Sustainability values stewardship of the planet’s resources, while acknowledging the need to draw from the environment in order to create business. Sustainability encompasses the financial, social, and environmental impact of a product and pursues opportunities that will not negatively affect those areas. It is important to realize that sustainability is not the same as “green.” While both topics are considered a part of the green industry— groups, businesses, and processes dedicated to promoting environmental responsibility— the concepts differ in focus.<sup>2</sup> Green products are clearly defined “products and services that reduce health and environmental impacts compared to similar products and services used for the same purpose.”<sup>3</sup>

Meanwhile, sustainability requires consideration of financial, social, and environmental responsibilities. Green products focus primarily on the environment. There is not an evaluation of future financial or social implications in green design. As a result, sustainability is perceived as a process. Through sustainable designs, the consumer is encouraged to consider the production process more deeply. For instance, by investing in a sustainable product, a consumer is invited to consider where materials came from; who was involved in production, what kind of business is manufacturing the product in front of them, and more. In other words, the consumer is

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<sup>1</sup> GreenBlue, “Design Guidelines For Sustainable Packaging.” *Sustainable Packaging Coalition* (2006): 3, accessed June 29, 2015.

<sup>2</sup> “Green Industry Initiative.” United Nations Industrial Development Organization. 2008. Accessed November 24, 2015. <http://www.unido.org/en/what-we-do/environment/safeguarding-the-environment/industrial-resource-efficiency/greenindustry/green-industry-initiative.html>.

<sup>3</sup> Ronnie Garrett, “The Difference Between Green and Sustainability.” February 15, 2012. Accessed June 29, 2015. <http://www.cleanlink.com/hs/article/The-Difference-Between-Green-And-Sustainability>.

participating in cradle-to-cradle designs— designs that have a life cycle and are influential from beginning to end.<sup>4</sup>

Therefore when using a sustainable package, its impact on the environment must be considered holistically by the designer and business. By examining the delegation of resources, where the resources come from, material health, resource recovery options, and of course the feasibility of the design, a foundation can be laid for a package redesign that will address the requirements of a truly sustainable product. The case study presented in the later half of this paper will discuss creative reasoning for a plastic alternative as well as reflect on the feasibility and challenges sustainable design presents.

### **Introduction to Sustainable Packaging**

Even though sustainable package design has been in production for about 30 years, only now has it become a feasible option for businesses. Originally, the expense of choosing sustainable methods for packaging and distribution was not profitable for the most businesses. Moreover, the availability of recyclable products was minimal due to the popularity of plastics and vinyl in packaging. Even if being sustainable was a feasible option for a business, finding educated designers and equipped printers was another obstacle for clients to overcome. Yet, now there is broader education and options amongst designers, clients, printers, and manufacturers that has lead to the expansion of the sustainable market and to being a member of a green industry.

In the 21<sup>st</sup> century, sustainability has gained consumer and environmental support, and garnered attention in law. There are several laws, tax incentives, and environmental considerations for designers and clients to keep in mind as they contemplate developing sustainable products. Under these federal and state environmental movements, businesses are offered an opportunity for choosing eco-friendly materials and processes as well as financial

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<sup>4</sup> GreenBlue, “Design Guidelines For Sustainable Packaging.” *Sustainable Packaging Coalition* (2006): 5, accessed June 29, 2015.

incentives for choosing sustainable production. Though the incentives may not drastically reduce the cost of a project, a client could potentially reduce the final unit cost of a non-recyclable product. Furthermore, a less tangible benefit these federal rewards result in is an “environmentally friendly” brand. Through sustainable design a company’s benefits extend beyond budgeting— it is an opportunity to be considered environmentally responsible.

As mentioned before, the market for sustainable packaging is not simply growing, but it is changing. Over the past few years new technologies are being developed for materials, ink, and packaging templates in order for more businesses to participate in the green industry without sacrificing their budget. By testing new methods, packaging producers can compete within the market while offering a durable and reliable product. While being eco-friendly is an important part of the process, it is vital that the end result, packaging, is actually effective. It fulfills the client’s needs, and it can withstand consumer use.

### **The Role of Packaging in Environmental Issues**

Over the past 200 years, global warming has been on the rise due to the industrial revolution. When pointing fingers at who and what to blame, packaging is notoriously named as a main contributor to global warming. But how much damage has packaging actually done? In actuality, packaging— though damaging— does not necessarily create as extensive an impact as many believe. Plastics for instance, account for only about 4 percent of oil extraction.<sup>5</sup> As a by-product of fuel production, plastics create harmful emissions during their creation but they are also a lightweight energy saving alternative to other materials. Moreover, there are variations of plastics that have the potential to be recycled or reused. Also, the time it takes for plastics to decompose can take about 500 years, therefore indicating that only a small margin of yearly

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<sup>5</sup> Environmental Protection Agency, “Plastics” (2010): 4, accessed July 29, 2015, <http://www.epa.gov/climatechange/wycd/waste/downloads/plastics-chapter10-28-10.pdf>.

carbon emissions can be attributed to plastics.<sup>6</sup> On the other hand, materials such as glass and aluminum are energy intensive to produce but they are easily recycled and up-cycled. Yet over the past 5 years, developments in packaging processes and recycling have led to improvements in glass and aluminum environmental profiles. Now, these materials have the potential to require only 5 percent of the energy used to create them when recycling them.<sup>7</sup> The real problem lies in the processes utilized for material and packaging creation as well as recycling processes used when disposing of the packaging and packaging waste. Therefore, the life cycle of a package must be considered as a continuous process in order to form an accurate perspective on its impact on the environment.

Fortunately, due to the attention garnered in environmental movements, packaging has begun to take steps towards becoming more environmentally conscious and has become a more accepted research. Many products are now replacing packaging materials such as corrugated card outers with multitrip plastic containers, or using recyclable transit plastic.<sup>8</sup> In addition government and public pressure has created an expectation for manufacturers to pursue environmentally friendly production options. Consequently, there is also a growth in waste restrictions, material research, and tax incentives that enable businesses and designers to explore sustainable packaging.

### **Packaging With Purpose**

When considering package redesign, there are functions and requirements that must be considered as guidelines for design before the package can be restructured for sustainable goals. Beginning with the simplest requirements, packaging must provide physical protection of the

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<sup>6</sup> Laurel Miller and Stephen Aldridge. *Why Shrink Wrap a Cucumber?* (London: Laurence King Publishing, 2012), 27.

<sup>7</sup> Et. al.

<sup>8</sup> Et. al, 35.

product, offer product information, entice the audience to purchase the product, and enhance the product experience.<sup>9</sup>

Physical protection of the product is one of the primary purposes for packaging. By placing a product in a box, netting, or cushioning, its value is being protected. Not only does it protect the manufacturer's investment, but it ensures the consumer will receive a quality good. While many methods of product protection can arguably be considered over packaging, it is important to remember that packaging— not matter how unnecessary— can also prevent tampering or contamination. The most common example of this is seen in food packaging. By placing a protective element around food products, we avoid safety and health concerns so even if the packaging seems unnecessary, we are actually avoiding greater conflicts with the product. Another form of protection offered with packaging is extended shelf life. By limiting direct contact with its surroundings, the decay of perishable products can be reduced and limit the need for additives to preserve the good. In turn, extended shelf life reduces waste and over stock for retailers.<sup>10</sup>

Once the physical protection of the product is designed and fulfilled, the next considerations are product information and visual appeal to the audience. By law, many products are required to display certain information clearly and concisely for the consumer like nutritional values, warnings, and age restrictions. Unfortunately due to the abundance of information required for some products, this results in added cardboard wraps, labels, and/or seals in order for a package to maintain its appeal while abiding by legal requirements.<sup>11</sup> There must be balance between information and the visuals that entice the audience to purchase the product. The consumer must be informed and easily find information in the package design, while also being visually engaged with the product. From simple cereal boxes to complex iMac packaging, the

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<sup>9</sup> Laurel Miller and Stephen Aldridge. *Why Shrink Wrap a Cucumber?* (London: Laurence King Publishing, 2012), 16.

<sup>10</sup> Et. al, 18.

<sup>11</sup> Et. al, 8.

product must be presented appropriately to the audience while conveniently presenting necessary features and information. Without effectively appealing to the audience through packaging, there is little incentive for the consumer to purchase the product. Moreover, the brand will suffer by failing to compete in the market and provide a satisfying user experience.

Product experience begins with the packaging. A package not only conveys information and convinces the consumer to purchase the product, but can possibly indicate the quality of the product. Poorly designed packaging indicates to the audience that the brand and product are also of mediocre quality. A low-quality product naturally leads to a perception that the product experience could be wasteful or disappointing. On another note, a difficult physical interaction between the package and the consumer can lead to negative consumer feedback.<sup>12</sup> Nothing can make an individual doubt the worth of a purchase more than when he or she is struggling to get the product out of the packaging. Consider earphones, no matter how visually appealing, the hard plastics used to package ear buds can be agonizing to open and do not start the product experience on a positive note. When designing packaging, it is imperative to develop a design that will enhance and interact with the audience rather than detract from the product and brand.

### **Design to Reduce, Reuse, and Recycle**

A common frame for the packaging industry is required to “evaluate current efforts, identify opportunities, and begin to pursue sustainable strategies to develop sustainable packaging materials and systems.”<sup>13</sup> However, specific questions and requirements will evolve with technologies and industries. Therefore, demanding that the common framework established now must be flexible for future progress and manageable with the current limitations faced in sustainable production. Four objectives that provide a basis for future growth and exploration are:

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<sup>12</sup> Grip. *Best Practices for Graphic Designers, Packaging: An essential guide for implementing effective package design solutions* (Rockport Publishers, December 2013), 56-68.

<sup>13</sup> GreenBlue, “Design Guidelines For Sustainable Packaging.” *Sustainable Packaging Coalition* (2006): 6, accessed July 8, 2015.

to optimize resources, to practice responsible sourcing, to assess material health, and to incorporate resource recovery.<sup>14</sup> By using these to evaluate designs, the packaging process becomes cradle-to-cradle and does not focus solely on one aspect of a package's life cycle.

Common solutions to environmental goals are to reduce the materials used in a package design, create a packaging concept that allows the package to be reused in some way by the consumer, or develop a package that can be recycled. These solutions though still reflect a singular focus on a portion of a package's life cycle though, and can be improved by considering designs that incorporate all of these methods. Reduction focuses on a how to lessen package's environmental impact during production, reuse focuses on the use of a package, and recycling focuses on the end of a package's life. Ideally, a sustainable package incorporates all of these methods thereby maximizing the lifespan of a package.

### **Optimize Resources**

The most direct method of optimizing resources is through the reduction of materials used in the package design. There are several ways to do this from shape and size of the package to the materials actually used. When beginning a design, the first consideration is the physical appearance of the package. At this point a designer has the ability to modify the proportions of a product's packaging in order to maximize resources while fulfilling the functions of a traditional package. It is imperative every aspect of packaging is considered necessary though. For example, consider packages of mini-applesauce squeeze pouches (Figure 1). There are typically two parts to this package: one being the pouch itself, and the second being the outer box that encloses the pack (Figure 2). From the perspective of reduction, the pouches themselves are minimal and necessary. It would be difficult to reduce this aspect of the package.

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<sup>14</sup> GreenBlue, "Design Guidelines For Sustainable Packaging." *Sustainable Packaging Coalition* (2006): 22, accessed July 8, 2015.



However, the outer box enclosing the group of pouches could be reassessed. Yes, the box is convenient for grouping and consumer purchase, but is an entire closure necessary? Is there another way the product could be presented that uses less material while addressing the need to group the pouches? In this case, a creative solution to optimize resources could be to cut the package in half, leaving the product grouped in the mid-section and exposed at the base and top. Not only could the designer cut the amount of material used but exposure of the pouches may be effective, allowing the customer to have contact with the product and appeal to their senses. This is simply one example of design solution that reduces packaging content.

Once the structure of the package is designed the materials are chosen. Though a package may have been reduced in size, disregarding the materials involved in the package can void these efforts. A designer must evaluate the number of materials and additives involved in the packaging process.<sup>15</sup> Moreover, how much energy required to produce these materials must also be specified and thoroughly researched when selecting materials. Feasible packaging options should have balance between chemical composition, ease of production, and waste production. Any material that is chemically unsafe or irresponsible, requires exceptionally high amounts of energy to process, yields waste with high methane or nitrous oxide units and should be avoided whenever possible. Following these standards, the most sustainable materials are clear Polyethylene Terephthalate (PET), glass, aluminum, paper, card and molded pulp, recycled content, and clear High-Density Polyethylene (HDPE).<sup>16</sup> This also means that plastics, though recyclable, are not balanced enough to be considered a viable sustainable packaging material.

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<sup>15</sup> GreenBlue, "Packaging Material Flows and Terminology." *Sustainable Packaging Coalition* (2009): 4, accessed July 11, 2015.

<sup>16</sup> Laurel Miller and Stephen Aldridge. *Why Shrink Wrap a Cucumber?* (London: Laurence King Publishing, 2012), 115.

## Responsible Sourcing

After optimizing the design's resources, the concept is then evaluated on a larger scale. Assessing the processes that contribute to the final product— and hopefully improving them— is the objective of responsible sourcing. There are two aspects of responsible sourcing that contribute to sustainability.<sup>17</sup> The first, being the physical packaging and process being optimized throughout its lifecycle, and the second, being social responsibility through support of ethical business. Methods of responsible sourcing include sourcing materials from suppliers who implement safe and conscientious environmental practices or suppliers that are locally available. By working with suppliers that enforce sustainable practices, the first method of responsibility is fulfilled. The second method is fulfilled by supporting businesses that follow sustainable principles and continuing their work. The same applies to local suppliers. There is less energy used to transport the supplies needed for production thereby lowering the energy used to create the final package, and the local business can continue to compete in the market. As a result the package benefits not only the consumer, but the other groups invested in the product's design.

Along with the responsible material sourcing, working with manufacturers that value healthy materials and energy efficient production is a simple way of responsible energy sourcing. By using energy efficient businesses to help produce a package, the benefits of a package are maximized. On the other hand, if the package design called for hard plastics or other high mass landfill materials, a high efficiency process through a sustainable manufacturer can lower the waste emission produced throughout the process and lessen the negative impact of a package.<sup>18</sup>

Another form of responsible energy sourcing is through the transportation of the product. Weight, size, and package shape have the potential to drastically impact the number of shipments required, the amount of energy needed to transport the product, and if additional shipping

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<sup>17</sup> GreenBlue, "Design Guidelines For Sustainable Packaging." *Sustainable Packaging Coalition* (2006): 6, accessed July 12, 2015.

<sup>18</sup> Scott Boylston. *Designing Sustainable Packaging* (London: Laurence King Publishing 2009), 92.

materials would be necessary to protect the merchandise (i.e. packing peanuts or Styrofoam).<sup>19</sup> Moreover, the fuel involved and general transportation methods can greatly impact the environmental waste resulting from a package's life cycle. "Sustainable packaging projects are resting on the shoulders of transportation efficiency, improved package handling and the percentage of recycled content in the packaging material."<sup>20</sup> Consequently, it is a designer's responsibility to not only meet the demands of a sustainable package itself, but to ensure his or her design can be sustainable throughout its life cycle thus requiring production and distribution evaluations of the packaged product.

### **Material Health**

Material health of the package design overlaps with optimizing resources, but material health specifically focuses on the safety and environmental impact of the chemical compositions of the package. Today's emphasis on the end of a product's life cycle makes material health a vital component to package design. "The accumulation of known or potentially toxic substances in the biosphere and in our bodies is the subject of increasing concern" and as such, designers must respond to concerns with chemically responsible solutions.<sup>21</sup> The chemicals and materials used in packaging can impact the health of humans, organisms, and our ecosystems regardless of how small the amounts may be.

While it is difficult to control the chemical compounds of common packaging resources, there should be careful consideration of the materials employed. When possible, compare materials and their chemical breakdown. Through comparison, a designer can be proactive in their sustainable efforts while addressing the package performance requirements. In addition to comparison, a good practice is to monitor restricted substances, chemical legislation, etc. in order

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<sup>19</sup> Rob Thompson. *Sustainable Materials, Processes and Production* (Thames and Hudson Ltd 2013), 123.

<sup>20</sup> "Bright Future For Sustainable Packaging." *Industrial Engineer* 42, no. 1: 14 (2010), <http://search.proquest.com/docview/506742578?accountid=27975>.

<sup>21</sup> GreenBlue, "Design Guidelines For Sustainable Packaging." *Sustainable Packaging Coalition* (2006): 6, accessed July 12, 2015.

to stay current on the impacts of a package socially and environmentally. Thorough research should be conducted on plastics, dyes and pigments, fillers, flame-retardants, coatings, adhesives, and inks in particular because of their tendency to be less environmentally safe than other materials.<sup>22</sup>

Conscious and educated material choices yield several benefits. Cleaner production and easier resource recovery are direct environmental benefits along with safer consumer use. Socially, the manufacturer and client can be recognized as an environmentally conscious brand, and raises awareness about packaging problems. Financially, a business serves to benefit from a positive branding image and reduces the likelihood of having to pay for fines or taxes for poor environmental practices. Therefore, the effects of material resourcing have the potential to expand into other areas of a package's life cycle making it truly sustainable.

### **Resource Recovery**

The last phase of a package's life cycle is its recovery. Recovery in itself ranges from the possibility of reuse for the package, the ease of recycling, and the environmental results from recycling processes. The most direct and effective form of resource recovery is through reuse. A package that can be reused again for the same product, or applied to a new purpose, successfully finishes a package's life cycle. Unfortunately, this is not always a common practice and more often than not a package is disposed of in general waste units. Understanding this, an environmentally conscious designer must incorporate materials that can be recycled or that are biodegradable. By adding the extra measure of recyclable or biodegradable materials to a package, a degree of resource recovery can be salvaged should the consumer choose to dispose of the design.

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<sup>22</sup> Rob Thompson. *Sustainable Materials, Processes and Production* (Thames and Hudson Ltd 2013), 92-96.

This entails that package must be easily separated for recycling. A complex package that requires more than a few simple steps to disassemble from the consumer will most likely become waste and will ever find its way into a recycling bin.<sup>23</sup> If there are multiple pieces or materials involved in a design, they should be quickly and easily separated in order to increase the likelihood of a package being properly recycled. Furthermore, when designing the package, the accessibility of recycling to the audience must be evaluated. For example, a community in an under privileged area would not necessarily have immediate access or funding to properly recycle resources. On the other hand, a wealthy community or an area that has strong support for environmental efforts would be more likely to have recycling bins and facilities in close proximity to the consumer. Essentially, the presence of recycling opportunities and the target audience plays a large role in resource recovery and as such, must be considered when designing a package in order to effectively address resource recovery.<sup>24</sup>

Finally, the recover processes employed as the package is at the end of its lifecycle should not outweigh the benefits of the newly recycled materials. In other words the energy or waste resulting from a recycling process should not be substantially more than the energy or waste saved.

## **Feasibility**

There are two separate aspects of feasibility that are considered when attempting a sustainable design: a) the financial impact the package will have on the client and b) the likelihood of each of the four standards outlined above being fulfilled.

In reality, sustainable design is still typically more expensive than a standard design due to the time, resources, and specialized technology required to complete the process. In addition,

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<sup>23</sup> Grip. *Best Practices for Graphic Designers, Packaging: An essential guide for implementing effective package design solutions* (Rockport Publishers, December 2013), 52-58.

<sup>24</sup> Laurel Miller and Stephen Aldridge. *Why Shrink Wrap a Cucumber?* (London: Laurence King Publishing, 2012), 123-129.

the resources, manufacturers, etc. are not as readily available and as such can cost more to employ. The role of availability and demand plays a large role in the financial feasibility of a sustainable packaging. What is available to a business based on need, unit cost, and quantity determines if there is even a possibility of a sustainable packaging approach. Meanwhile, the demand for the clients' product, the resources involved in the packaging, and a sustainable image dictate the financial limits of the client as well as the value of a sustainable package to them. Should the financial value and intangible value of the package design be disproportionate for the client, the feasibility of a sustainable course of action lowers.<sup>25</sup>

Once the financial feasibility of the package is determined, the standards of sustainable packaging should be evaluated. Depending on resources available, regulations, packaging needs, and more, certain standards may be more difficult to abide by than others. For instance, when designing packaging for perishable products, the primary needs and restrictions for the package take precedence over sustainable efforts that follow. Whether the materials cannot always be environmentally friendly in order to preserve the product, or the transportation for the product unavoidably produces a large amount of waste, the package must first and foremost be designed to fulfill its purpose as mentioned previously. At this point feasibility means, a designer must maximize the potential of each standard when possible while acknowledging more wasteful technologies, sources, or methods may need to be utilized to achieve an end result that follows a client's needs and limitations.

### **Case Study: Redesign Plastic Food Containers**

The following is a creative brief for a package design that will consider and employ the findings outlined in my research. A redesign of a familiar package has been accomplished in

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<sup>25</sup> Grip. *Best Practices for Graphic Designers, Packaging: An essential guide for implementing effective package design solutions* (Rockport Publishers, December 2013), 78.

order to improve its lifecycle and reduce the waste produced by it. The package design is a product line for a company called Alo that offers an alternative to plastic bags and plastic containers (Figures 3, 4, and 5). The project includes marketing and production plans, concept ideas, and comps of the final product. The tone of the product line will be simplistic, clean, tactile, and organic. The packaging is high-end and well designed with a price that reflects a specialized consumer base. However, Alo aligns with the growing rugged, paper bag trend that is on the rise with many luxury brands.

### **I. Objectives, Client, and Audience**

The client for this project is Alo, a sustainable business that provides alternative packaging for food storage. The primary mission of the business is to replace plastic food storage like Tupperware and bags with environmentally friendly options. These packages are functional for short-term use, meaning the bags and boxes are intended for packing meals to-go.

The project at hand is to create bags and boxes that fulfill the needs for food storage, while also addressing the four aspects of sustainability: optimize resources, responsible sourcing, material health, and responsible recovery. To begin, these packages must be able to protect food, be durable, and require little assembly in order to satisfy the consumer needs in the product. After these objectives are addressed by the design, the packaging will be adjusted to reflect responsible sourcing and to incorporate healthier materials. The materials utilized will also maximize the purpose of the package by allowing it to be reusable or up-cycled.

The problem in this case is to develop a food storage alternative that is competitive with easy plastic storage in price and function, while also maximizing the sustainable potential of the product. This opportunity addresses a new need in food storage since sustainability is on the rise. With this product line, Alo can form a new niche in the market by effectively setting itself apart from plastic storage providers. Through materials, patterns, functional design, and creative

marketing, Alo has the potential to fulfill its company's mission, while standing out with a new and fresh product on the market.

My objective then, is to increase the amount of sales in favor of sustainable food storage, and in turn decreasing the amount of plastic storage sales in stores. If the packaging is successful, it will reduce plastic waste on a local scale and consumers will save money long-term. A method of determining the success of the design line and analyzing how well the objectives were met will be focus groups and consumer surveys.

## **II. Audience**

Alo's challenge is to create a product line that is relevant to adults between 33 and 45 (secondary audience being between 46 and 50) that are environmental enthusiasts. Based on Exponential Advertising Intelligence's research, these individuals will typically be female, married, and stay-at-home moms known as the millennial mom. Generally, the target consumers are characterized as highly motivation individuals that are in the upper middle to high-income bracket, thus with an income that ranges from \$85,000 to \$120,000 per year.<sup>26</sup> The target audience is defined by their active social media presence, busy schedules, social justice based political views, and their participation in fitness activities and travel. The audience is also known to frequent local stores, boutiques, and organic food stores. In this case, the population will be centered on cities and suburban areas around the DMV region. Afterwards it will branch out into areas that reflect similar consumer behavior and socioeconomic patterns.

## **III. SWOT Analysis**

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<sup>26</sup> "Marketing to Millennial Moms: How Your Brand Can and Should Speak to This Emerging Consumer Powerhouse." *Millennial Moms Whitepaper*, 2012.



When going forward with the planning and marketing of the package, it is important to consider the strengths and weaknesses of the product line along with the opportunities and threats that Alo faces. First, a positive aspect of the product line is how it addresses the audience's need for hard and soft storage containers. Instead of requiring the audience to purchase separate bags and hard containers— like competitors Ziploc and Glad do— the consumers can buy a set of hard and soft food containers. In addition these products can be hand washed for reuse, rather than throwing out plastic bag after plastic bag. Another strength of Alo products is the natural and durable materials used. Silk, hemp, and bamboo are quality products that can endure multiple uses just as plastic can, yet they also are environmentally conscious. The growing support of sustainable design and environmentally conscious products will give Alo a lot of momentum as it hits the market, especially when sold in stores— or even at farmers' markets— that cater to an environmentally conscious audience.

On the other hand, Alo faces certain weaknesses that must be acknowledged for further research and product improvement. For example, the product line has a limited audience scope. These products also are not necessarily suitable for younger audiences. Because of Alo reusable nature, some ages may not understand to save the packages for another use and dispose of them. This consideration would require education on the part of parents or guardians if the product line extends to family use, in order to ensure younger children would bring the packages home to be washed. Alo can address this issue by including care instructions for families as well as an insert for children. Another threat to Alo is the expense. By being a natural and sustainable product, the expense of a food storage set is more than plastic bags or Tupperware. Due to the cost, there is a limited amount of individuals that can afford to purchase Alo products. A solution to this threat is to emphasize the long-term benefit and savings Alo offers when advertising the product. Also, smaller, less-expensive sets can be marketed or individual bags and boxes can be offered as a sample in order for the consumer to test the investment they would make.

With a sustainable product line, comes a great deal of opportunity. One opportunity for Alo is to observe and model the TOMS philosophy and donate to a non-profit with every purchase. Cause-marketing is a way to engage our target audience especially when they are a socially oriented group of individuals. Another opportunity is to explore other materials and blends that can diversify the line and potentially lower the price of the product. Moreover, there is an opportunity to explore fair trade producers and enhance the social image of Alo.

As Alo grows though, threats grow. A main point of competition for this product line will be the convenience of throw-away materials. For busy families and professionals, the need to wash packages can be seen as a disadvantage. There is no way to refute this part of the package's use. Therefore, when marketing the product it will be important to remind the audience that they already wash dishes and Tupperware so washing a few pouches will be easy in comparison. It will also be vital to tie the financial benefits of Alo as a reminder of the value in savings in comparison to the disadvantage of always washing the packages. Lastly, a threat to the production end of Alo is the expense of materials fluctuating on the market. Depending on the availability and price of organic materials, Alo will have to modify prices to ensure it makes necessary profit. With marketing analysis, the trends and pricing of materials can be predicted ahead of time, which will prove useful when ordering more materials. Also, negotiations can be arranged with producers to set a fixed price for Alo purchasing.

Competitors of Alo will be prominent food packaging brands like Ziploc, Glad, Tupperware, and Mr. Lids. These four competitors all offer convenient food storage that can be reused or thrown away depending on the purchased product, while also offering consumers a variety of package sizes. These food storage items can be washed in the dishwasher and microwaved, and come in different shapes to suit a wide range of needs. The strength of Ziploc and Glad mainly lies in their plastic bags. Plastic bags are a consistent part packing lunches because of the convenience. In addition the bags do not take up much space and can be packed down if placed in a lunchbox with other items. Meanwhile, Mr. Lids focuses on hard plastic that

comes with the benefit of the lids being attached to the containers. Not only is the consumer's food protected, but also it is not a hassle to pair lids and track down multiple pieces of plastic when packing lunch. Alo, to compete with these brands, must offer convenient soft bags and hard containers that are not a hassle to use and do not require assembly. The emphasis of the leading brands is their ease and effectiveness. Therefore, Alo will have packaging that has an equal, if not better, user experience. These sustainable packages will place the consumer experience at the forefront of the design so it can be considered as reliable as other household brands.

For a more narrow scope of interest, sustainable food packaging that competes with Alo can be found in brands like Beeswrap and Ecolean. Beeswrap uses cotton and bees wax to create an all natural food storage experience that is reusable. By simply wrapping foods with the Beeswrap, the heat of the consumer's hands will seal the package and keep their food fresh. It is an easy experience and definitely a competitor for Alo. Another up and coming competitor is Ecolean. Ecolean provides consumers with sustainable pouches for liquids such as juice, yogurt, milk, etc. The packaging can be resealed, but not reused. While this is not as resourceful as it could be, the idea of a sustainable liquid package is rare and unique on the market. Alo can compete with these brands by expanding its product line. Instead of offering only one way to preserve food, it will offer hard boxes, firm pouches, and soft pouches. These brands are limited in use and can only store so many kinds of food (or liquid). Since Alo addresses a range of consumer needs while also being sustainable, it has the opportunity to advance beyond these brands.

#### **IV. Visuals**

To begin, Alo packaging will be defined by its natural color palette and accents of subtle red umber. While the automatic connotations of organic products focus on green hues, Alo will break the typical trend with its reddish brown accent. Pairing light green with red umber connects

color meanings like reliability, honesty, and strength to vitality, adventure, and motivation.<sup>27</sup>

These color connections create a more engaging visual design and give Alo an image of being a sustainable innovator rather than a standard green organization.

The product line will use the natural coloring of package materials as the primary color and the red umber or dark brown as the print color for the basic line. For product lines with special patterns and prints, the colors can fluctuate to include greens and blues. All inks involved for Alo products will be soy inks to maintain the sustainable mission of the company. As the product and brand expands, the packages will eventually have the potential to explore organic dyes for the soft and firm pouches to add more variety. For now though, the packaging will start with a very organic and natural visual aesthetic to gain the support and trust of consumers. This also means that bleaching fabrics for a lighter color will not be considered in order to maintain the integrity of the materials. Moreover, chemical stains for the bamboo products will not be used because the unique appearance of each bamboo box will be tainted if its natural coloring is altered (Figure 7). Any other materials used in Alo products such as twine or wax would also be left in their natural color state.

The typeface used in Alo product designs will be primarily a sans-serif, organic typeface with geometric character shapes to support the modern tone of the brand (Figure 12). In addition, it will ensure readability when information is printed on the fabric pouches and small hang tags (Figure 13). The compliment between the two type styles will make the packaging more dynamic and unite the modern and organic aspects of the product.

Three different patterns will be available as Alo begins. The first is an all-natural pattern that will have a minimal aesthetic, displaying the Alo name and logo on the pouch or box. The second pattern will be an abstraction of bamboo in light green with a small panda in black to add contrast and emphasis (Figures 8 & 9). The pattern will correspond to the World Wildlife Fund (WWF) because with each purchase of this particular patterned box or bag, a portion of the

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<sup>27</sup> Leatrice Eiseman. *Pantone Guide to Communicating with Color*. (Grafix Press, 2000).

proceeds will be contributed to WWF. The third pattern will be a dark blue abstraction of leaves with a light blue silk worm as the accent (Figure 9). In this case, purchasing these bags or boxes will result in a contribution to the Center for Biological Diversity.

The materials used to produce the soft pouches will be tightly woven hemp or organic silk. Organic hemp has a durable quality that will be appropriate for foods such as crackers, bread, chips, or cookies. Because the fabric is thick and firm, it will withstand transport and protect harder foods and be in a square shape to accommodate items like sandwiches (Figures 10 & 11). Yet the folding flap will be curved and long to create a more edgy and fashionable appearance. For foods that are more fragile like fruits and vegetable, silk pouches will be offered. As a smooth and flexible fabric, the silk will not be harsh or shed fibers on softer foods. In addition, the silk pouches will be in an octagonal shape to create a more fashionable design for the consumer (Figure 6). For the firm pouches Alo will offer, only hemp will be used because the material can hold structure more so than silk. Finally, for a hard plastic substitute, bamboo boxes will be offered. When consumers have leftover meals they would like to pack for lunch or save for later, the bamboo box will be appropriate. A wax insert made from thin hemp and beeswax will also be available to consumers who wish to have less mess in their bamboo box, or prevent absorption in the wood. All materials used by Alo to produce sustainable food packaging are biodegradable and reusable. Consumers can wash products by hand with warm soapy water and leave out to air dry, enabling them to use the products again and again.

## **V. Retail and Marketing**

Venues that have been chosen to sell Alo will be selective and reflect the economic bracket of the audience. Moreover, these retailers have shown sustainable interests and reflect similar environmental principles to Alo.<sup>28</sup> First, Williams-Sonoma has been chosen as it has

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<sup>28</sup> Retail Industry Leaders Association, "2015 Retail Sustainability Management Report." 2015. Accessed November 28, 2015.

recently opened up to sustainable and organic products. In addition, its reputation as a luxury cooking and specialty food store suits Alo because of the customer base that frequents the chain store. Typically the consumers in this store are married women ranging from 35 to 45 with an established home in suburban or metropolitan areas. Many of the customers frequenting Williams-Sonoma also have small families or frequently entertain guests in their home. The target audience also is known for favoring luxury items and quality service.<sup>29</sup> This audience fits well with Alo because of the brand's luxury pricing and materials. Williams-Sonoma would be an opportunity to skim quality consumers and gain customer loyalty.

Next, Whole Foods, MOM's Organic Market, and Trader's Joe's have been selected as retailers for Alo to work with because they are locations frequented by the female demographic most likely to buy Alo. Each of these stores caters to middle class to upper class consumers that are usually from suburban areas.<sup>30</sup> Whole Foods and Trader Joe's have a strong consumer base of small families as well as couples. Both stores show similarities in that they have consumers with both members of the home working in a fast-paced professional environment.<sup>31,32</sup> Then, MOM's Organic Market offers the opportunity to market to suburban families specifically, which is beneficial as Alo develops products that are suitable for children.<sup>33</sup> Online sales will also be available for the few consumers outside of these retail areas and as a convenient option for customers looking for additional Alo products. An online site will also offer more combinations and color options that are not available in stores.

Alo will be advertised in print and digital forms on a national level through publications such as *Better Homes*, *Parenting*, *Parents Magazine*, *Working Mother*, and *Green Child*

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<sup>29</sup> Williams-Sonoma, Inc. "2014 Annual Report- Williams-Sonoma, Inc." 2014.

<sup>30</sup> "MOM's Organic Market: Private Company Information." Bloomberg.com. February 1, 2015. Accessed December 6, 2015.

<sup>31</sup> Hoovers Company Information Consultation "Trader Joe's Company Report 2013." 2013.

<sup>32</sup> Whole Foods Market, Inc. "2014 Annual Report- Whole Foods Market, Inc." 2014. Accessed December 4, 2015. [https://assets.wholefoodsmarket.com/www/company-info/investor-relations/annual-reports/2014-WFM\\_Annual\\_Report.pdf](https://assets.wholefoodsmarket.com/www/company-info/investor-relations/annual-reports/2014-WFM_Annual_Report.pdf).

<sup>33</sup> "MOM's Organic Market: Private Company Information." Bloomberg.com. February 1, 2015. Accessed December 6, 2015.

*Magazine*. All of these magazines focus on a family demographic and publish stories centered on health, home, and family.<sup>34</sup> These publications diversify the family base Alo reaches out to though. From working parents, environmentally conscious parents, single parent families, and more Alo can advertise to a variety of families that all have and interest in sustainable products.<sup>35</sup> Through these magazines, Alo associate its product line with reputable marketing forums because these magazines are trusted for their reviews and marketed products.

To encourage a stronger digital presence and enforce paperless advertisement, blogs will also be part of the marketing plan. The social media of each region would be assessed to determine the most effective platforms for Alo to advertise through. In the Washington DC area for instance, Poshbrood blog, Very Busy Mama blog, and Clarendon Moms blog will be forums to advertise Alo not only because of their popularity in the area, but because of their potential influence on other consumers. These blogs cater to mothers in the metropolitan area that juggle busy social lives and family. There is also a mixture of working and stay-at-home parents that follow these blogs. Furthermore, the women these blogs target show interest in topics like fitness, healthy eating, and natural products.<sup>36</sup> By offering these bloggers sample of Alo and asking them to review the products on their blog, Alo can get feedback that relates to the topics of interest on these blogs and connect to the everyday consumer.

The packages would be offered as sets of five soft or firm pouches or two boxes to serve as add-ons for consumers needing additional stock and to address the less extensive needs of individuals buying for themselves alone. These sets will come in small or large for the pouches, and in small, medium, and large for the boxes. The pouches will also be offered in silk or hemp. In retail stores, the selection will be more limited and based on the discretion of the retailer.

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<sup>34</sup> "Parenting Magazine Micro MediaKit." Parenting Magazine Media Kit Info. 2011. Accessed December 3, 2015. <http://justmediakits.com/mediakit/471-parenting.html>.

<sup>35</sup> "Research – Adults MRI." Better Homes and Gardens Media Kit. 2014. Accessed December 5, 2015. <http://bhgmarketing.com/research>.

<sup>36</sup> "Mom Bloggers." Washington FAMILY Magazine. 2015. Accessed December 9, 2015.

[http://www.washingtonfamily.com/for\\_parents/article\\_588190de-a2aa-5f09-a0a9-40f616481479.html](http://www.washingtonfamily.com/for_parents/article_588190de-a2aa-5f09-a0a9-40f616481479.html).

Online all of these options will be available and will include the full variety of colors and patterns Alo has to offer. Based on value sets from company's like Ziploc, Alo will offer similar value sets to include 4 bamboo boxes and 10 soft pouches (5 in hemp and 5 in silk). By creating similar quantities and units, Alo can compete more effectively with group unit sales. Furthermore, according to Qualtrics' customer needs analysis, the similarity between brands through value sets while maintaining distinguished features, will increase the likelihood for consumer purchases.<sup>37</sup> In addition, the benefits of grouped products will be perceived as outweighing the benefits of buying only 2 boxes or 5 pouches. The consumer gets twice as much, while potentially saving more money. In addition, there will be a variety of sizes included in this value set, making it ideal for consumers just starting to use Alo products. These sets will be available in stores and online. Alo will have more freedom with its online store though to offer package deals on its products, for example two-for-one on silk and hemp pouches.

When it comes to price, Alo would begin with a small profit margin, which could increase as it gains momentum. This strategy will follow skimming techniques, in order to gather customer loyalty among select consumers while allowing less reliable consumers to fall back to competitors. However, if the product increases in popularity and material/production costs don't fluctuate drastically, the overall price can drop even if the profit margin increases. To fulfill the retail fee, Alo products will typically be marked up by 3% or 4% depending on the retailer. Using Chopra and Meindl's methods for calculated costs while estimating unit price and labor costs; noting competitor pricing; determining raw materials and production costs, the price of an individual pouch would be roughly \$5.<sup>38</sup> Then when grouped together in sets, pouches will cost about \$18 to ensure the consumer is getting a deal while providing Alo its necessary profit as it

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<sup>37</sup> "Customer Needs Analysis - Qualtrics." Qualtrics. 2015. Accessed November 4, 2015. <http://www.qualtrics.com/university/researchsuite/research-resources/survey-types/market-surveys/customer-needs-analysis/>.

<sup>38</sup> Sunil Chopra and Peter Meindl. *Supply Chain Management: Strategy, Planning, and Operation* (Prentice Hall, 2015), 355-412.



enters the market. This estimation comes from the strategy to essentially offer one pouch free or half off when buying a specific quantity.

For the bamboo boxes, the individual cost would be about \$7— using again Chopra and Meindl’s supply chain management information— and the set cost would be approximately \$13.<sup>39</sup> For the value set, pricing will depend on size, items included, and materials involved. The pricing for the example value set previously listed though would range from \$60.00 to \$70.00. While the cost of Alo products is high, it accurately reflects the expense of a luxury, organic product. Also, though it is expensive, consider the price of buying box after box of plastic bags and Tupperware sets. A box of 50 Ziploc bags costs \$4.49. Buying a set of 5 Alo bags is roughly \$8.99, and each bag can certainly withstand more than 20 uses and it would only take about 20 uses of each pouch to equate the purchase Ziploc. Long-term, the price of Alo products will balance out with plastic tupperware from makers like Ziploc, Glad, and Mr. Lids. The sustainable aspect of this product though is what makes it unique and worth the expense. A consumer is not just storing their food in a new way; rather consumers are lowering their waste production and actively choosing a sustainable behavior. That alone can break the tie between a long-term money saver and a short-term cheap buy.

When factoring in the select non-profit contributions with each Alo purchase, the prices will not change as the 5% donation has been partially factored into the standing prices and is part of Alo’s donation to the non-profits. These non-profit donations will serve as an incentive to consumers to purchase Alo packages because it will further the positive feedback they will feel from their purchase.

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<sup>39</sup> Sunil Chopra and Peter Meindl. *Supply Chain Management: Strategy, Planning, and Operation* (Prentice Hall, 2015), 355-412.

### Reflection and Future Research

Alo sustainable packaging has the potential to reduce plastic waste on a regional level. Logically, the product would not completely eliminate the impact of plastics in landfills on a large scale, but over time it can influence the environmental health of smaller areas. Alo products would not eliminate the usage of plastic bags either, but offering a sustainable alternative to plastic food packaging addresses a need that was not fully acknowledged by manufacturers. Ziploc, Glad, and Mr. Lids plastic products have been countered by glass storage alternatives, but Alo pushes this competition further by offering products that are alternative to plastic storage bags too. Furthermore, Alo's products are reasonable for transporting individual portions of food. Other companies offer storage for large quantities of food, but not many options for as consumer looking to simply pack a lunch. Alo is an example of a company that is creating a sustainable niche in the market that few other competitors have attempted. The Alo product lines have the potential to raise awareness about waste in consumers' daily lives, while also establishing a consumer demand for more sustainable packages.

Evaluating Alo's sustainable characteristics, not only are the inks, materials, and threads organic and biodegradable, but also the processing for the product line is minimal. Assembly and screen-printing can be done machine using efficient and clean processes. Alo also fulfills the concept of reuse and recycle because consumers can use the packages multiple times and maximize the life cycle of their purchase. The maintenance of Alo boxes and pouches is simple—only requiring warm soapy water and time to air dry. The easy up keep of the product ensures that consumers will be less likely to dispose of the packages without reusing them several times. Since the packages are simple and are not comprised of many parts or pieces, the material waste should also be low when the product reaches the end of its life cycle.

Responsible sourcing is seen through the networking with fair trade producers in other countries like India. By working with local and ethical producers, Alo fulfills its obligation to also be financially and socially responsible as a sustainable company. In addition, Alo products

can utilize environmentally conscious transportation because the packages are not perishable and are lightweight. The opportunity for clean transportation is not always an option for businesses, but is a possibility for Alo as it expands and has the means to explore alternative shipping methods. Until then, the company is balancing the energy waste of shipping with its responsible sourcing, material health, and product potential.

In the future, Alo would need to address more durable alternatives for a hard container because bamboo can only withstand a certain amount of heat. A possible option is a molded pulp container that can be heated up, but disposed after use. This alternative would need to be researched further though to determine if the waste produced from the material does not outweigh the benefits it gives the consumer. Also, at this time Alo does not offer containers for liquid foods like soup or yogurt. In order for Alo to adequately address consumer food storage needs, a sustainable design solution for this problem would be needed in the near future. Another topic for future research would be profit and cost changes as the business expands and markets change. Cost is a very important component of sustainability because it can dictate how much a business can spend on environmentally responsible materials and processes. Should materials become more expensive, or the products grow in demand, unit pricing needs to accurately reflect these changes and should be predicted well ahead of time so Alo can prepare itself financially.

## **Glossary**

### *Additives*

Supplementary materials that are typically used to improve the safety of a product or a specific product characteristic. For example, fillers improve strength, plasticizers improve flexibility, and flame retardants prevent combustion.

### *Auxiliaries*

Supplementary materials that are used to achieve specific properties in packaging. For example, varnish can be used to create a shine or glue can be used to bind edges together. The main categories of auxiliaries include inks, coatings, and adhesives.

### *High-Density Polyethylene (HDPE)*

A polymer made from petroleum and ethylene along with other catalysts like chromium oxide. The thermoplastic is typically used for pipes and projects that require strong moisture barriers.

### *Molded Pulps*

Recycled paper and a percentage of virgin pulp that are pressed against mold and dried. The material is highly recycled and used for simple packaging like egg boxes, egg crates, and display trays.

### *Polyethylene Terephthalate (PET)*

A polymer in the polyester family made from petroleum natural gas variations along with a resin catalyst. It is a more practical plastic that is used almost exclusively for water bottles and soft drinks.

Appendix

Figure 1



Figure 2



Figure 3



Figure 4



Figure 5



Figure 6

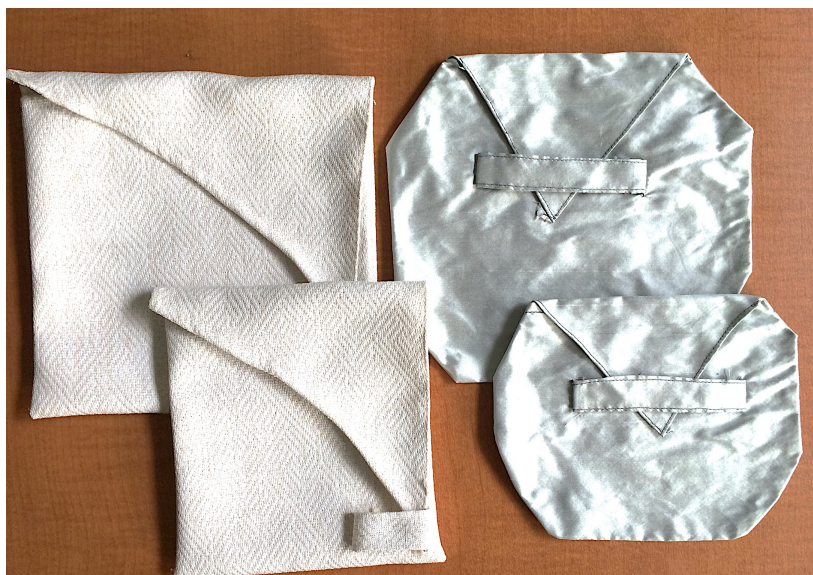


Figure 7



Figure 8



Figure 9



Figure 10





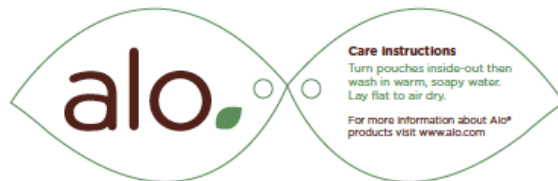
Figure 11



Figure 12

alo.

Figure 13



## References

- Best Practices for Graphic Designers: Packaging : An Essential Guide for Implementing Effective Package Design Solutions*. Beverly, MA: Rockport Publishers, 2013.
- Boylston, Scott. *Designing Sustainable Packaging*. London: Laurence King, 2009.
- "Bright Future For Sustainable Packaging." *Industrial Engineer* 14, no. 1 (2010). Accessed June 18, 2015. <http://search.proquest.com/docview/506742578?accountid=27975>.
- "CleanMetrics - Packaging Carbon Footprint Analysis." CleanMetrics - Packaging Carbon Footprint Analysis. 2011. Accessed October 12, 2015. [http://www.cleanmetrics.com/html/packaging\\_carbon\\_footprints.htm](http://www.cleanmetrics.com/html/packaging_carbon_footprints.htm).
- Chopra, Sunil, and Peter Meindl. *Supply Chain Management: Strategy, Planning, and Operation*. Sixth ed. Prentice Hall, 2015.
- Design Guidelines for Sustainable Packaging*. Charlottesville, Virginia: GreenBlue, 2006.
- Eiseman, Leatrice. *Pantone Guide to Communicating with Color*. Sarasota, Fla.: Graftix Press ;, 2000.
- Garrett, Ronnie. "The Difference Between Green and Sustainability." Cleanlink. February 15, 2012. Accessed June 29, 2015.
- Gesellschaft für Konsumforschung Institute (GfK) "Three Quarters of Consumers Say Brands Have to Be Environmentally Responsible." April 20, 2015. Accessed June 4, 2015.
- "GreenBlue." GreenBlue. Accessed May 9, 2015.
- "Green Industry Initiative." United Nations Industrial Development Organization. 2008. Accessed November 24, 2015. <http://www.unido.org/en/what-we-do/environment/safeguarding-the-environment/industrial-resource-efficiency/greenindustry/green-industry-initiative.html>.
- Haggar, Salah El. *Sustainable Industrial Design and Waste Management Cradle-to-cradle for Sustainable Development*. Amsterdam: Elsevier Academic Press, 2007.
- Hamed, Brady. "Less Than 100: How Percentages Show True Understanding of Green Trends." Sustainablebrands.com. April 3, 2013. Accessed September 30, 2015.
- Hoovers Company Information Consultation "Trader Joe's Company Report 2013." 2013. Accessed December 4, 2015.
- Kotler, Philip, and Gary Armstrong. *Principles of Marketing*. 11th ed. Upper Saddle River, N.J.: Pearson Prentice Hall, 2006.
- "Marketing to Millennial Moms: How Your Brand Can and Should Speak to This Emerging Consumer Powerhouse." *Millennial Moms Whitepaper*, 2012.
- Martin, Diane, and John Schouten. *Sustainable Marketing*. Upper Saddle River, N.J.: Pearson Prentice Hall, 2012.

Miller, Laurel, and Stephen Aldridge. *Why Shrink-Wrap a Cucumber?: The Complete Guide to Environmental Packaging*. London: Laurence King Publishing, 2012.

"Mom Bloggers." Washington FAMILY Magazine. 2015. Accessed December 9, 2015. [http://www.washingtonfamily.com/for\\_parents/article\\_588190de-a2aa-5f09-a0a9-40f616481479.html](http://www.washingtonfamily.com/for_parents/article_588190de-a2aa-5f09-a0a9-40f616481479.html).

"MOM's Organic Market: Private Company Information." Bloomberg.com. February 1, 2015. Accessed December 6, 2015. <http://www.bloomberg.com/research/stocks/private/snapshot.asp?privcapId=22212784>.

*Packaging Material Flows and Terminology*. Charlottesville, Virginia: GreenBlue, 2009.

"Parenting Magazine Micro MediaKit." Parenting Magazine Media Kit Info. 2011. Accessed December 3, 2015. <http://justmediakits.com/mediakit/471-parenting.html>.

"Plastics." 2010. Accessed July 20, 2015. <http://www.epa.gov/climatechange/wycd/waste/downloads/plastics-chapter10-28-10.pdf>.

"Customer Needs Analysis - Qualtrics." Qualtrics. 2015. Accessed November 4, 2015. <http://www.qualtrics.com/university/researchsuite/research-resources/survey-types/market-surveys/customer-needs-analysis/>.

"Research – Adults MRI." Better Homes and Gardens Media Kit. 2014. Accessed December 5, 2015. <http://bhgmarketing.com/research>.

Retail Industry Leaders Association, "2015 Retail Sustainability Management Report." 2015. Accessed November 28, 2015.

Robertson, Margaret. *Sustainability Principles and Practice*. Routledge, 2014.

Scott, Jonathan. "Minimizing Packaging." *The Sustainable Business (2nd Edition)*.

Thompson, Rob, and Martin Thompson. *Sustainable Materials, Processes and Production*. London: Thames & Hudson, 2013.

"UNIDO Green Industry Initiative for Sustainable Industrial Development." United Nations Industrial Development Organization. (2011): 44. Accessed October 20, 2015.

"Who We Are." Sustainable Packaging Coalition. Accessed May 24, 2015.

Whole Foods Market, Inc. "2014 Annual Report- Whole Foods Market, Inc." 2014. Accessed December 4, 2015. [https://assets.wholefoodsmarket.com/www/company-info/investor-relations/annual-reports/2014-WFM\\_Annual\\_Report.pdf](https://assets.wholefoodsmarket.com/www/company-info/investor-relations/annual-reports/2014-WFM_Annual_Report.pdf).

Williams-Sonoma, Inc. "2014 Annual Report- Williams-Sonoma, Inc." 2014. Accessed December 3, 2015.