International Journal of Engineering & Technology, 7 (2.33) (2018) 907-911

International Journal of Engineering & Technology

Website: www.sciencepubco.com/index.php/IJET

Research paper

The influence of shelf-level product presentations on Product and category perceptions. a study of visual merchandising using a data driven approach

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Abstract

India's growing Retail Industry has been widely acknowledged one of the most lucrative in the whole world. It captures the wide spectrum from very large malls, specialty stores, big-box discount stores to the smallest kirana (neighborhood) stores. Modern and organized retailers use various visual merchandising techniques to attract attention, elicit consideration, influence purchase decisions and retain customers. This study aims to understand the impact of various Visual Merchandising presentation techniques on consumer's perception of the product attributes and perception of the retail outlet using data generated out of experiments conducted using the aid of advanced applications of IT. An online survey was conducted among 107 respondents across 35 Indian cities, with standard scales to measure the factors considered in the study. ANOVA performed using STATA MP software, on the data indicates that consumers perceived that vertical and horizontal product presentation offered better variety and presentation compared to an unordered presentation. No difference between the impact of vertical and horizontal product presentation were found. Retail stores can better manage perception about the product attributes and their store among customers by choosing the ordered merchandising style for product presentation.

Keywords: *Visual Merchandising; Optimized Product Presentation; Experiment Design; Consumer Perception; Consumer Behavior; Indian Retail Industry*

1. Introduction

With the rapid advances in mass media, social media, data analytics and customer profiling, shopping which had already become a leading leisure activity, is under a lot of focus.

The Indian Retail Sector, which was largely unorganized till the 1980s, has witnessed a huge transformation post the liberalization era. This growth has been due to the liberalization policies since 1991(Mohan et. al., 2005; Kiran, 2005), and the subsequent entry of lot of new international firms, as well as expansion by domestic firms. Retail industry in India now accounts for more than 10% of the country's GDP and also almost 8 % of the country's employment.

Retailing in India has emerged as one of the largest and fast growing globally, with a total market size of $320 billion and growing at a compound annual growth rate of 5% (Anuradha and Franz, 2009). India was ranked as the most attractive market for global retailers to enter by K T Kearney's Global Retail Development Index for 2007, which ranked 30 emerging countries on 25 macroeconomic and retail-specific variables (Kearney 2007).

In the organized retail arena, companies use different techniques and methods to attract the consumer's and retain them. Retailers spend a lot of time and money in creating unique visual experience for their store, which will provide a better mood for the consumers, which in turn will influence the purchase intention of the consumer (Law et al., 2012). Visual merchandising (VM) is an in-store technique whereby products on sale or for consideration are arranged inside a category to meet specific goals of promotion or sales. Visual merchandising has been adopted and used by retail firms all over the world to attract buyers.

While the importance of VM and its impact on retail store management has been discussed in literature, studies focusing on the impact of VM on product perceptions have been largely unexplored. This study uses an experimental design approach using visual cues with the aid of information technology extensively at each step.

The extant literature review with respect to visual merchandising, product presentation, variety perception and brand perception is followed by the hypotheses. A conceptual model has been developed on this basis. This is followed by the section on methodology and the scales used in the study. The next section provides a description about the sample along with the data analysis. The results and discussion section explains about the detailed findings from the study. The paper is concluded with the inferences from the study and their implications in business. Finally, the paper discusses about the limitations and scope for future work.

2. Review of literature

Studies by Cant et al., 2014 tell us that, not only do visual merchandising techniques influence the perception of the consumer about a store and its products, but also as a tool that is being used to communicate to them about the store. Visual merchandising is

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also being used to influence the impulse buying behaviour of consumers inside stores. When consumers indulge in higher levels of excitement, the capability of the consumer to behave rationally gets reduced leading to better chances of impulse buying.

Visual merchandising techniques are being implemented by retailers in various aspects of a store like store layout, colour, product display, music, lighting and cleanliness (Gajanayake 2016, Cant et al. 2014).

a) Product presentation and planning

Bauer et al., 2012, details the four high-level assortment dimensions as: the assortment's pricing, its quality, its variety, and its presentation. Product display/ presentation is the most palpable and effective aspect of assortment dimensions.

According to Bauer et al. (2012), "consumers use only a limited number of informational cues to form perceptions about the four higher-level assortment dimensions and integration with the attitude theory, it was found that consumers integrate these higher-level assortment dimensions into a summary evaluation of the grocery category's attractiveness".

Chernev et al. (2015), posits that complexity of merchandising, decision task difficulty, preference uncertainty, and decision goal of the purchase moderates the effect on choice overload for the customer in a retail store. According to Raymond (2009), "Successful visually guided action begins with sensory processes and ends with motor control, but the intervening processes related to the appropriate selection of information for processing are especially critical given the human brain's limited capacity to handle information". The increasing complexity of visual information leads to increasing difficulty for a customer to process the assortment, and this points to the need for product presentation to be ordered and controlled to a good extent.

Murali et al. (2009), talks about product assortment planning (PAP) and the focus on the variety, depth and the inventory level for each stock-keeping unit (SKU). They further establish that despite longstanding recognition of its importance, no dominant solution exists for PAP, and current research orientation address only some of the factors that decide assortment planning, and not the types of product arrangement or presentation.

b) Types of product presentations

Different types of product presentation can be classified as vertical, unordered and horizontal presentation. While implementing visual merchandising activities in a store, allocation of the shelf space for different products is another important task that needs to be given a lot of attention by a retail store. The selling space available in a store is fixed, thereby the merchandising space. So, the store management has to take decisions on a continuous basis on which products to stock and how much space should be given to different products and categories (Borin et al., 1994).

Hence product presentation, the most palpable and thereby communicable aspect of assortment dimension of visual technique is being studied in this paper, especially horizontal and vertical symmetric assortment. Even though lot of research has been done on product display, the different types of product presentation and its influence on consumer behaviour has not been explored much. The study is trying to analyse the influence of different product presentations on the product perceptions of the consumer.

c) Product Perceptions

Product perception is classified as variety perception and presentation perception, which are considered as two measures for understanding consumer's perception of ease while shopping. The more a customer feels ease while making the purchase decision, the better chances of repeat purchase behaviour.

1) Perception of variety

Generally variety means the different options available for a customer to choose from. Variety is the first classification with which product perception has been measured. Variety perception is generally impacted by dissimilarity between products as well as type of display or presentation i.e. organized or unordered display (Hoch et al., 1999, 2002).

In measuring variety it is further classified into three different kinds (Baur et al., 2012), namely perceived brand variety, perceived flavor variety and perceived range of quality. Perceived brand variety is the feeling among consumers that the product presentation offers a variety of brands, perceived flavour variety is the feeling among consumers that the presentation offers a variety of flavours, perceived range of quality is the feeling among consumers that the presentation offers a wide variety of quality ranges. All these aspects together create the customer's perception on the product category at a store.

2) Visual Perception

Visual presentation perception generally means how a product is being perceived while displayed or showcased in a visual merchandising presentation. Presentation is the second aspect with which perception has been measured. Presentation is further classified into three different kind, namely perceived appeal, perceived logical presentation and perceived ease in finding the product (Baur et al., 2012).

Perceived appeal is the feeling among consumers that the presentation has a better appeal compared to other presentations, perceived logical presentation is the feeling among the consumers that the presentation has a better logical arrangement and perceived ease in finding the product means the feeling in consumers about the easiness in finding a product from an presentation.

d) Types of Product Presentation

Product presentation or display generally refers to how a product has been displayed in a shelf in a retail store. Product presentation is identified as a method to encourage in store stimuli (Garrido-morgado & González-benito, 2015). It is found that a well arranged product display could influence the impulse buying behaviour of consumer's. Consumer buying behaviour is also influenced by different type of product presentation techniques (Gajanayake, 2016). There are generally three types of product presentation, vertical, unordered or unorganized and horizontal arrangement.

Vertical presentation is a method by which products of the same package or colour are being arranged in same vertical bands one after the other. Unordered presentation is one in which where no specific pattern is being followed for the presentation of the products. Horizontal presentation is a method where products of different packages are arranged horizontally one after the other in the same row.

3) Conceptual model and Hypothesis

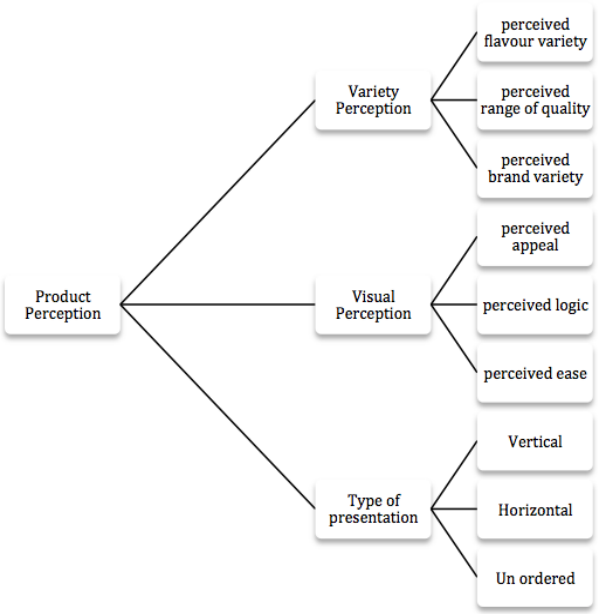


Fig. 1: Conceptual Model.

There is a significant difference in consumer's perception of overall product variety across different types of product presentation.

H1a: There is a significant difference in perceived brand variety, across the different types of product presentation.

H1b: There is a significant difference in perceived flavour variety, across the different types of product presentation.
H1c: There is a significant difference in perceived range of quality, across the different types of product presentation.
H2: There is a significant difference in visual perception, across different types of product presentations.
H2a: There is a significant difference in perceived appeal, across different types of product presentations.
H2b: There is a significant difference in perceived logical presentation, across different types of product presentations.
H2c: There is a significant difference in perceived ease in finding the desired product, across different types of product presentations.
H3: There is a significant difference in type of presentation, across different types of product presentations.

3. Methodology

An online experiment was designed and a survey was conducted to capture the responses, and circulated online to those consented to take an interest in the study. All respondents who took interest in the study by choice, and they were guaranteed that their individual response would be kept private.
The questionnaire was designed in such a way that the respondents were exposed to three different product arrangements namely vertical presentation (Fig. 1), unordered presentation (Fig. 2) and horizontal presentation (Fig. 3). Arrangements were depicted using computer-simulated images for the product category, breakfast cereals. The image editing software Adobe Photoshop was used to create the images, which were later uploaded along with the questionnaire into the online survey platform provided by www.google.com, called "googleforms". A set of questions to measure each aspect of product perception was used after each arrangement was shown.
A hyperlink generated that pointed to this survey was e-mailed to the set of contacts fitting the sampling criteria. Social Media platforms like Facebook and LinkedIN were also used to reach out to potential respondents. A reference system was followed were each respondent was encouraged to share the hyperlink with his/her own set of contacts as well.
The extensive use of Information Technology for creation, propagation and collection of data made the process more efficient in terms of time and consolidation of responses. Moreover, this methodology controlled for any last minute cognitive effects of sales promotion or impulse buying sales promotion efforts, making this a unique method to adopt for studying impact of visual cues on perceptions.
The questions have been adopted from the "scale to measure grocery assortment perception" by Baur et al. (2012) and modified to suit the context. Convenience sampling was followed.

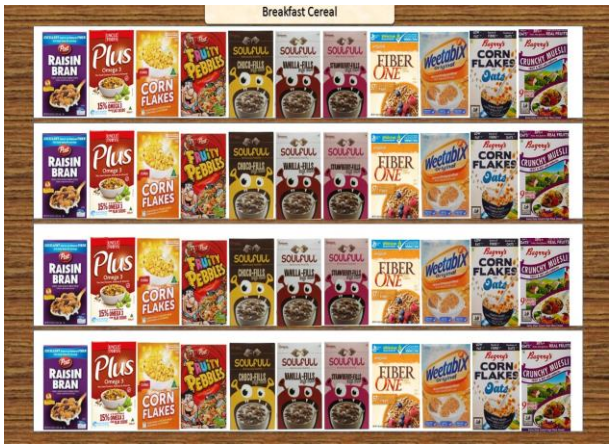


Fig. 2: Vertical Presentation.



Fig. 3: Unordered Presentation.



Fig. 3: Horizontal Presentation.

4. Data description

The sample size for the study was 107, and as depicted in Fig. 4 and 5, 40.2% of the respondents were females and 59.8% were males.
Out of the total respondents 30.8% belonged to metros and 69.2% belonged to non-metros. The respondents spreading crosswise 35 Indian cities were considered as part of the study. Sampling was done with at most care in order to bring maximum heterogeneity in the sample.

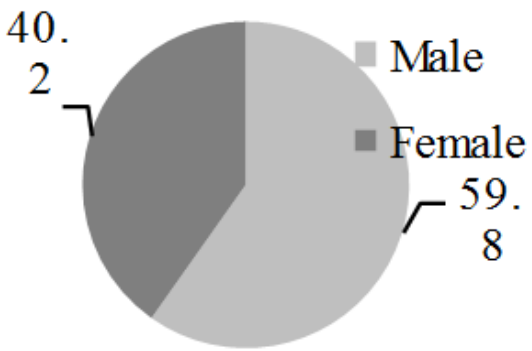


Fig. 5: Gender Split.

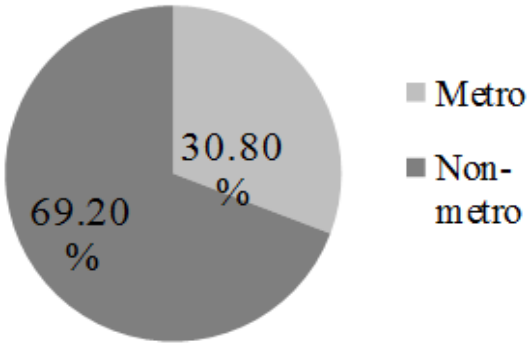


Fig. 6: City of Residence.

Characteristics	Frequency(N= 107)	
	N	%
Gender		
Male	43	40.2%
Female	64	59.8%
Geography		
Metro	33	30.8%
Non-Metro	74	69.2%

5. Results

ANOVA (Analysis of Variance) was used to analyse the data to identify the differences in consumer perception across different arrangements. ANOVA is used for comparing means of three or more groups (or variables) for statistical significance. While ANOVA is conceptually similar to multiple two-sample t-tests, it is more conservative (results in less type-I error), and is suited to analyse these kind of variables and relationships that involve similar grouping.

"Type of arrangement" is taken as factor variable and, "variety", "appeal", "logic of arrangement" and "ease of finding" are included in the dependent list. STATA/MP, a general-purpose statistical software package by StataCorp was used to carry out the ANOVA. The results indicate that there is significant difference in consumer's perception with respect to different product arrangements.

Table.1: Anova Results

Variable	Arrangement Type	Arrangement Type	p value
Brand Variety	Vertical	Unordered	0.00*
		Horizontal	0.37
	Unordered	Horizontal	0.00*
Flavour Variety	Vertical	Unordered	0.00*
		Horizontal	0.89
	Unordered	Horizontal	0.00*
Quality Range	Vertical	Unordered	0.00*
		Horizontal	0.89
	Unordered	Horizontal	0.00*
Appealing	Vertical	Unordered	0.00*
		Horizontal	0.89
	Unordered	Horizontal	0.00*
Logical Arrangement	Vertical	Unordered	0.00*
		Horizontal	0.38
	Unordered	Horizontal	0.00*
Ease to find	Vertical	Unordered	0.00*
		Horizontal	0.62
	Unordered	Horizontal	0.00*

From Table – 1, the following inferences are made:

a) Variety Perception: Consumers perceived that "Vertical and Horizontal Arrangements" offered better "Variety" (Brand as well as Flavour) than "Unordered Arrangement".

Consumers perceived that "Vertical and Horizontal Arrangements" offered better "Quality Range" than "Unordered Arrangement".

Consumers did not perceive any difference between the "Variety" and "Quality Range" offered between "Horizontal Arrangement" and "Vertical Arrangement".

b) Visual Perception: Consumers perceived that "Vertical and Horizontal Arrangements" are logical and appealing, compared to "Unordered Arrangement". Consumers perceived that "Vertical Arrangement" makes it easier to find the product compared to "Unordered Arrangement".

c) Product Presentation: While consumers perceived that "Vertical and Horizontal Arrangements" offered better presentation than unordered arrangement, there was no significant difference in the perception between the type of arrangement.

From Table.2, it is evident that consumers perceived "Vertical and Horizontal Arrangements" offered better "Flavor" and "Brand variety" along with better "Quality Range of Brands", compared to "Unordered Arrangement". This implies that the "Overall Variety Perception" was high for "Vertical and Horizontal Arrangements".

Table.2: Mean Values

	Variable	Arrangement Type	Mean Value
1	Brand Variety	Vertical	4.01
		Unordered	3.21
		Horizontal	3.88
2	Flavour Variety	Vertical	3.85
		Unordered	3.17
		Horizontal	3.87
3	Quality Range	Vertical	3.68
		Unordered	2.97
		Horizontal	3.66
4	Appealing	Vertical	3.87
		Unordered	2.47
		Horizontal	3.89
5	Logical Arrangement	Vertical	3.70
		Unordered	2.29
		Horizontal	3.83
6	Ease to find	Vertical	3.84
		Unordered	2.50
		Horizontal	3.77

A similar conclusion can be made from the results on visual perception as well, given that perception of appeal, logic and ease of finding are high for ordered arrangements compared to unordered.

Meanwhile, the study also brought out that there is no significant difference in the perception between the effectiveness of vertical and horizontal arrangements against each other.

6. Conclusions

The study understands the impact of different types of product arrangement inside a retail store on consumer's perception of the product and category. The results indicate that consumers perceived vertical and horizontal arrangement to have an impact on the overall product perception compared to an unordered arrangement.

The inference from the study can be used for better merchandising practices in retail shelves at the category and shelf levels. When retail brands are competing with each other for shelf space at the store, along with the mind space of the customer, identifying new ways to attract and retain consumers means life or death.

In addition to focusing on product and packaging design, retail brands could invest in planning their shelf level presentations in categories inside retail stores. While implementing such micro level strategies may take considerable time and resources, vertical and horizontal product presentations using colour, packaging and SKU size can be used to attract consumer's to the display shelf and give them a better perception about the variety, quality of the product. As far as the retailers are concerned, this could lead to a palpable and positive perceptive change in the ease of purchase, logic and visual appeal to the category in general, leading to higher store loyalty and repeat purchases.

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