The Product Effect: A New Technique for Automotive Market Research

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Abstract

In competitive markets the appearance of a product is crucial to its success. In the automotive industry, where competition is fierce, market research is customarily conducted as part of new product development. The methods used are predominantly variants of the focus group and the survey-questionnaire. A common feature is their focus upon the product per se, and how people perceive and evaluate it. An alternative method, and the subject of the research described here, focuses upon the person associated with the product: in other words, the effect the product has upon how people perceive its owner. This method derives from environmental psychology. Termed the Room Effect, it explored the effect the setting had upon perceptions of the person. Until now this method has not been applied to products. The research described shows its use with both cars and motorcycles, and in application within Malaysia and Australia. The results indicate a distinct product effect, and one subject to both nationality and gender differences.

Keywords: Room effect, Automotive, Market research, Product

1. Introduction

Gaining insights into consumer perceptions of products is increasingly important, and normally falls within the remit of market research. Within the automotive industry a wide range of techniques have been adapted for application, some from the social sciences and most recently from neuroscience. Their application reflects the increasingly competitive segmentation of the global automotive market. It also reflects the speed of new product development and the shortening of product life-cycles. Segmentation is particularly problematic, whereby a product is designed for a specific demographic. The difficulty here is that the design may satisfy that particular demographic in one country, but not in another. Even something as apparently trivial as the naming of vehicles needs careful market research. For example, the Citrôen C4 is unlikely to sell in China because 4 is a homonym for sì, meaning death. The Alfa Romeo 144 will have double the problems. Similar associations need to be considered for colour. Even the sound of a vehicle name can have negative associations: thus, Proton Malaysia’s attempt to export the Waja (a version of the Proton) to English speaking countries was bound to experience problems, which it did. Styling is potentially even more problematic whereby the top and the bottom of the market may be understood, but
the vast topographic battleground of the middle segment may vary from country to country. In response to such complexities, a range of techniques have been adapted and applied in the automotive industry.

2. Existing Automotive Market Research

Several techniques have been incorporated to better understand consumer behavior. Automotive companies apply such methods such as activities, interests and opinion (AIO) studies, large-scale clinics (Parker, 1999), listening in (Urban & Hauser, 2004), empathic design (Leonard & Rayport, 1997), focus group (Morgan, 1996), consumer expression and experiences (Murphy, 1996), ethnographic (Bhattacharya & Sen, 2003) and motivation (Arvidsson, 2001).

Volvo, for instance, used a customer-oriented strategy during their design development stage. The development of the Sports Utility Vehicle (SUV) called the XC90 was the first Volvo step towards customer involvement. Within this, interviews were conducted with the potential customers to ascertain their views and attitudes. These were fed into the concept development phase of the project (Rojek, 2004). For Toyota, observation was one of the methods used in the development of the Lexus, whereby teams of technicians were sent from Japan to survey parking lots of up-market restaurants, garages and neighborhoods. They wanted to have cars that would fit in well in terms of design. They wanted to know how valets parked cars; where did the Benz go in relationship to the Cadillac Seville or the Tercel? (Dawson & Patrick, 2005). Besides observation, listening in is another method used by Toyota to identify new product opportunities. The Toyota Scion website was designed as a listening post for customer feedback and suggestion (Cina, 2002). The ethnography method used by Harley Davidson was found effective in increasing sales for this established motor cycle company (Schouten & McAlexander, 1995). Between 1991 and 2002, the U.S. heavyweight motorcycle market grew at a compound annual rate of about 15%. Within this market, Harley Davidson had a market share of 48% by 2002 (Frigo, 2004). Piaggio an Italian company that produces scooters under three brands, Vespa, Gilera and Piaggio, applied motivation research to discover new market niche and opportunities (Arvidsson, 2001). Using this technique, in-depth interviews were carried out in order to uncover previously hidden or allegedly repressed desires of the youth market (Arvidsson, 2001).

A common feature of the above methods is that they focus upon the vehicle *per se*. In so doing they overlook a key feature of products, namely the capacity of the product to confer its characteristics onto the owner. These characteristics can be overt or more subtle. In the overt category, ownership of, say, a
new Rolls Royce indicates obvious wealth, and this crosses national boundaries. In any country, such ownership confers wealth and status and, by implication, success on its owner. At the top end, signals of success are apparent in ownership of a Bentley, Lamborghini, Ferrari, and down to the second level of Mercedes and BMW. Similarly at the bottom end, ‘aspiring to success’ is indicated by ownership of vehicles from developing nations. It is the wide band of the middle level that is highly complex, with a large range of competitors that may move up and down in their status by virtue of advertising, design or even sponsorship of motor racing events. This is a shifting area in which the majority of Western consumers lie. As such it is highly sensitive to trends, style and technical innovation.

At a more complex level, the objects that we possess communicate aspects of personality, group membership, and aspirations. This was first articulated by Thorsten Veblen in his classic book, ‘The Theory of the Leisure Class’ (Veblen, 1899). It was Veblen who invented the term ‘conspicuous consumption’, and he described the role of possessions in the definition of our social identity. A later advocate was Goffman with his ‘The Presentation of Self in Everyday Life’ (Goffman, 1959). This again identified the role of objects in socially positioning people, epitomized by the role of the living-room as a stage in which people perform to guests. The theatrical props were, of course, the furniture and furnishings. Empirical evidence exists for this (Laumann & House, 1970) and theorists of the materials culture fraternity have since extended this. Its latest empirical manifestation is in what has been called the ‘Room Effect’.

3. Room Effect

The Room Effect derives from environmental psychology. The technique that established the Room Effect is very simple. A photograph of a person was incorporated into different photographs of rooms. Thus the person remained the same, but the room changed. Observers were asked to judge the person on a range of personality and social dimensions, interest being in the effect the different rooms had upon their judgments of the same person. In 1974, Canter, West and Wools (1974) found that the characteristics of the room were transferred to the person seen in the room (Canter, West, & Wools, 1974). Thus a warm room would equate with a warm occupant and a powerful room with a powerful occupant. Earlier, in 1956, Maslow and Mintz (1956) observed a similar Room Effect, whereby the characteristics of the room impacted upon judgements of people’s faces associated with the room (Maslow & Mintz, 1956). Thus faces in a ‘beautiful’ room were judged higher in ‘energy’ and ‘well-being’ than those in an ‘average’
room, which in turn were higher than those in the ‘ugly’ room (Wilson & Mackenzie, 2000). Campbell (1979) also found an association between the design of a professor’s room and the presumed characteristics of the professor who would be found there (Campbell, 1979).

To investigate the potential application of the Room Effect to products – what might be termed a Product Effect – a pilot survey was conducted using two sets of products, cars and motorcycles, and two sets of subjects, Malaysians and Australians. The intention behind the latter was to test for possible cultural differences in effects. The same technique was used as in the original room studies: images of males and females were digitally incorporated into settings involving different motor vehicles. Thus the person remained the same, but the vehicle changed.

4. Subjects

The survey involved a total of 148 participants from Malaysia and Australia. Since it is known that product judgment can be influenced by background factors such as age, education and socio-economic status, students were selected as being a relatively homogenous group (Wilson & Mackenzie, 2000). First year students of the School of Film and Television (Swinburne University of Technology, Melbourne, Australia) and the Faculty of Accounting (Universiti Teknologi MARA, Sungai Petani, Malaysia) participated. Their distribution in terms of age and gender is given in Table 1. The Australians were predominantly Caucasian and the Malaysians predominantly Malay.

Table 1: Background characteristics of participants

<table>
<thead>
<tr>
<th>Demographics</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Country</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Australia</td>
<td>68</td>
<td>46.0</td>
</tr>
<tr>
<td>Malaysia</td>
<td>80</td>
<td>54.0</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>57</td>
<td>38.6</td>
</tr>
<tr>
<td>Female</td>
<td>91</td>
<td>61.4</td>
</tr>
</tbody>
</table>

5. Stimuli

In order to test for possible effects, clearly different products were paired. These consisted of Mercedes Benz against Proton for cars and Vespa against Modenas for motorcycles. The rationale for this choice was that if product effects were not realized for such comparisons, then they were unlikely to manifest for
more similar products. Associated with each product – and therefore the recipient of the presumed Product Effect – were a Malaysian male and female and an Australian male and female. Considerable effort went into finding two pairs of Malaysians and Australians of comparable age and comparable looks. The rationale for this was that males and females of extremely good or bad looks were unlikely to be effected by a Product Effect, and therefore more neutral looks were the target. Furthermore, only the head and shoulders were shown, thereby limiting the amount of information available to those participating in the survey. As drivers of cars tend to be older than drivers of motorcycles, certainly in Malaysia, the figures for the former were older than those for the latter. Finally, each Malaysian and Australian was positioned similarly to the vehicle, and the vehicle was digitally modified to be as similar in size, orientation and colour as possible. The four compositions are given below:

a) A picture of an Australian and Malaysian man in the foreground with either a Mercedes Benz or a Proton car as background.
b) A picture of an Australian and Malaysian woman in the foreground with either a Mercedes Benz or a Proton car as background.
c) A picture of an Australian and Malaysian man in the foreground with either a Modenas or a Vespa motorcycle as background.
d) A picture of an Australian and Malaysian woman in the foreground with either a Modenas or a Vespa motorcycle as background.

Figure 1: 8 pictures stimuli of Proton and Mercedes Benz car
6. Questionnaire and Procedure

The questionnaire was designed to elicit the participants’ views of the Malaysians and Australian pictured alongside their vehicle and, in so doing, to assess the impact of the vehicle. Two sets of questions were employed. One focused upon essentially physical and demographic characteristics, as follows:

1. How tall do you think he/she is? (*In cm*)
2. How heavy do you think he/she is? (*In kg*)
3. How old do you think he/she is?
4. What level of education did he/she achieve?
5. What do you think his/her annual income will be? (for car)/What do you think his/her parent’s annual income will be? (for motorcycle)
The other focused upon personality characteristics. This employed eighteen scales derived from a standard five-factor model of personality traits covering Extraversion, Agreeableness, Conscientiousness, Neuroticism and Openness to Experience (McCrae & Oliver P., 1992) (Table 2).

Table 2: Types of personality adjectives used in the questionnaire based on the basic dimensions of the five-factor model of personality traits.

<table>
<thead>
<tr>
<th></th>
<th>Extroversion</th>
<th>Agreeableness</th>
<th>Conscientiousness</th>
<th>Neuroticism</th>
<th>Openness to Experience</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Masculine / Feminine</td>
<td>Friendly</td>
<td>Positive Attitude</td>
<td>Unstable</td>
<td>Creative</td>
</tr>
<tr>
<td>2.</td>
<td>Elegant</td>
<td>Trustworthy</td>
<td>Reliable</td>
<td>Anxious</td>
<td>Stylish</td>
</tr>
<tr>
<td>3.</td>
<td>Sporty</td>
<td>Generous</td>
<td>Efficient</td>
<td>Vulnerable</td>
<td>Open to New Ideas</td>
</tr>
<tr>
<td>4.</td>
<td>Attractive</td>
<td>Kind</td>
<td>Organized</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

A set of statements was devised corresponding to the above factors. The statements were randomized and administered to participants in either the first order or its reverse. This counterbalanced for possible order effects. The statements were as follows:

He/She looks like he/she has a positive attitude to life.
He/She is creative.
He/She looks friendly.
He/She looks unstable.
He/She looks masculine/feminine.
He/She looks trustworthy.
He/She looks anxious.
He/She is elegant.
He/She looks sporty.
He/She looks stylish.
He/She looks open to new ideas.
He/She is attractive.
He/She appears generous.
He/She looks reliable.
He/She looks efficient.
He/She looks organized.
He/She appears kind.
He/She looks vulnerable.

Each statement was accompanied by a nine-point Lickert scale to indicate the respondents’ level of agreement/disagreement (Quester, Karunaratna, & Goh, 2000). This uniformity has a number of statistical advantages, including permitting multidimensional scaling to be performed upon the data. Malaysian respondents received a Malay language version of the questionnaire while Australian respondents received an English language version.

7. Results

The purpose of this pilot research was to test whether the Room Effect would generalize to a Product Effect. In other words, would the product influence perceptions of the person associated with it. The results reveal some distinct product effects and also both gender and nationality differences in such effects. Initially, ANOVA was performed to determine where differences lay and then t-tests to isolate such differences. The results that follow are a sample of statistically significant differences for both the car and motorcycle.

7.1 Car

Question 4: What level of education did she achieve? (Malaysian/Australian female)

The results reveal a highly significant difference in the perceived ‘educational level’ of both females (p = .000), whereby both are perceived as more educated with the Mercedes Benz than with the Proton. This was consistent for both the Malaysian and Australian respondents (as are the results that follow).

![Figure 3: 4 pictures stimuli – Malaysian/Australian female with Proton and Mercedes Benz car](image-url)
Question 5: What do you think her annual income will be? (Malaysian/Australian female)
As might be expected, both the Malaysian and Australian female were judged as having a higher income when associated with the Mercedes Benz than with the Proton (p=.000).
Question 15: She looks stylish. (Malaysian/Australian female)
The results indicate a highly significant difference in perceived ‘stylishness’, with both females appearing more stylish when associated with the Mercedes Benz than with the Proton (p = .001).

Illustration 3: Female (Malaysian/Australian) with Proton/Mercedes Benz car – Stylish

Question 21: She looks organized. (Malaysian/Australian female)
Both Malaysian and Australian females were perceived as significantly more ‘organized’ when associated with the Mercedes Benz rather than with the Proton (p = .000).

Illustration 4: Female (Malaysian/Australian) with Proton/Mercedes Benz car – Organized
Question 5: What do you think his annual income will be? (Malaysian/Australian male)

Perceived annual income was significantly higher for both Malaysian and Australian males when associated with the Mercedes Benz rather than with the Proton ($p = .000$).

Figure 4: 4 pictures stimuli – Malaysian/Australian male with Proton and Mercedes Benz car

Illustration 5: Male (Malaysian/Australian) with Proton/Mercedes Benz car – Annual Income
7.2 Motorcycle

Question 8: She looks friendly. (Malaysian/Australian female)

The results indicate that the Malaysian and Australian females were perceived as more ‘friendly’ when associated with the Vespa than with the Modenas (p = .005).

Figure 5: 4 pictures stimuli – Malaysian/Australian female with Modenas and Vespa motorcycle

Illustration 6: Female (Malaysian/Australian) with Modenas/Vespa motorcycle – Friendly
Question 17: She looks attractive. (Malaysian/Australian female)
Both females appear significantly more ‘attractive’ with the Vespa than with the Modenas (p=.003).

Illustration 7: Female (Malaysian/Australian) with Modenas/Vespa motorcycle – Attractive

Question 22: She is kind. (Malaysian/Australian female)
Both females appear significantly more ‘kind’ in association with the Vespa than with the Modenas (p=.003).

Illustration 8: Female (Malaysian/Australian) with Modenas/Vespa motorcycle – Kind
Question 7: He is creative. (Malaysian/Australian male)

Both males were judged significantly more ‘creative’ when associated with the Vespa than with the Modenas (p=.001).

Figure 6: 4 pictures stimuli – Malaysian/Australian male with Modenas and Vespa motorcycle

Illustration 9: Male (Malaysian/Australian) with Modenas/Vespa motorcycle – Creative
8. Discussions

The intention of this pilot study was to investigate the possible carry-over of the Room Effect to products: in other words, is there a Product Effect? The results prove confirmatory. Given the sample size it was not anticipated that major differences would occur. However, highly significant differences were observed for some of the measures used, with indications of strong cross-cultural agreement for some and less for others. While generalization from a pilot study is somewhat premature, never-the-less, the results suggest that the Product Effect was more pronounced for the females associated with both the cars and the motorcycles. Furthermore, this was consistent for both Malaysian and Australian participants.

The next stage of the research is to obtain a much larger sample of participants. This is underway and involves an international survey using internet facilities that have been developed in-house. With a larger sample the intention is to test for possible gender and cultural differences, and to construct a more sophisticated statistical model of the outcomes.
References


