

Tue 5.1 Shoppers' Attention to Packaging and In-Store Media

Siv Lindberg¹, Annika Lindström¹, Caroline Cederström¹, Anders From² & Christina Westerlind²

¹Innventia AB

Box 5604, SE-114 86, Stockholm, Sweden

²SCA R&D Centre

Sidsjövägen 2, SE-8521 SUNDSVALL, Sweden

Abstract

A study of shoppers in grocery store has been performed in relation to shoppers' attention to packaging and in-store media. An eye-tracking study and interviews of 110 female shoppers at a large Swedish grocery chain, was performed in order to study the relationship between fixation data and purchase. Participants were recruited at the store entrance and were instructed to shop one item from each of the categories detergents, kitchen towels and juice. Their eye-movements were registered during the shopping trip. After completion, a questionnaire was administrated in order to assess several aspects of consumers' choice tactics.

The time slot in which the package design can capture the attention of the shopper is very short. The average fixation length per person and product was 0.60 sec/person for detergents (68 products), kitchen towels 1.01 sec/person (32 products) and 0.60 sec/person for juice (98 products). This measure however, does not consider the number of facings for each product. Most of the time in front of the shelf is spent looking at the actual packages, 84 % for juice and detergents and 87 % for kitchen towels. Only approximately 15 % of the time is spent on price tags and shelf barkers.

The number of products actually examined varied from 2 to 30 with an average of 13 products. In all three categories, 94-97 % of the products were noticed by at least one person. Eye-tracking metrics have validity as a proxy to purchase. Mean fixation length on products was found to be significantly higher for chosen product in all three product categories. Affective reasons such as liking and appeal of the product was found to be significantly more important in the juice category than for kitchen towels whereas the importance of price in terms of being cheap is significantly lower in importance for juice than for kitchen towels

Introduction

A modern supermarket is a battlefield of sensory competition for the consumer's attention. Visual signage in form of free-standing advertisements, digital screens, placards, and packaging; olfactory signals in form of scents; and auditory signals in form of announcements, interactive digital displays and music, are all part of the information clutter in retail environment. It is increasingly difficult to break through the supermarket clutter and to gain consumers attention. Sorenson (2008) describes the supermarket as a

“360 degree sensory environment” with a “barrage of visual media from signage, packaging and display advertisement”. When people encounter choice overload, they use a choice-making heuristic that leads them to feel less committed to exercising their preferences (Lyengar & Lepper, 2000). Also, when both the number of options and the information about options increase, people tend to consider fewer choices and also to process a smaller fraction of the overall information available (Hauser & Wernerfelt, 1990).

The purchase decision is often made at the point of purchase (POP) i.e. when the shopper is standing in front of the supermarket shelves, According to The Point of Purchase Advertising International (POPAI), the rate for 2011 stands at 76% (55% Unplanned; 6% Substitutes; and 15% Generally Planned). Because of the enormous amount of visual stimuli present in the super market environment, assessment on what is in the shopper’s field of vision and what is attended to is a logic step to understand behaviour and how purchase decisions are made

A general assumption is that the shoppers’ attention is an indicator of shoppers purchase decisions. In the laboratory, eye-tracking data have shown that eye-movements to brands displayed on a supermarket shelf are valid measures of visual attention and are generally correlated with brand consideration (Pieters and Warlop 1999; Russo and Leclerc 1994). Chandon et.al (2009), studied the effect of in-store factors (number of facings and positions) on evaluation and choice and found these to influence attention and evaluation in accordance with earlier research, they demonstrate the low levels of in-store price information processing in supermarket purchases. However, in laboratory settings, static observers are normally viewing passively static or projected shelves and report their purchase intentions. These settings provide good control over variables but results yet remain to be validated in real shopping environments.

The introduction of portable eye-tracking devices provide opportunities to combining eye-tracking and purchase data at the actual point of purchase (c.f. Clement 2007; Clement et. al 2013; Gidlöf et. al. 2013). Real shopping environments, however, present another range of difficulties to overcome. The real world is not stationary. In a busy supermarket products may be moved around on the shelves during the course of the study. Furthermore, when the shopper equipped with the eye-tracker approaches the shelf, the analyst needs to decide at what time the shopper has actually arrived at the shelf. Likewise the analyst needs to decide at what point in time the choice is made and where to stop the analysis.

Chandon et al (2009) found that out-of-store factors such as past brand usage and market share had high impact on consumers’ attention to and evaluation of brands displayed on supermarket shelves. Hoyer (1984) showed that consumers tend to apply simplified choice tactics when buying products that are purchased repeatedly (i.e. detergents). These choice tactics were categorized into price tactics, affect (I like it), normative tactics (related like it) and performance tactics.

The purpose of this study is to investigate whether purchase can be predicted from shoppers’ attention to packages on supermarket shelves, i.e. number of fixations and gaze time. Furthermore to examine importance of out-of-store factors, e.g., past brand usage, price tactics, affective (I like it) tactics, normative tactics (related like it) on different product categories.

Method

An eye-tracking study at ICA Kvantum Sollentuna included 110 female participants during two weeks, Monday to Friday. Age range was 18 to 74; the average age was 44.5 years. Participants were recruited at the entrance to the supermarket and a 100 SEK voucher was given as reimbursement. Participants were asked to choose one product from each of three categories (kitchen towels, detergent, and juice) as they would normally do during their shopping trip. The categories are depicted in Figures 1-3.

The participants were equipped with a mobile eye-tracker and their eye movements were recorded during the selection process at the shelves.

Upon checkout each observers were asked to answer a short questionnaire about their product choices. First they were asked in an open ended question why they selected the specific products. Secondly they were presented with a set of questions measuring their choice tactics, adopted from Hoyer (1984). Specifically they were asked to state the importance of *price related* factors (cheap, card offer etc.), *affective factors* (I like, appealing), *normative factors* (friends like, family like) and *habit* (bought before, try something new). Finally they were asked how long they bought the specific brand.

Eye-tracking data was obtained from 61-69 participants, depending on category. Loss of data was mainly attributed to failure of the recording unit for one of the eye-tracking equipment’s, and calibration

problems. Video segments where participants purchased products from a selected category were analysed. The sequences of each participant was analysed frame by frame, coded and entered into an excel sheet. The duration and number of time a participant looked at a specific product was registered. A fixation was registered if a participant's gaze stayed on the product for 4 frames, i.e. 130 ms. The fixation length is the sum of fixations within a product before moving to the next product.



Figure 1. Household tissue, kitchen towel and bathroom tissue. 32 products distributed over 5 brands.



Figure 2. Detergents. 68 products distributed over 8 brands.



Figure 3. Juice, 98 products distributed over 9 brands.



Figure 4. Participant equipped with ASL Mobile Eye eye tracker

Results and discussion

Effective time spent looking at product options varied between product categories; the juice products (98 products) received on average 6.5 sec viewing time (average of all fixations for all participants), detergents (68 products) 7.9 sec and kitchen towels (32 products) 22 sec. The average fixation length per person was 0.60 sec for detergents and juice, and 1.01 sec. for kitchen towels. This measure does not consider the number of facings for each product. Most of the time in front of the shelf is spent looking at the actual packages, 84 % for juice and detergents and 87 % for kitchen towels. Only approximately 15 % of the time is spent on price tags and shelf barkers. This is in accordance with earlier results that report low level attention to price tags (c.f. Chandon et. al. 2009).

The number of packages actually examined by each shopper varied from 2 to 30 with an average of 6 products for Kitchen towels (18 %), 12 products for detergents (17 %) and 15 products for juice (15 %). During the entire shopping trip, 36 % of the shoppers fixated at least one time on any of the in-store TVs or digital displays; the display at the entrance received most attention.

Eye-tracking metrics and choice

In the present analysis, the number of fixations for each product was aggregated up to the time but not including the first physical contact with the chosen product, i.e. all fixations before the purchased product is actually touched, were included. A one-way analysis of variance (ANOVA) was performed with purchased and non-purchased as the categorical predictor. Dependent variables were: average number of fixations for purchased and non-purchased products (*nr of fixations*), average fixation length on purchased and non-purchased products (*fixation length*), average number of people who noticed purchased and non-purchased products (*seen by number of persons*), the average length of fixation that purchased and non-purchased products received (*mean fixation length on products*), and how long fixation time each person spent on average on purchased vs. non-purchased products (*mean fixation length per person*).

Table 1. Descriptive statistics (mean/standard deviation) for significant predictors for products choice. Only significant predictors are shown.

	non-purchased products	purchased products
Detergent (α 0,05)		
nr of products	39	27
nr of fixations	12,51/14,20	23,19/17,51
fixation length	5,60/7,92	11,28/10,11
seen by number of persons	7,79/6,95	14,22/8,63
mean fixation length on products	0,34/0,16	0,45/0,14
Juice (α 0,05)		
N	63	28
nr of fixations	9,25/8,82	29,11/16,43
fixation length	3,38/3,74	13,82/7,64
seen by number of persons	6,43/5,52	15,29/8,21
mean fixation length on product	0,33/0,15	0,45/0,15
mean fixation length per person	0,51/0,36	0,83/0,35
Kitchen towels (α 0,05)		
N	16	15
mean fixation length on product	0,77/0,36	1,25/0,44
mean fixation length per person	0,42/0,11	0,58/0,12

Mean fixation length on products was found to be significantly higher for purchased product (α 0.05) in all three product categories. For the juice category all metrics, i.e. number of fixations, fixation length, seen by number of persons, mean fixation length on product and mean fixation length per persons, were significant for product purchase. For the detergent category, all metrics except mean fixation length per person were significant. Descriptive statistics for the significant metrics are given in Table 1. Thus, in the juice and detergent category, purchased products received on average a larger number of fixations, were fixated for a longer time, and seen by a larger number of shoppers than non-purchased products. This is true even when the last fixations attributed to the actual choice, i.e. physical contact with the chosen products, are excluded from the analysis. Also for the kitchen towel category, purchased products received on average longer fixations and the average fixation length for each person was also longer. However, this category being rather small, only 31 products might have allowed for a higher visual penetration and thus differences between purchased and non-purchased products are less pronounced with respect to eye-tracking metrics. Only two metrics, mean fixation length on products and mean fixation length per person are significantly different for purchased and non-purchased products in this category.

Questionnaire and choice tactics

In their free responses to the open-ended question regarding reasons for their choice, the most reported reasons related to price, quality and habit. Price was mentioned most frequently for the kitchen towel products, 39 %, but only in 6 % of the cases for the juice products. For juice products, quality (74 %) and habit (75 %) were mentioned most frequently. Habit was also frequently mentioned for detergent (78 %). On average the chosen brand have been bought for 4 years (kitchen towels), 7 years (detergent) and 5 years (Juice)

Table 2. Open ended question on reason for choosing a specific product.

	Kitchen towels	Detergents	Juice
Price	39 %	21 %	6 %
Quality	18 %	33 %	74 %
Habit	16 %	78 %	75 %

The closed questions consisted of a listing of statements with 3 response categories assessing the level of importance of each statement for purchase of the specific product. Results were subjected to a one-way ANOVA with product category as the categorical predictor. Significant differences were found between product categories for price (cheap), like and appealing, Significance levels are given in Table 3.

Table 3. ANOVA table for survey data where type of product, i.e. kitchen towels, detergent, and juice are the categorical predictors. Significant attributes are marked in red.

	MS	SS	df	MS	F	p
Price tactics						
cheap	2,791	71,293	125	0,570	4,894	0,009
card offer	0,053	53,894	125	0,431	0,123	0,884
offer	0,532	68,552	125	0,548	0,971	0,382
value for money	1,071	55,826	125	0,447	2,399	0,095
Affective tactics						
like	1,111	31,271	125	0,250	4,439	0,014
appealing	1,826	62,817	125	0,503	3,633	0,029
Habit						
bought before	0,735	57,209	125	0,458	1,607	0,205
try something new	0,182	45,136	125	0,361	0,504	0,605
Normative tactics						
related likes	1,403	77,412	125	0,619	2,266	0,108
related bought	0,648	87,923	125	0,703	0,921	0,401

In particular there is a significant difference between the kitchen towel and juice categories when it comes to liking and appeal of the product. The importance of affective tactics is significantly higher for juice than kitchen towels. The importance of price tactics (cheap) is significantly less for juice than for kitchen towels. These differences are further depicted in Figures 5 and 6. Detergent is closer to juice than to kitchen towels on both affective and price tactics variables, although differences to kitchen towels are not significant.

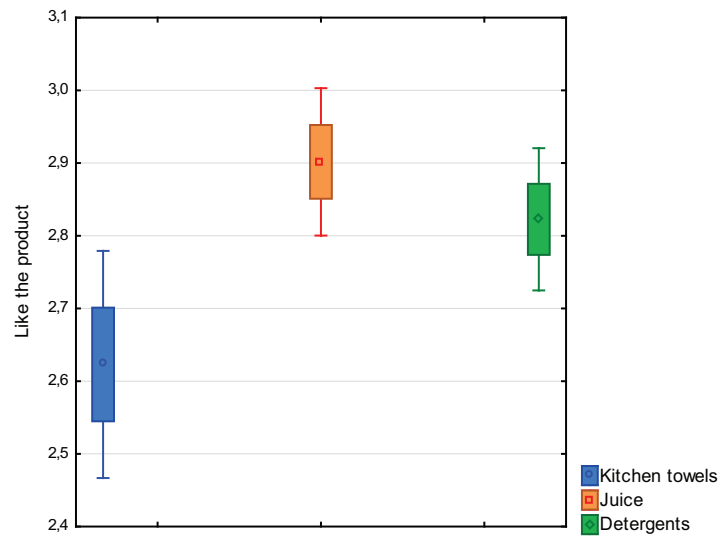


Figure 5. Mean and 95 % confidence intervals for importance of affect (liking of the product).

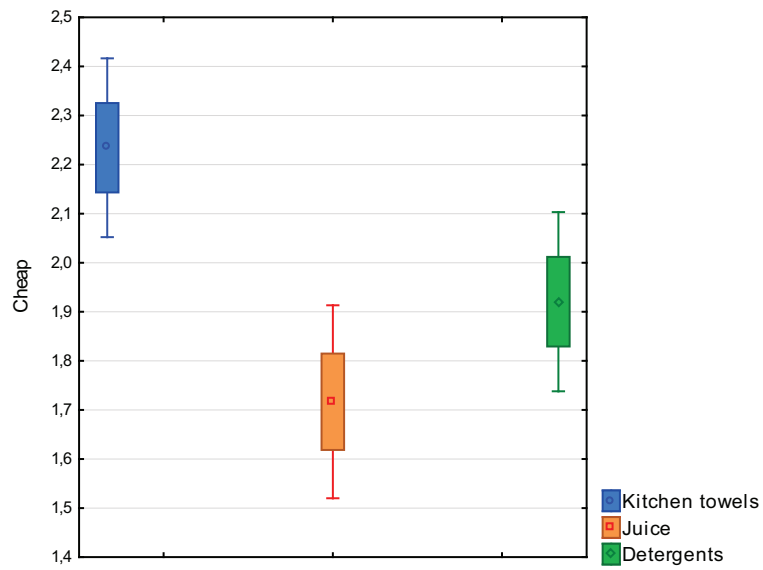


Figure 6. Mean and 95 % confidence intervals for importance of price (cheap).

Conclusions

- The average number of options actually examined by each shopper was 6 for kitchen towels (18 %), 12 for detergents (17 %) and for juice (15 %).
- Packaging is the most important in-store media. Only 15 % of the time was spent looking at price tag, displays and shelf barkers.
- Eye-tracking metrics have validity as a proxy to purchase. Mean fixation length on products was found to be significantly higher for chosen product in all three product categories. The proportion of participants that noticed a product, fixation length and mean fixation time on product are good predictors of actual choice in detergent and juice categories.
- Affective reasons such as liking and appeal of the product was found to be significantly more important for purchase in the juice category than for kitchen towels, whereas the importance of price tactics in terms of the product being cheap, is significantly less for juice than for kitchen towels.

References

1. Clement, J. (2007). Visual influence on in-store buying decisions: An eye-track experiment on the visual influence of packaging design. *Journal of marketing Management*, 23(9-10), 917-928.
2. Clement, J., Kristensen T & Gronhaug, K. (2013) Understanding consumers' in-store visual perception: The influence of package design features on visual attention. *Journal of Retailing and Consumer Services*, 20(2), 234-239.
3. Chandon, P., J.W. Wesely-Hutchinson, E.T. Bradlow, and S.H. Young. (2009) Does in-store marketing work? Effects of number and position of shelf facings on brand attention at the point of purchase. *Journal of Marketing*, 73, 1-17.
4. Gidlöf, K., Wallin, A., Dewhurst, R. & Holmqvist, K. (2013) Gaze behaviour during decision making in a natural environment. *Journal of Eye Movement Research* 6(1):3, 1-14.
5. Hauser, J. R., & Wernerfelt, B. (1990). An evaluation cost model of consideration sets. *Journal of Consumer Research*, 16, 393-408.
6. Lyengar, S.S., and Lepper, M.R. (2000). When choice is demotivating: Can one desire too much of a good thing? *Journal of Personality and Social Psychology*, 7(6), 995-1006.
7. Pieters, R., and L. Warlop. (1999). Visual attention during brand choice: The Impact of time pressure and task motivation. *International Journal of Research in Marketing* 16(1) 1-6.
8. Russo, J.E., & Leclerc, F. (1994). An eye-fixation analysis of choice processes for consumer nondurables *Journal of Consumer Research*. 21(2), 274-290.