UNIVERSITY OF ALASKA ANCHORAGE OFFICE OF UNDERGRADUATE RESEACH AND SCHOLARSHIP

Do Eco-labels Effect Consumer Choice?

A research study on consumer behavior with University of Alaska vending machines

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Using campus vending machines at the University of Alaska Anchorage campus, this study aims to show the effect on consumer behavior when product contains an eco-labeling system. The study aims to improve public health and lessen negative environmental impact through snack choices made at the vending machines.

Specific Aims

Do informational labels on products influence what people purchase? This research measures the effects of eco-labels. Methods such as prohibition and education outreach are unsuccessful in quickly informing consumers about product impact on their health and the environment. Proposed eco-labeling system utilizes the best aspects of conventional and easily recognized methods such as universal color-coding used in traffic lights. The research also proposes that institutions, like the University of Alaska Anchorage, can work with local businesses, like Aurora Vending without drastically altering the nature of their relationship, through an effective compromise by providing products that increase public health and decrease environmental impact. This study will measure the degree to which eco-labels can affect (or may change) consumer behavior at the vending machine.

Data will be gathered by tracking the sales from four snack vending machines located on the UAA campus. Products are scientifically ranked using *The Good Guide*, an established online rating system that factors product health content and company environmental impact. Each item in the four vending machines will be assigned one of three codes; green for good health content and good environmental practices; yellow for moderate health content and moderate environmental practices; red for low health content and low environmental practices (GoodGuide, Inc., 2011). The results measured by vending machine sales will determine effects that labels can have on consumer food choices.

Introduction

Researchers have studied the impact of health content labels and environmental impact labels; however, I did not find research combining the two categories. The studies I researched suggest warning label methods will become mandatory in conjunction with the public's concern over health and environmental issues. Currently, other than FDA nutritional content, food labeling by companies and industries is largely voluntary (i.e. organic certification, fair trade, and low fat content). Current U.S. law does not require food companies to disclose potential negative environmental or health impacts. Consistent pressure from activist groups to label food products containing genetically modified organisms, dairy products from cows injected with hormones, or fish harvested from farms, are just a few indications that the public desires mandatory warning labels on food as a legal standard. This raises important questions about how to effectively use labels as a method of informing consumers about the health and environmental effects of their choices. Key studies that investigated labeling practices suggest a simple, empowering, and informed consumer choice policy that monitors change in consumer behavior.

Eco-labels, which are environmental and health informational ratings, will serve as a catalyst for effectively changing consumer preferences toward more sustainable, earth friendly, and healthy choices.

As scientists, politicians, and corporations discus how to face global health and environmental challenges, which many environmentalists say the next five to six years will define, citizens' consumer choices come under scrutiny (Ausebel, 2011; Mallon, Bourne, & Mott, 2007). If we consider individual consumer choices in light of the current exponential population growth, forecasted to exceed 9 billion people by the year 2050, the aggregate effects are significant (Bell, 2012). The eco-label study investigates efficient, immediate, and accessible methods of consumer change at the individual and local level. Product labeling policies and regulation are still the most commonly used methods at the institutional level when addressing public concerns, though these attempts have produced mixed results. A multifaceted policy borrowing from past methods is the best approach for effectively addressing our most common social, economic, political, and environmental issues related to consumer behavior.

Cigarette warning labels, the oldest universally accepted top-down U.S. product labeling, has a well-established history of changing consumer behavior. Since the 1964 U.S. government mandate, results show permanent change in consumer purchase trends without using a prohibition approach. Smoking in the U.S. has decreased by nearly half and the health warning label has evolved in over 30 countries, each reporting significant results in reduced smoking, improved societal health, and increased political approval while showing the industries using warning labels can still be economically viable (Alters, 2010; Bansal-Travers, 2011; Borland, 2009; Cunningham, 2009; Fathelrahman, 2009; Fong, 2009; Goodall, 2008; Moodie, 2010; Peters, et al., 2007; Senior, 2000; US Department of Health and Human Services Centers for Disease Control and Prevention, 1999). Other industries, like clothing and electronics, have been focal points for non-governmental organizations to expose corporate social responsibility. Although the NGO bottom-up grassroots approach raises public awareness, it does not garner enough support for legal action to mandate labeling as a universal method of informing consumers about a company's environmental and health practices (Ecologist, 2007; GURN, 2007; Hale & Wills, 2007; Micheletti & Stolle, 2008; Oberseder & Schlegelmilch, 2011). The food industry is the most important focus of eco-labeling research. Studies are conducted on child obesity in schools, adult dietary health in the workplace, nutritional marketing, low fat vending sales, responses to snack food taxes, and warning labels on snack items. None of the studies reported a loss of overall sales and all displayed a change in consumer trends toward healthier and more sustainable choices (Bergen, 2006; Calamaro, 2004; Colby, Sarah E., 2008; Colby, Sarah E., 2010; Fiske, 2004; French, Jeffery, Story, Hannan, & Snyder, 1997; French S. A., 2005; French S. A., 2010; Greene, 2010; Lacanilao, R. D., Cash, S. B., & Adamowicz, W. L. , 2011; Mantel, 2010; Vanclay, et al., 2011). Studies on the environmental and health impacts of aquaculture and genetically modified organisms are resulting in the drafting of policies that will make labels for all food products mandatory (Thogersen et al., 2009; Center for Food Safety, 2011).

By implementing "top-down" labeling proposed from "bottom-up" studies, this research proposal is taking a fundamental look at how mandatory environmental and health product labeling will affect consumer behavior. The evidence indicates a labeling standard is the right response to bridge consumer, company, and government responsibilies with community rights in demanding health and environmental standards and information.

Each day people make a variety of decisions that affect personal health and resource use. However, without a holistic consciousness of consumer impact and an absence of the understanding of interactions between consumers, governments, and companies, consumer choice can easily be rendered benign (Limnios et al., 2009). There is an urgent need for research to understand the best usage, application, and consumer decision making in relation to eco-labeling of products (Sibillin, 2007; Thogersen et al. 2009; Wogalter & Laughery, 1996). This study suggests that eco-labels can improve health and lessen environmental impacts by motivating consumers to make informed choices for their individual health as well as overall environmental health of the earth. With the eco-labeling system as a non-intrusive method for consumers to make better choices, we can bring about positive change.

Project Design/Methods

After reviewing a range of labeling studies focusing on top down and bottom up efforts, which attempt to confront environmental and health issues, this research study will show how eco-labeling influences vending machine consumer behavior. Utilizing vending machines already on the UAA campus, we will gain a glimpse into the effectiveness of eco-labeling. Monitoring an easy to understand labeling method on snack products tests the ability of people to evaluate their level of impact by conducting instant product comparisons. The results can help UAA students, faculty, and community members to easily address some environmental and health concerns. Health and environment are synonymous in this study because all natural processes are cyclical and how we take care of our environment determines the quality of what we put into our bodies (Hawken, 2007; Robbins, 2001). By systematically testing the basics elements of a problem, we can propose practical methods and policies that governments and industries can adhere to while concurrently giving the individual consumer important relevant information and healthier choices.

General Manager Curt Zakrzewski of Aurora Vending, which is the company that owns and maintains all the vending machines on the UAA campus, has agreed to fully participate in my research

project[1]. The eight-week study will begin on the first day of the spring semester, January 17, 2012 and end on March 13, 2012. The first two weeks will serve as a baseline period with no eco-labels, but new products will be available. The following four weeks, with the same product selection, will contain the eco-label system on all products in the selected machines. For the final two weeks, the removal of the eco-labels will allow comparisons to the earlier baseline period that might indicate any spurious variables. Sales are tracked by Aurora Vending's computerized tracking system on a weekly basis at the four selected locations.

I will work directly with the employee that services all UAA vending machines. I will assist with stocking of items, collection of data, and placement of eco-labels. I will also check on each machine daily during the study period to ensure that eco-label system is intact and make any necessary corrections. The inventory tracking, which I will oversee, contains data reporting the number of individual units sold, dollar sales for each item, and total machine revenue. I will transfer this data to an Excel spreadsheet providing an accurate comparison between variable and baseline periods. Through this experimental design, I will statistically show effect on consumer behavior when eco-labels are present.

The four vending machines selected for intervention of eco-labeling are virtually identical in size, appearance and quantity of products contained. The four vending machines are located in high volume areas: the Social Science Building/Consortium Library, Wells Fargo Sports Complex, Allied Health Building, and the walkway above University Drive. For this study, I will intentionally select approximately 6-8 items (20% of stock) for high health content and company environmental sustainability. Aurora currently stocks none of the newly selected items. All sales and product purchasing is made through Aurora Vending. The new items, like *Clif Bar*[2] and *Raw Revolution*[3], gives vending selections a full range of "poor" to "good" items to compare. As of Nov. 30th, 2011, both companies confirmed their participation in this research by agreeing to supply products. The new inventory will replace the least selling items in the units and the sales price of each new item will not exceed any similar stocked item by more than $0.75, which keeps all products under $2.00. The product placement within the vending machines is, as the company would typically market them. This means placing like items next to each other (chips and pretzels on one row, chocolate bars on another, etc...) despite their color rating given by *The Good Guide*[4].

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[1] Curtis Zakrzewski, personal interview, October 31, 2011, Aurora Veding head office, Anchorage, AK

[2] Eric Russell, email correspondence, October 12, 2011, Emeryville, CA, United States: Clif Bar & Company.

[3] Dave & Brian, email correspondence, November 30, 2011, online website: Team Raw Rev www.rawrev.com

[4] Scientifically based product health and company environment rating system (http://www.goodguide.com/)

I will professionally create and laminate the eco-labels using General Support Services. The goal of the design is to create a simplistic, yet conceivably realistic eco-label. I will place a circular color tag big enough to notice without obstructing any product, next to the price tag of each item. The color tags contain two quick "bullet points" stating their meaning. For example, green tags state "Health content: Good" and "Environmental practices: Good". Yellow tags state "Health content: Moderate" and "Environmental practices: Moderate". Red tags state "Health content: Low" and "Environmental practices: Low" (see appendix A). The color tags are assigned to each product based on the overall *Good Guide* rating. This rating, ranging from 1.0-10.0 with 10.0 being the best possible rating, reflects product health content and company environmental impact as well as a combined (see appendix B). This combined score will determine the color tag assigned. A quick reference guide, or eco-guide, will be displayed above the money feeder and on the top sections of the face of the vending machines. The eco-guides contain brief details of what these statements mean. The quick reference guides are colorful, yet very simplistic and easy to understand. The labels and quick guides are efficient enough for the consumer to discern how to use the eco-labels in about 10 seconds. The eco-label system will use attributes based on information from The Good Guide, Aurora Vending, research advisers, and my own research on marketing theories and research designs.

The research design uses attribute-based stated preference methods, or choice experiments, to present consumers with product descriptions that indicate options they could choose (Klaus & Colombo, 2011). The eco-labels are presenting attributes and the color rating system indicates preference. This model is especially suited for this project because it eliminates a bias or "spotlight effect" highlighting one attribute or product over other options, as each product receives a rating. The final data will be analyzed using the random utility theory (choice modeling). This theory predicts consumer decisions within the context of eco-labels (Busemeyer, Barkan, Mehta, & Chaturvedi, 2007; Lacanilao, Cash, & Adamowicz, 2011). I chose experimental design because it is the strongest method to establish causality between consumer willingness to pick healthier environmentally better snack selections in vending machines and the availability of information on product health content and producer company's environmental practices.

Anticipated Results and Future Research

The results of this experiment will tell us how labeling might influence consumer behavior at vending machines. Aurora Vending has agreed to support the research by providing access to their vending machines and data collection, while Cliff Bar and Raw Revolution will provide products to be placed in the machines. Educational institutions such as K-12 school system and UAA may benefit from

the results by updating vending machine policies on campuses. Currently, the Anchorage Public School District enforces a strict mandate eliminating sales of low-health snacks in public schools. Without a novel approach, the public school policy costs the district 1.2 million dollars a year which decreases the budget for student extra curricular activities like sports and booster clubs[5]. Since the policy implementation, child obesity has not significantly lessened in the Achorage public school district. The public school mandate will be reviewed next year (Spring, 2012) and the superintendent anticipates that results from my study may inform future policies. Through my research, I hope to show that commercial food industries and governments can collaborate to educate a healthier consumer who cares about the environment. My goal is to show that public institutions can achieve more by actively promoting items that are healthy and give satisfaction rather than focusing on preventing sale of low quality products (Poole, Marti'nez, & Gimenez, 2007). We need similar studies focusing on educational impact of labeling among younger age groups in public schools, as increasing obesity in that population has become a specific concern. Though this study targets a specific group - college studends -, it can esily be applied in different settings with other populations. Additionally, this study combines an interest in individual health parameters with environmental practices of companies. Some individuals may be motivated to change their consumption because of individualistic health concerns while others may change their behavior because it will affect the environment and community in general. Hence implications of my research are manifold and can facilitate new ideas for public policy. A future study separating the effects of health concerns from environmental ones can be very illuminating which I hope to be able to pursue after this project is completed.

[5] Carol Comeau, personal interview, November 17, 2011, Anchorage Public School administrative office, Anchorage, AK.

Project Budget

ITEM	AMOUNT NEEDED
Label Creation and Printing	$350
Association of the Study of Food and Society Conference and Presentation:	
• Airline Ticket	$675
• Food, Lodging, Bus/Taxi Transportation	$650
• ASFS Conference & Symposium Presentation Materials	$225
• Conference Fees	$100
Total:	$2000

Budget Justification

Eco-labels will be printed and laminated as high quality. The high quality appearance of the labels is important so that they appear very professional and visually appealing for the consumer. Upon completion of this study, I plan to submit the paper to present at the annual conference of *The Association for the Study of Food and Society* conference held June 20-24 in New York. Airfare, lodging, food, presentation materials (including a poster to be used at Undergraduate Research and Discovery Symposium) and registration fees are estimated to be around $1650.00, which covers the costs of attending. I also plan to apply to the undergraduate award of the American Sociological Association. My research findings are timely and unique. The subject is relevant to social health issues, environmental issues, and my field of study. The ASFS conference fits my topical research interests perfectly. The conference accepts undergraduate submissions and encourages opportunities for scholars, students, activists, farmers, practitioners, and citizens to share and learn about innovative solutions and alternative methods for environmentally sound and culturally healthy food systems and establishes public dialogue between academia, local communities, and larger discourse within national and global levels. Attendance at the conference will provide educational opportunities for enhancing my knowledge and help facilitate new ideas for my next research project.

Project Timeline:

Fall 2011	Literature review and proposal drafting
December 6 2011	Finalized proposal submission
Mid-December 2011-January 14 2012	Label creation and product selection
January 10, 2012	Submit proposal paper with extended lit review to American Sociological Association's conference (undergraduate student research roundtable) in Denver, CO (August 17-20. 2012)
January 15-16 2012	Preparing the research vending machines with product and eco-labels
January 17-March 13 2012	Research Period and data collection
February 10, 2012	Submit proposal to the UAA/UAF Global Change Student Grant Competition. Project phase II.
Mid-March 2012	Analyze data and begin final report draft
Mid-April 2012 (dates TBA)	Presentation at the Undergraduate Research and Discovery Symposium
April 2012	Submit paper to *The Association for the Study of Food and Society conference*
May 15, 2012	Expenditure deadline
May 30, 2012	Final written report deadline
June 19 2012	Depart for the ASFS conference in New York, New York
June 20-24 2012	ASFS Conference attendance (and presentation)
June 24 2012	Return to Anchorage, Alaska

August 10-17, 2012	ASA, possible conference presentation. Target journal; Journal Food, Culture, & Society (http://food-culture.org/journal)
October 4, 2012	Draft research grant proposal expanding current project, to submit to OURS.

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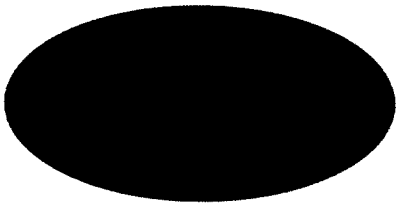
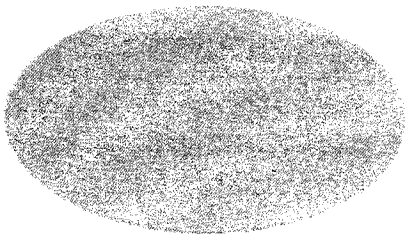
Appendix A

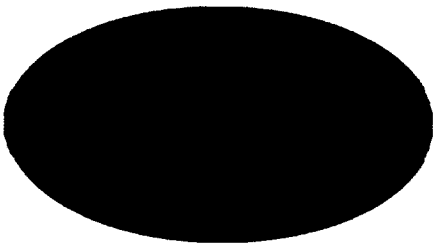
This is the basic outline of a green, yellow, and red eco-label.



- Health content: Good
- Environmental practices: Good



- Health content: Moderate
- Environmental practices: Moderate



- Health content: Low
- Environmental practices: Low

Appendix B

These are sample vending machine items and their *Good Guide** ratings. If the overall rating is 3.5 or below, it receives a red tag, between 3.6 and 6.5 a yellow tag, and 6.6 or higher a green tag.

Product	**Health Rating (0.0-10.0)**	**Environmental Rating (0.0-10.0)**	**Overall Rating (0.0-10.0)****	**Color Tag Assigned**
Snack Bars				
Clif Bar, chocolate chip	8.3	7.6	7.9	
Health Valley, Chocolate Chip Granola Bar	4.9	4.1	4.5	Yellow
Kind Almond & Coconut Bar	2.6	3.5	3.0	
Bagged Snacks				
Whole Earth, Socrispy Bites	9.6	8.0	8.8	
Lay's, Baked Potato Crisps	5.4	6.4	5.9	Yellow
Tim's Cascade, Sea Salt & Vinegar Chips	1.9	3.2	2.6	
Cookies & Crackers				
Luna Cookie, Chocolate Mint	8.9	7.6	8.3	
Health Valley, Cookie Cremes	4.9	4.1	4.4	Yellow
Voortman, Vanilla Wafers	1.9	3.2	2.6	
Candy				
Endangered Species, Dark Chocolate	4.9	8.8	6.8	
Hershey's, Milk Chocolate	1.8	6.0	3.9	Yellow
Nestle, Junior Mints	2.1	3.3	2.7	

** GoodGuide is in business to provide authoritative information about the health, environmental and social performance of products and companies. http://www.goodguide.com/about*

***This rating is an average of the health and environmental ratings.*