Determining Impact of Brand-Celebrity Congruence on Print-Ad Effectiveness using Eye Tracking Technology

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Abstract

A brand ambassador is commonly used by various organizations while creating a brand image in the mind of the consumer, hence it becomes imperative to understand the implications of a celebrity endorser. This paper attempts to determine the impact of brand ambassador on the brand recall with a high as well as low product-celebrity congruence. The response of the consumers was recorded via an eye tracker, which essentially captured the physical aspects of the attention of the consumer when he looks at a digital print ad. The parameters used for this study are – Time to first fixation, Heat maps and gaze plots which helped us analyse which section of the ad, the viewer saw first and at which section did he spend the most time at. After conducting the eye-tracking experiment, the respondents were asked a few questions to understand the recall of the ads shown. This focused group response was combined with the eye-tracking results to determine the brand recall. The recall values of both the groups (one with high product-celebrity congruence and the other with low product-celebrity congruence) were run through statistical analysis (ANOVA) for determining if there exists a major difference in the recall between the two groups. It was found that the recall was more for advertisements where the product-celebrity congruence was higher.

I. INTRODUCTION

Celebrity endorsers have been used in advertisements for a long time, especially post arrival of contemporary media platforms. However, companies must choose the right celebrity in order to avoid pitfalls (Erdogan, 1999). A study conducted established the fact that neuroimaging data tells us the celebrities lead to long term positive effect on memory and purchase intentions of the endorsed product (Racula, 2012). What the paper seeks to find is whether this association can be enhanced by selecting a more relevant celebrity. Celebrity endorsements are generally used to drive sales and increase market share (Abdussalam, 2014). It was also found that announcing celebrity contracts also affected the stock prices of those companies which shows the kind of impact it has

on the public's mind (Agrawal, Kamakura, 1995; Ding et al., 2011). However, in another study it was that influencers have a stronger connect with the audience as compared to celebrities when it comes to building credibility (Schouten et all., 2019). This is probably due to the fact that the influencers are common people who may genuinely use the product hence their reviews and endorsements seem more genuine. Thus, the congruence is slightly more with influencers than celebrities. In this paper, we try to understand the effects of a brand ambassador who has a dominant association with the product and also if there is no association present between the product and the celebrity. This paper aims to understand the perception a viewer has on print ads with respect to the celebrity-product fitness. The response of the consumers will be captured via an eye tracker, which will capture

the physical aspects of the attention of the consumer when he looks at a digital print ad. After which, we will try to link brand recall with product-celebrity congruence.

II. 2. LITERATURE REVIEW

According to a study conducted by Microsoft in 2015, the attention span of a typical consumer has gone down to 8 seconds, (this is one second less than that of a goldfish). Thus, brands don't get much time to engage with the consumers and they have to find ways to create an impression on the mind of the consumer within that tiny window of opportunity. So, what is the first thing a consumer notices in a print ad? Which part of the print ad catches the consumer's eyes for the highest span? These are some questions which brand managers generally ask, when they are analysing the effects of a celebrity and also the ad design and layout.

2.1 Match-Up Theory

This is the most common theory; which brand managers and marketers consider before choosing a celebrity for their product or brand. According to the Match-Up theory, it's not necessarily effective to select an attractive model as a brand ambassador or endorser for all products. According to a study Attractive models or celebrities tend to work better for products that carry a sense of beauty along with it (Kamins, 1990). This model falls in line with social adaption theory of Kahle and Homer (Kahle, Homer, 1985). In simpler terms, the celebrity's image must fit with the product for the endorsement to be effective. For example, Maruti Suzuki roped in Ranveer Singh as the brand ambassador for its premium car 'Ciaz'. Ciaz was positioned as a high-end sedan with good looks, meant for a superior ride and experience. However, for its lower end models like Alto, which is a primarily a functional product, Maruti didn't tie up with any celebrity. Thus, Ranveer Singh, who has the image of a handsome young man, goes well with the positioning that Maruti was trying to create for the Ciaz, hence consumers could relate to it. However, when it comes to products which are purely functional in nature, say a computer – then the attractiveness of the celebrity is not very relevant. According to a study, expertise is a better match-up factor than physical attractiveness (Till, Busler, 2000). Consumers will probably believe a computer expert or a geek rather than a celebrity when it comes to choosing laptops. A study stated that when it comes to high technology-oriented products, expert endorsers have a stronger effect than celebrity endorsers (Biswas et all., 2006). Thus, using celebrities for such products won't be very effective.

Note: Nowadays, in some exceptional cases celebrities do endorse functional products, for instance, Disha Patni s the brand ambassador for Asus. This is because Asus is positioning its products as stylish and good looking, hence, an association with attractive celebrities.

2.2 The significance of credibility

Consumers are more confident about suggestions and endorsements when it is coming from a person who is an or a thought leader in that particular field (Hovland, Weiss, 1951). For example, it would be more appropriate if a muscular celebrity like Hritik Roshan is endorsing a fitness brand like CultFit or if a beautiful actress is endorsing a skin care products or cosmetics. Even if the celebrity brand value is high, still product fit would play a crucial role. For example, it would be very effective if superstar Amitabh Bachchan is endorsing Nike sportswear. Consumers need to find an association of the product with the celebrity in order to form a coherent brand image in their minds. In fact, one study went further to claim that endorsement effectiveness can be increased

2.3 Eye Tracking

Eye-tracking simply means where and for how long people watch online content or any advertisement. Eye-tracking data is presented on the screen at which subjects were looking during the experiment and various heat maps and gaze plots can be made on the image.

Eye-tracking can help you to understand the duration and sequence of where the person looked first, second and so on. You can establish what the user considers to be the foremost fascinating part of the screen and also the areas where the subject was looking at most of the time.

Eye-tracking means the observation and behaviour of eye movement and pupil dilation. It has found varied applications in multiple domains such as research in psychology and product and packaging

designing, but in terms of screen-based media, it is essentially utilised by the professionals to discover where participants are focussing.

Points of "**fixation**" are of major interest. This is the area at which the participant's eyeball stops moving, being static for long enough for him to understand what exactly he has seen. The transit of the eye of the participants among multiple fixation points is defined as a "**saccade**". Though, the velocity of this transit implied the subject isn't really processing what he sees, the path taken between the fixations is indicated by visualising the saccade.

A general way through which the focus of the subject's gaze is computed by comparing the place of near-infrared light that gets reflected by eye to place of pupil. This particular info can subsequently be seen in conjunction with the place of subject's head and further can undergo extrapolation to discover the point at which subject's focus was, and thus the related coordinates on the screen.

2.4 Using Eye Trackers for Market research

Eye trackers is an excellent tool to find out how consumers scan through print ads. It enables researchers to figure out the non-conscious behaviour of a customer that are driver by preferences and biases. According to a study it is a reliable method for scholars to link outcomes with cognitive processes (Lai et all., 2013).

It provides huge amounts of data which can be used to study consumer perceptions, ad effectiveness, design comprehensibility, visual appeal and many more. However, we will focus on three main metrics in this paper which is mentioned below:

1) **Heat Maps**: These maps basically tell us how much time a consumer spends on various sections of an image (in our case, a digital ad print). The more time a consumer has spent, the redder will be the colour of that section and vice versa.

2) **Gaze plots:** This plot gives a chronological representation of the places that the viewer's eyes have gone to. It tells us which section of the image the eyes looked at first and where did it go after that. Thus, we can come to know the first thing the viewer's eyes had caught. This is generally the most attractive section of the image.

3) **Time to First Fixation:** It reflects the duration for which the subject looks at a particular area from the onset of stimulus.

III. RESEARCH METHODOLOGY

To understand the impact of celebrity-product congruence on print-ad response, the first step was to define the key terms, viz. *impact, ad-response and celebrity-product congruence* and how they will be measured. Ad-response in the paper is defined in terms of the subject's attention span towards a print ad. The attention span is measured by the amount of time the subject's eyes are fixated on a particular area. Impact is measured as an increase or decrease in the fixation time, hence implying an increase or decrease in the attention to a print ad. Celebrity-product congruence is defined as an inherent relation between the positioning of the product and the impression of the celebrity's personality. For example, celebrities are considered to be fashionable, hence they are congruent with apparel and consumer care brand. Conversely, a good-looking celebrity will not share any relation with a consumer electronics or a travel service company.

3.1 Sampling

For this experiment, we used convenience sampling, a form of non-probabilistic sampling method, where people which can be easily contacted or reached are taken for sampling. Total 30 subjects including 13 males and 17 females were taken for the eye-tracking study. We had chosen the subjects who were studying at Symbiosis International University.

The age group was between 21 to 28 years. The eye-tracking results and interview results are based on data collected from these 30 subjects. All participants had normal, corrected to normal vision according to their report.

3.2 Data Collection

To measure the response, the fixation duration data was collected via an eye-tracking software. The software, via its sensors, measures the duration for which the subject's eyes are fixated on a particular.

The congruence between the celebrity and the product is pre-determined as per the positioning done by the brands and the celebrity's personality.

The brand recall is measured post the eye tracking experiment, where the subjects are asked to name the brands they were shown. The order in which they recite the brands are used for giving a brand recall score to each brand.

3.3 The Eye Tracking Experiment

For this experiment, the subjects were shown 7 print ads for 5 seconds each and the software captured the eye movements and fixations of the subjects. Each print ad image had pre-defined 'Areas of Interest' which told the software which fixations were important for the study. The images had four main areas of interest – the celebrity, the product, brand and the tagline. The study wanted to understand which area of interest gauged the subject's attention and how it varies for different celebrity-product congruency levels. The print ads used are shown in Table 1. The congruency or the fit of the product and celebrity was determined based on a study which defined "fit" as the logical acceptance of the dominant associations of the brand, which when activated do not contradict those of the celebrity's association, but

instead support various aspects of the celebrity's life (e.g., through usage, lifestyle, status, etc.) (Ang, Dubelaar. 2006).

Table. 1 Print ads and the congruence between product and celebrity

Brand	Celebrity	Congruence
Siyaram	Ranveer Singh	Yes
Make My Trip	Ranveer Singh	No
Set Wet	Ranveer Singh	Yes
Colgate Maxfresh	Ranveer Singh	Yes
Chings Noodles	Ranveer Singh	Yes
Vivo Phone	Ranveer Singh	No
Thumbs Up	Ranveer Singh	No

For the study, Ranveer Singh was fixed as the celebrity and the major advertisements featuring him as the brand ambassador were chosen. Format

of advertisement taken were static images of print ads. The same celebrity was used to remove any biases the subjects might have towards different celebrities.

From the eye-tracking test, heat maps and gaze plots were also generated to help us better understand the attention received by each print ad.

During the eye tracking study, we asked the participants to watch the images being shown on the screen one by one. They were given 5 seconds and then image changed. After all the 7 images being shown to the participants, they were asked few interview questions to understand the brand recall of the ads shown.

IV. QUANTITATIVE DATA ANALYSIS AND RESULTS

4.1 Eye Tracking Data

The Parameters understudy for each focus area were 'Time to First Fixation' and 'Total Fixation Duration'. The summary of the data collected are shown in the summary table below.

The time duration for each parameter is collected for all 30 respondents and a simple mean is calculated to understand the trends in the attention span received by the 'Product' and the 'Celebrity'.

It can be seen in Table 2, that in almost all cases the time to first fixation is lower for the celebrity as compared to the product. Thus, implying that the first thing that caught the subject's attention for all 7 images was the celebrity.

The average total fixation duration is higher for the product as compared to the celebrity when the Celebrity-Product Congruence is Present. On the other hand, the average total fixation duration is lower for the product as compared to the celebrity when the Celebrity-Product Congruence is absent.

After the primary data, we analysed the heat and gaze plot of the images to check if they were telling a different story.

Table. 2 Fixation Data from Eye Tracking

		Time to First Fixation		Total Fixation Duration	
	Brand	*Celebrity*	*Product*	*Celebrity*	*Product*
Celebrity-Product Congruence: Present	Ching's	0.53817	1.18241	0.80741	1.26345
	Colgate	0.722069	2.20519	1.07897	1.04630
	Set Wet	1.052069	0.70867	0.82034	2.00667
	Siyaram	0.2375862	1.69889	0.93517	0.69370
	Average	**0.6374735**	**1.44879**	**0.91047**	**1.25253**
Celebrity-Product Congruence: Absent	MMT	1.34296	0.79967	0.6162963	1.23167
	Thumbs up	0.31448	1.81550	1.8031034	0.51200
	Vivo	0.09897	1.77857	1.4968966	0.65259
	Average	**0.58547**	**1.46458**	**1.3054321**	**0.79875**

4.2 Heat Map interpretation

The heat maps of various advertisements posters were analysed comprehensively and all of them suggested that the visual focus of the subjects, captured through the eye ball movements in the form of attention span was primarily on the face of the brand ambassador, irrespective of the brands, type of offerings – product or service when the celebrity-product congruence was absent. Conversely the heat map showed maximum heat for the product when celebrity-product congruence was present.

4.3 Gaze Plot interpretation

The gaze plots of various advertisements posters suggest that the first gaze or the place at which eyeballs rested first among various things is the brand ambassador which was then followed closely by the product and finally the tagline got the share of the visual focus. This was uniform across all images and subjects regardless of the presence or absence of a celebrity-product congruence.

4.4 Brand Recall Score

The post eye tracking interview with the subjects was intended to calculate the brand recall score and check if there was any relation between the celebrity-product congruence and the recall propensity. The order of recall of all subjects were ranked on a scale. The scale used is an interval scale from 1 to 7 with 1 being a highest and 7 being the lowest score.

Firstly, all recall ranks for each brand and for each subject was listed and an ANOVA test was run for the 7 brands to check if there was any significance difference between the recall ranks for the 7 brands. The ANOVA statistics results obtained are shown in Table 3.

Table. 3 ANOVA Statistics for 7 Ads

ANOVA						
Source of Variation	SS	df	MS	F	P-value	F-critical
Between Groups	158.3448	6	26.3908	7.913343	**1.20E-07**	2.145071
Within Groups	653.6552	196	3.334975			

The P-value obtained for the experiment was lower than 0.05 hence we the null hypothesis can be rejected. Hence, we can claim that the brand recall is different for different brands.

For the next step, we categorised the 7 brands into two categories – one where celebrity-product congruence is present and one where it is absent. A simple average of the recall scores of each brand in the category was calculated. After this, another ANOVA test was run to check whether there was any significant difference between the brand recall scores of the advertisements where celebrity-product congruence was present and where it was absent. The ANOVA statistics results obtained are shown in Table 3.

Table. 4 ANOVA Statistics for Congruent Vs. Incongruent Ads

ANOVA					
Source of Variation	SS	df	MS	F	P-value
Between Groups	14.08633	1	14.08633	30.24951	9.74E-07
Within Groups	26.07759	56	0.465671		

The P-value obtained for the experiment was lower than 0.05 hence we the null hypothesis can be rejected. Thus, it can be concluded that the brand recall for advertisements where celebrity-product congruence was present is different than the brand recall for advertisements where celebrity-product congruence was absent.

V. DISCUSSION

According to this study, it was revealed that the subject's attention almost always went to the celebrity first. Which is probably because the brands that use celebrities want to make them the centres of attraction. Also, generally the first thing people notice is a familiar object, which in this case is a popular celebrity. Thus, using a celebrity might be helpful in attracting a person's first glance. However, that's not the only thing that will help create a lasting impression on a viewer's mind. A match between the celebrity and the product is has a stronger effect on the effect of endorsement instead of the nature of the products and the endorser (Mittelstaed et all., 2000).

The second aspect of the study was the total fixation duration. According to the eye tracking data, the subjects, on an average, saw the product for a longer duration when there was a congruence between the celebrity and the product. A study found that when athletes endorse a brand which is logically in line with his endeavours it leads to higher association and purchase intention (Carrillat et all., 2016). This is usually desired as advertisers want people to focus on the product and not just on the celebrity, even though they must be spending a fortune on the celebrity.

The last pillar was the brand recall score. Most subjects had a higher brand recall for ads where there was a congruence between the celebrity and the product. If this is connected to the previous finding, we know that the subjects saw the product for a longer duration, hence they had a higher recall for that product/brand. As indicated in a previous study, the recall is higher when the product and celebrity are matched based on the filtering model (Misra, Beatty, 1990)

VI. CONCLUSION

It can be concluded that using a celebrity is effective in getting the first glance of a viewer but it may or may not keep the viewer engaged, which is the primary intent of the advertisement. Marketers should also make sure to choose a celebrity who shares some kind of relation with the brand or the product. According to a study, high congruence between the product and the celebrity led to higher credibility and a favourable product attitude (Kamins, Gupta, 1994). This not only gives the product more credibility but also helps position the brand more accurately. Presence of congruence between the celebrity and the product leads to the viewer to look at the product for a longer duration. This will help in communicating the content of the advertisement more effectively. Thus, the impact of the ad-response will be much higher. This in turn

will also help in increasing the brand recall. Marketing managers, instead of spending fortunes on a popular celebrity without any connection with the product or the brand, may think of saving that money and using it elsewhere or use it wisely to find a stronger match for that product.

VII. LIMITATIONS OF THE STUDY

Although eye tracking is one of the best methods to know consumer behaviour towards brand perception, there are few limitations of the study. The match-up theory used is dependent on other variations such as the source credibility, product evaluations, etc. (Lynch, 1994). According to the meaning transfer model presented in a study, the study of the relation between celebrity and endorsement can be improved by bringing in a cultural perspective (McCracken, 1989). Our study doesn't include any cultural angle. The creativity of the print-ad may contribute to a higher brand recall rank for an advertisement. The subject's state of mind plays a major role and it determines where his attention goes. The participants might be already aware of the ad being shown to them which will result in a higher recall. The participants might get to know about the advertisements before the experiment is run from other fellow participants which might create a biased result. The recall values may be affected by the first or the last image that were shown to the subjects. As the first and the last images may create a deeper impact in the minds of the subjects.

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Annexure 1: Heat Map Images
Ching's Noodles

Colgate Max Fresh

Make My Trip

Set Wet

Siyaram

Thumb's Up

Vivo Phone