

An Eye Tracking Approach to Consumers' Preference to Private Label versus Public Label

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ABSTRACT

The evaluation of packaging branding is important to determine its ability to connect with consumers on an emotional level. In the past, focus groups were the traditional method used to evaluate branding; however, focus groups can be seen as an inaccurate method of gathering data due to purely qualitative data collection. This paper presents a simulated shopping study done in CUShop™, a consumer experience laboratory, to determine whether consumers prefer a public label product versus a private label product, using eye tracking to analyze the decision making process. Results indicate that consumers preferred the public brand cereal, spending more time looking at and visiting this product on the shelf next to its competitor.

Keywords:

Eye tracking, packaging science, design, retail environment, branding, private label, public label, CUShop™, Pack Expo

INTRODUCTION

Brands can provide instant information such as thoughts, values, and emotions to potential buyers via visual, verbal, and sensorial cues (Gobe, 2007). Consumers interpret a brand through its aesthetics and emotional associations, connecting the brand image with their expectations of the product (Klimchuck, Krasovek, 2006). Among products, there is a branding division between private and public labels. A private label product is defined as a product owned and branded by a company whose top business priority is distribution rather than manufacturing, as it is for a public brand (Richardson, et al 1994). In the past, private labels, also known as store brands, have been seen as being of lesser value than public brands due to their lack of shelf presence (Myers, Murray, 1999). They generally mimicked the design characteristics of the public brands within their particular category (Roncarelli, Ellicott, 2010). More recently, however, the design of store brand packaging has been evolving, thus altering consumer perception of private labels (Myers, Murray, 1999). Private label packaging is now being increasingly purchased not only due to its lower pricing, which have an average price of 21% below public brands, but also because of its enhanced shelf appeal (Hoch, Banerji, 1993). Private label brands accounted for over a fifth of the combined sales in the United States and are currently increasing at a faster rate than public brands (Sethuraman, 2001).

Prior to this study, none have tested consumers' preference to public label versus private label using eye tracking technology. Focus groups were the stock testing method, which rely on group communication as a means of collecting data without having any quantitative data to detract from. Eye tracking technology allows us to get that quantitative data that would otherwise be missing, while CUShop™ allows us to simulate an actual shopping experience that would otherwise not exist.

Brand choices can be dependent on many factors involving the consumer and the product environment. In a neutral environment, e.g a mock grocery store without any brand associations, a private brand product will have to rely on its packaging design to sell itself over a public brand product that is likely to be familiar to consumers. Consumers may spend more time observing the packaging of the private brand in order to inquire about the product with which they are more than likely unfamiliar. On the other hand, they may almost skip over it entirely in order to focus their attention on the brand with which they are familiar. We use eye tracking in this study to test this hypothesis.

BACKGROUND

The design of a brand is a creative process in which emotions, beliefs, and personality become outwardly expressed by a product (Gobe, 2007). Many consumers see the brand and the packaging design as a single entity (Klimchick, Krasovek, 2006). The brand's image and relationship with the consumer are established through the pairing of a three-dimensional structure with two-dimensional graphic communication components (Klimchick, Krasovek, 2006). Through this, the package can form an emotional connection with the consumer that urges them to pick up the product and commit to the purchase. If a brand is designed correctly, it can help the product surpass its competition and expand its consumer base (Gobe, 2007). A recent study out of the UK found that 73% of interviewed buyers stated that they depend on the package's design to help with purchase decisions (Wells, et al 2007).

Consumers have become more demanding in recent years, now insisting that the products they purchase fulfill all of their needs and desires (Wells, et al 2007). For example, products should not only be affordable, but also be perceived as having exceptional quality (Wells, et al 2007). Because

of this new shopper mentality, branding should be created with the consumer in mind, tailoring itself to the consumer culture of the current time (Gobe, 2007). Since private labels are exclusive to and owned by the retailers where they are sold, they have the potential to develop packaging that is even more customized to their shoppers than the public brands, who offer their products to a larger genre of consumers at multiple establishments nationwide (Wells, et al 2007). We test such private brands to see if the packaging alone can stand up to that of public brands in a neutral environment.

Public label packaging typically incorporates vivid colors and overly cluttered graphics in an attempt to grab the buyer's eye. Consequently, valuable information can get lost among the noise of the package, causing the consumer confusion and ruining the formation of any emotional connection. For private labels, it is common to take a different approach to package design, utilizing simple designs and incorporating white space. The use of white space works to enhance the modern feel of the design, thus increasing its perceived value, while also easily displaying important product information to the consumer. Another common approach is to mimic the design of the product's competition. In this study, the packaging designs are very similar to each other. This is used to test the assumed face value of the package and product based on its brand and does not take into account the modern approach to private label design.

Many of the large-scale retail establishments have begun designing private label packaging that encompasses the masstige packaging ideology (Roncarelli, Ellicott, 2010). Masstige packaging is a branding philosophy that places an emphasis on bringing opulence to the average consumer (Roncarelli, Ellicott, 2010). Masstige can simply be thought of as "luxé for less" or "beauty for a bargain" (Roncarelli, Ellicott, 2010). Two major American companies that have adopted the masstige ideology are Walmart and Target (Roncarelli, Ellicott, 2010). In 2009, Target rebranded their private label, creating the Up & Up collection (Target Pressroom, 2009). Target says that because they are devoted to helping their customers save money, while still providing them with quality merchandise, they have created the Up & Up products to the same degree of quality as rivaling national brands (Target Pressroom, 2009). The new brand has a unique look with fresh graphics and new packaging structures that provide consumers with products they can feel proud to buy (Target Pressroom, 2009). In this study, the masstige of private brand Southern Home cereal is tested. The absence of price will show if consumers still believe it is a "bargain" product.

Consumers are attracted to branding because they believe it assures expectations of quality and emotional satisfaction (Kumar, Steenkamp, 2007). The term "brand" is often asso-

ciated with manufacturer's brands, however, store brands are also brands (Kumar, Steenkamp, 2007). The prevalence of store brands has increased in correlation with the increase in size and sovereignty of big name retailers. (Kumar, Steenkamp, 2007). Today, store brands are found in over 95% of the various categories of consumer packaged goods (Kumar, Steenkamp, 2007). Private label shares are growing worldwide, for example, in Germany it has increased 22% in thirty years (Kumar, Steenkamp, 2007). In the U.S., private label sales are 20% of sales in supermarkets (Kumar, Steenkamp, 2007). Companies like Whole Foods and Trader Joe's focus mainly on their private label products, with 80% of their products consisting of private labels (Kumar, Steenkamp, 2007). It is predicted that within the next few years private labels will even penetrate into more exclusive product categories, such as organic food, cosmetics, and pharmaceuticals (Roncarelli, Ellicott, 2010). In this study, we have included other various private label products throughout the store for the purpose of realism. By adding other private label products, the theme and influence of private brands is maintained. Since participants will also be shopping for items other than cookie cereal, they will be exposed to the rest of CUshop™ as they are tested.

Unlike public brand packaging, private brand packaging design works to not only instill positive feelings towards the product, but also towards the entire store (Meyers, Murray, 1999). The package should leave an impression on the consumer that entices them not only to buy the product again, but to return to the store and buy the other private brand products available (Meyers, Murray, 1999). Appropriately priced private label products that also exceed quality expectations help to raise the entire perception of the stores in which they are sold, making private label programs a very powerful marketing tool (Meyers, Murray 1999). Therefore, the private label design must encompass the store's total image and succeed in making the consumer aware of the store's philosophy and beliefs (Meyers, Murray, 1999). For example, a store that markets electronics should produce packages that emit a high-tech feel, while a store that emphasizes a "green" ideology should use organic packaging with natural images (Meyers, Murray, 1999). In a neutral environment, i.e. CUshop™, a shop without an associated brand, we test to see if a private label packaging design can compete with the design of its public brand competition.

The evaluation of packaging branding is important to determine its ability to connect with the shopper on an emotional level. In the past, focus groups were the traditional method used to evaluate branding. (Gobe, 2007). But more recently focus groups have been seen as a less reliable method for gathering data (Gobe, 2007). It is very difficult to accumulate accurate information from participants in the focus group (Gobe, 2007). When asked to give their opinions and feelings towards a brand, many consumers do not know how

to properly express themselves (Gobe, 2007). Others choose not to disclose their true feelings, not wanting to offend the brand owners or choosing to agree with other participant opinions. As Nicolas Mirzayantz states, “consumers are not rational beings. There is an unconscious collective out there that is far beyond what we see in the marketplace. We barely understand the depth of the emotional vocabulary at our fingertips and people’s relationship with our natural environment” (Gobe, 2007).

The new chosen method of data collection is eye tracking research (Myers, Murray, 1999). Video-based combined pupil/corneal reflection eye trackers use the corneal reflection method and a camera to record the eye movements as the consumer views the package (Myers, Murray, 1999). This method allows us to evaluate how the consumers are viewing the package and make appropriate redesigns after analyzing the data (Myers, Murray, 1999). Fixation count, time to first fixation, fixation duration, gaze point count, saccadic crossovers, and scanpath comparison are all measurements that can be extracted from eye tracking information for researchers to use.

METHOD

Context:

This experiment was conducted in CUShop™, Clemson University’s Consumer Experience Lab that provides researchers and participants with an immersive, realistic shopping environment. The shop was set up with real store shelving and actual store products that allowed participants to be actively engaged in their shopping experience as they would in a real shopping trip.

Funded by PMMI, a non-profit company, ten Clemson students shipped the entire CUShop™ set-up from Clemson University to the Las Vegas Convention Center in Las Vegas, NV. Figure 1 shows the inside of the shop at Pack Expo. Pack Expo is a packaging exhibition that hosts and displays innovative products and packaging machinery from various companies around the world. The expo was a three-day event with hundreds of attendees.

Tobii, a company that specializes in eye tracking technology, provided eye tracking hardware and software. This included two pairs of eye tracking glasses, 100 infrared markers, and the Studio software.

One large eye tracking study was conducted that was actually composed of seven individual studies. This was due to the large amount of anticipated participants and restrictions on time, space, and equipment. After data was collected from each participant it was input and organized in the software for later analysis. This paper will contain the analysis for the branding study.



Figure 1. CUShop at Pack Expo 2011 in Las Vegas.



Figure 2. Stimuli: Cookie Krisp and Kookies Cereal

Participants:

There were a total of 139 participants, 82 of which had to be removed from this study based on filtering. Any participant that did not fixate on both of the cereal stimuli was removed. All of the participants of the study were attendees of Pack Expo 2011, male and female, ranging in age from 21-50 years old. There was no incentive to participate in the study; however, participants were offered a one-page “results” print out that had an aggregate heat map and images and descriptions of their individual scan path and bar graph after going through the study.

Stimuli:

Two boxes of cookie cereal were used as the stimuli for this study. One box was private label “Southern Home Kookies” while the other was public label “General Mills Cookie Krisp,” shown in Figure 2. These boxes were placed next to each other on the shelf among other cereal boxes. The prices for each cereal were the same. Inside the shop, the cereal was located on the second aisle amongst pop tarts and other breakfast related items such as grits, oatmeal and granola.

Cereal was chosen for this study based on its shape, size, and familiarity with consumers. The cereal box size and shape provides a large surface area for participants to observe, while also providing an optimal area of analysis from which eye tracking information can be easily gathered. Additionally, cereal is a common shopping product that people are familiar with.

Cookie cereal was specifically chosen so that it would be easy to find amid the other type of cereals on the shelf.

The particular brands were chosen based on their familiarity with consumers. Cookie Crisp is a popular public label that can be found in any grocery store, while Kookies is a private label that can only be found in Bi-Lo grocery stores located in South Carolina, North Carolina, Georgia, and Tennessee.

Materials and Apparatus:

Eye movements were gathered using two pairs of Tobii Glasses, shown in figure 3. The Glasses are an eye tracking device worn like a pair of reading glasses. They are monocular (using the right eye only), sampling at a rate of 30 Hz with a 56° x 40° recording visual angle and a reported accuracy of 0.5°. Participants in this study were able to use the Glasses in a free-moving, mobile manner.

Other hardware used in conjunction with the Tobii Glasses are the Recording Assistant and infrared (IR) markers (also shown in figure 3). The Recording Assistant is a 12 x 8 x 3 cm device attached to the Glasses that stores the data on a mini-SD memory card. The IR markers are used to determine an Area of Analysis (AOA) which is further used to determine Areas of Interest (AOIs) in the associated software. The AOIs are used for data aggregation and analysis.

The associated Tobii Studio software was used with the hardware to input and analyze data after each participant completed the study. The glasses and software allow data to be collected through video and gaze plots, heat maps, and charts.

Experimental Design:

This study is a single factor design, using one box of Cookie Crisp versus one box of Kookies cereal.

The cereal boxes will take up two spaces, the width of the two boxes, on three, 48 inch wide retail shelves amongst many other cereal boxes. The shelves were 78 inches tall and 16 inches deep. Figure 4 shows the cereal box setup. Participants' task was to select a cookie cereal.

Randomized shopping lists were given to each participant with a list of items they were to shop for and a blank box in which they were to record the associated number of their selection. The shopping list is shown in Figure 5.



Figure 3. Tobii Glasses with the Recording Assistant and IR markers



Figure 4. Stimuli: Cereal aisle

grocery list		grocery list		grocery list	
fill in the box with your purchase number		fill in the box with your purchase number		fill in the box with your purchase number	
purchase number	1 \$6.42	purchase number	1 \$6.42	purchase number	1 \$6.42
strawberry pop tarts	<input type="checkbox"/>	grilling tongs	<input type="checkbox"/>	original scent	<input type="checkbox"/>
grilling fork	<input type="checkbox"/>	paper plates	<input type="checkbox"/>	liquid laundry detergent	<input type="checkbox"/>
original scent	<input type="checkbox"/>	s'mores flavored	<input type="checkbox"/>	cookie cereal	<input type="checkbox"/>
liquid laundry detergent	<input type="checkbox"/>	pop tarts	<input type="checkbox"/>	pasta sauce	<input type="checkbox"/>
2 liter soda	<input type="checkbox"/>	cookie cereal	<input type="checkbox"/>	olive oil	<input type="checkbox"/>
cookie cereal	<input type="checkbox"/>	original scent	<input type="checkbox"/>	blueberry pop tarts	<input type="checkbox"/>
olive oil	<input type="checkbox"/>	liquid laundry detergent	<input type="checkbox"/>	coffee	<input type="checkbox"/>
coffee	<input type="checkbox"/>	coffee	<input type="checkbox"/>	grilling spatula	<input type="checkbox"/>
	<input type="checkbox"/>	olive oil	<input type="checkbox"/>		<input type="checkbox"/>

Figure 5. Shopping List

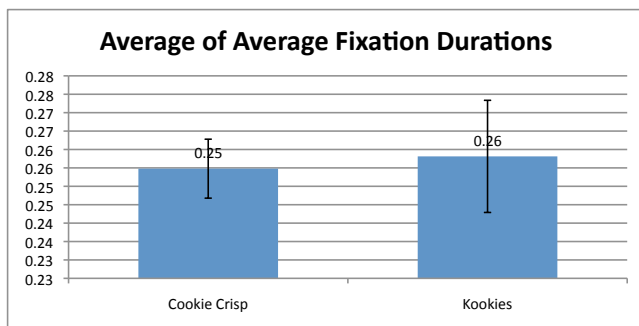


Figure 6. Average of average fixation durations, shown with standard error bars.

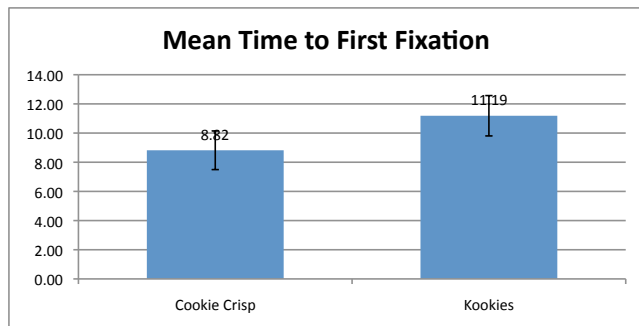


Figure 7. Time to first fixation, shown with standard error bars.

Procedure:

Participants that volunteered to be a part of an eye tracking study were lead through a three-step process of calibration, shopping, and survey.

Calibration of the Tobii Glasses was achieved when the researcher successfully guided the participant through the standard calibration process provided by the Glasses.

The shopping portion of the study involved the calibrated participant entering the store with the provided shopping list after being told “to shop as you normally would shop, selecting one of the items on the shopping list. Select each item by placing the purchasing number in the blank square.”

After participants finished their shopping, they were asked to complete a ten-question survey that included demographics and questions about the CUShop™ experience.

RESULTS

Based on the selections made on the shopping list, Cookie Crisp was shown to be the preferred cereal, being chosen 93 times. The Kookies cereal was chosen a total of 23 times, while other non-cookie cereals were also chosen 23 times.

The following eye tracking data was collected for this study: total fixation duration, average fixation duration, time to first fixation, fixation count, and visit count (saccadic cross-overs). A total of 82 participants had to be removed from the results data because they did not have fixations on both of the cereal stimuli.

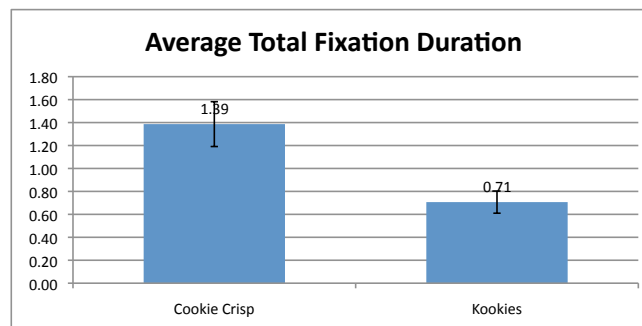


Figure 8. Total fixation duration, shown with standard error bars.

Student’s t-tests for the time to first fixation metric revealed no significance ($p = 0.22$, n.s.) between cookie crisp and kookies, no significance for average of average fixation duration ($p = 0.85$, n.s.), significance for average of total fixation duration favoring cookie crisp ($p < 0.01$), significance for number of fixations favoring cookie crisp ($p < 0.01$), and significance for number of repeat visits favoring cookie crisp ($p < 0.01$). Here are the means:

mean_ttf	Cookie Crisp	8.82
	Kookies	11.19
mean_avgdur	Cookie Crisp	0.25
	Kookies	0.26
mean_tdur	Cookie Crisp	1.39
	Kookies	0.71
mean_fixcount	Cookie Crisp	5.08
	Kookies	2.66
mean_vc	Cookie Crisp	3.46
	Kookies	2.23

No significant difference was found for average fixation duration between the cereals. Figure 6 shows the average of average fixation durations, the average over all participants of their average fixation duration. This information shows that individuals, on average, looked at both Cookie Crisp and Kookies for the same amount of time per fixation.

There was no significant difference found for the time to first fixation between the cereals, as shown in figure 7. The lack of difference in time to first fixation shows that neither package was an initial attention grabber.

There was a significant difference ($p < 0.05$) in the total fixation duration between the cereals. Figure 8 displays the average of overall participants for their total fixation duration. The chart shows that participants overall looked at Cookie Crisp longer than they did Kookies.

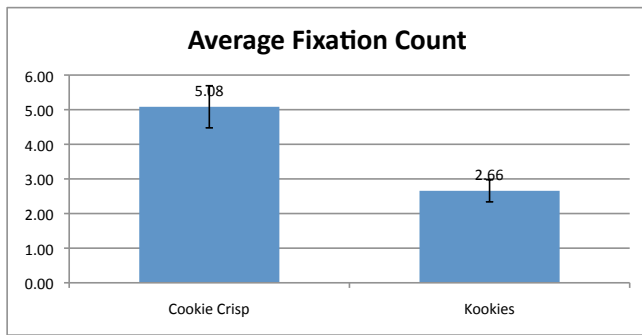


Figure 9. Average fixation count, shown with standard error bars.

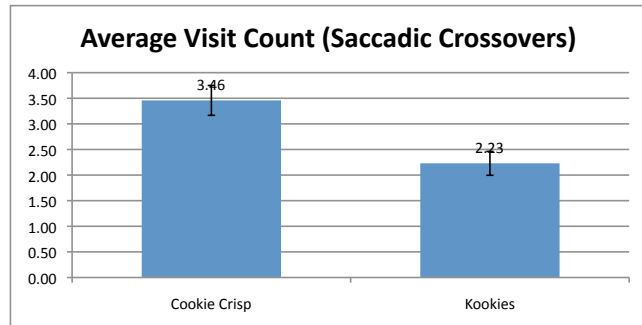


Figure 10. Average visit count, shown with standard error bars.

A significant difference ($p < 0.05$) was found in the total number of fixations between the cereals, with participants looking at Cookie Crisp more often than Kookies. This is shown in figure 9.

There was a significant difference ($p < 0.05$) in the average visit count (saccadic crossovers) between the cereals, shown in figure 10. Cookie Crisp had a higher visit count, meaning participants left and then looked back at the package more often than that of Kookies.

Figure 11 exhibits a heatmap of the cereal section. The red areas signify the most views, followed by yellow, then green.

CONCLUSION

Despite Southern Home's attempt at shelf appeal with Kookies, public brand Cookie Crisp appeared to be the preferred choice in this study. This appears to support previous research and statistics stating that public labels have a lesser shelf appeal than private labels.

Both products having the same time to first fixation could show that neither product had an initial advantage over the other. The high visit count for this product could be symbolic of participants noticing the familiar product, unsuccessfully scanning for another better product, and tracing back to settle with the initial sighted product.

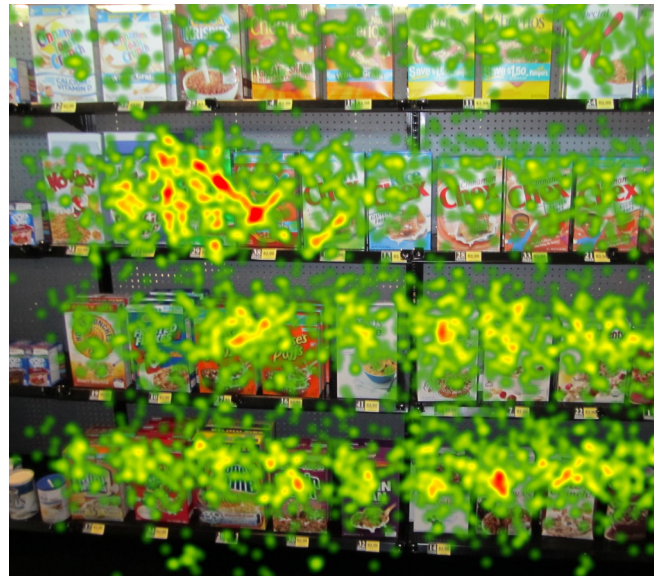


Figure 11. Heat map. Red areas signify the most views.

Not only was Cookie Crisp chosen the most, participants also spent significantly more time looking at it. One reason for this could be that they were distracted by all of the other familiar products on the shelf, even those that were not on their shopping list, as shown in the heatmap in figure 11. This is a realistic result in the sense that this is what would occur in an actual grocery store setting, which is what this study wished to accomplish. Another reason for this could be the fact that price was negligible in this study. This may contradict the goal of a realistic shopping environment where prices are usually a major factor in consumer purchase decisions. However, for the purposes of this study the primary objective of evaluating packaging design's affect on purchase decision was viewed as more important than accurate pricing. Further studies could test the influence of price on a similar situation.

It is possible that a private brand's success can be attributed to the store and region where it is sold. Prior research findings reveal how private brands can attune their brand identity to appeal specifically to smaller audiences. A private brand identity of this nature may possess a higher purchasing power when sold in its own stores because of its ability to relate to the beliefs and priorities of its customers. This study can serve as a stepping stone for the discovery of private brand packaging success. Further studies could be conducted to examine the appeal of private brands when they are dependent on location or target audience and could be repeated with various packaging designs.

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