FORUM

THE EFFECT OF FACTORS RELATED TO MERCHANDISING ON RETAIL SALES

EFEITO DOS FATORES DE MERCHANDISING NAS VENDAS DO VAREJO

EFECTO DE LOS FACTORES DE MERCHANDISING EN LAS VENTAS DEL MERCADO MINORISTA

ABSTRACT

The studies of Mehrabian and Russell (1974), (researchers in the field of environmental psychology), have been instrumental in spreading the idea that the environmental features at the point of sale cause emotional reactions that lead to behavior that is hard to explain from a cognitive standpoint. For this reason, merchandising implementation plays a key role, since its aim is to provide an appropriate store atmosphere and display products in a way that encourages buying activity. This paper investigates the effects of merchandising factors on retail sales. The study was carried out in two types of stores: experimental – where merchandising factors were employed, and control - where the design features of merchandising remained unchanged. The analysis of the results confirmed the income effect. The increase in revenue can be an indicator that merchandising factors have an influence on the consumer´s store choice criteria and his/her behavior within a determined sales environment.

KEYWORDS Merchandising, design factors, retail, buying behavior, marketing.

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Resumo Os estudos de Mehrabian e Russel (1974) foram fundamentais para a disseminação da ideia de que os elementos ambientais do ponto de venda causam reações emocionais que resultam em comportamentos pouco explicáveis sob o ponto de vista cognitivo. Nesse sentido, assume papel importante a implementação do merchandising, que objetiva a adequada apresentação do ambiente de loja e exposição de produtos de modo a favorecer a atividade de compra. Este artigo investiga o efeito dos fatores de merchandising nas vendas de varejo. Foi realizado um estudo com dois grupos de lojas: o experimental – em que se aplicaram fatores de merchandising, e o de controle – em que tais fatores permaneceram inalterados. A análise dos resultados confirmou o efeito na receita. O incremento na receita pode ser um indicador de que fatores de merchandising exercem influência nos critérios de escolha da loja e no comportamento do consumidor sob determinado ambiente de venda.
Palavras-chave Merchandising, fatores de design, varejo, comportamento de compra, marketing.

Resumen *Los estudios de Mehrabian y Russel (1974) fueron fundamentales para la diseminación de la idea de que los elementos ambientales del punto de venta causan reacciones emocionales que resultan en comportamientos poco explicables desde el punto de vista cognitivo. En ese sentido, asume un papel importante la implementación del merchandising, cuyo objetivo es la adecuada presentación del ambiente de tienda y exposición de productos a los efectos de favorecer la actividad de compra. Este artículo investiga el efecto de los factores de merchandising en las ventas minoristas. Fue realizado un estudio con dos grupos de tiendas: el experimental -en que se aplicaron factores de merchandising-, y el de control -en que tales factores permanecieron inalterados-. El análisis de los resultados confirmó el efecto en los lucros. El incremento de los lucros puede ser un indicador de que factores de merchandising ejercen influencia en los criterios de elección de la tienda y en el comportamiento del consumidor bajo determinado ambiente de venta.*
Palabras clave *Merchandising, factores de diseño, mercado minorista, comportamiento de compra, marketing.*

INTRODUCTION

It was as a result of the studies of Mehrabian and Russell (1974) about the effects of store atmosphere on the feelings of customers, that studies about the atmosphere of the commercial environment began to have more scientific weight. These effects include the alteration of the company's image, the customer purchase intention and income. The capacity of the physical environment to influence behavior and create the image of an establishment is particularly important for service companies such as shops, restaurants, banks and hospitals. Studies like those of Bitner (1992), Smith and Burns (1996), Baker and others (2002), Neto, Espinoza and D'Angelo (2003), Sanzi (2007), Sampiro and others (2009) suggest that among the factors that affect store atmosphere, merchandising has a great influence on store choice criteria.

The physical atmosphere of the shop has been identified as one of several inputs in forming attitudes towards the store. Elements such as color, lighting, style, layout, and cleanliness that comprise merchandising, can have more immediate effects on the purchase decision than other marketing factors that are not present at the point of sale (POS), such as communication outside the POS (GUIMARÃES and others, 2003). Although in Brazil, the word merchandising is also linked to the inclusion of brands and products in televised programs and cinema (what is called 'product placement'), the concept of merchandising has a broad meaning and can be employed for any technique, activity or promotional material used in the POS environment to foster and influence customer purchase decisions (BLESSA, 2003).

This article investigates the effects of merchandising factors (independent variable) on income (dependent variable) in a network of retail footwear stores. It involves an experimental research study through the manipulation of the "merchandising factor" variable, which forms a part of the atmospheric factors (social, environmental and design), in particular design, on the basis of models outlined by Baker and others (2002) and Zorilla (2002) who discussed factors like customer perception and established store-choice criteria, among which design proved to have most influence.

The merchandising factors (or design features) that are used here include the following: layout of sectors of the stores, communication between the sectors, placement of product lines, volume, store clustering, arrangement and display of products, color combination, brand positioning of promotional labels and prices, the use of showcases and other promotional materials like displays, pictures and posters. The working hypothesis adopted here is that improving these features with regard to what is traditionally kept in shops, will lead to an increase in sales figures.

The need for this research can be explained by the importance of understanding the interaction between the technical, strategic and behavioral factors that have been studied and which reflect the merchandising decisions for improving the ambience of the store. The managers are continually planning, creating, altering and controlling the physical structure of an organization but often the impact of a particular project or change of concept about end uses is not fully understood (BITNER, 1992). In the light of the difficulty of recreating a store atmosphere that is grounded on a methodology that is backed up by laboratory experiments, and which measures purchase intentions through samples of consumers, this study seeks to establish a direct relationship between the environment of the shop and the real situation of the customer; it thus involves a field experiment that is still rare in empirical marketing studies.

Conducting a formal experiment in situ with access to the sales environment and the staff in the shop, allowed information to be gathered about the application of merchandising standards such as information about the company's strategies in the form of documents and reports. This is because the POS is the place where the three main factors of purchasing effectiveness are combined: the product/service, the customer and capital.

The article discusses environmental psychology, purchasing behavior and business management and the possible way of measuring the payback from the use of merchandising factors that make up the atmosphere of the store. The next section outlines the basic theoretical approach of the study, followed by the methods, results and main conclusions. Suggestions for further research are provided in the light of the marketing theory.

THEORETICAL PRINCIPLES

In examining the various roles that the physical environment can exert on service organizations, this section highlights the implications of merchandising factors as the focal point of the investigation. The

argument of this research study is grounded on the belief in the stimulus-response-mechanism which is what first led to studies about environmental factors in purchasing behavior (MEHRABIAN and RUSSELL, 1974) and in the constructs carried out by Baker and others (2002) and Zorilla (2002), who explain what triggered off the phenomena that occurred in the course of this procedure.

The theory of affective experience postulated by Mehrabian and Russell (1974) relates the particular pattern of each shop environment to the resulting behavior of customers in terms of the emotional states induced by the atmosphere on individuals, as configured in the stimulus-response-mechanism (Figure 1)

In the view of Mehrabian and Russell (1974), responses to the stimuli of an environment are causes of approximation or withdrawal behavior and if they are properly handled, these environmental factors can make people more willing or eager to go to a shop, to remain there and explore the environment, as well as increasing their inclination to make a purchase.

In his criticism of the affective experience theory, Russell (1976) is not opposed to the argument that a situational influence is generally mediated by certain psychological processes, but puts forward a view that this is not the only way that situations can affect behavior. In the opinion of the author, the characteristics of pleasure, arousal and dominance were cited as the emotional mediators of behavior but these only offered a partial account of the effects of a particular situation; they did not explain the needs that characterize each situation in more objective and practical terms.

Since the behavioral response and the presumed mediated response are measured interpersonally and without any reference to the surrounding situation, it will not be possible to make use of the information about situational conditions when explaining behavior.
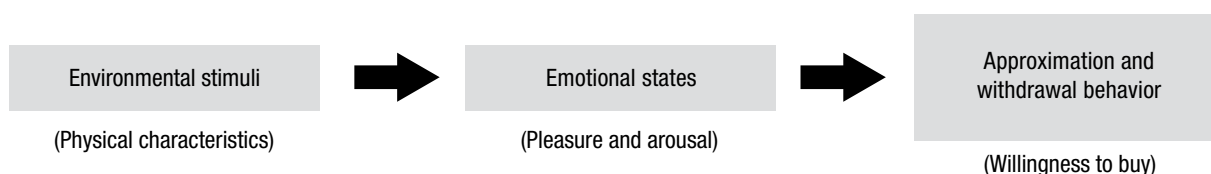
An important study that helped to validate Mehrabian and Russell's theory of human affective experience (1974) was undertaken by Donavan and Rossiter (1982) who investigated how customers react to the atmosphere of the shop. The results showed that customers experience two main kinds of emotion in the environment of stores – arousal (arousal – sleepiness) and pleasure (pleasure – displeasure) in accordance with Mehrabian and Russell's model, (1974) (Figure 2). The central feature of this study, which was carried out in the context of their environmental psychology theory, is that the two emotional states interact with each other. In particular, there is the fact that arousal intensifies pleasant reactions while at the same time intensifying unpleasant reactions.

It can be concluded that individual perceptions and behavior in a particular environment are the result of emotional states induced by the environment itself. Purchasing intentions increased when shops were regarded as pleasant and aroused feelings of excitability, whereas in shops that were regarded in a neutral way or as unpleasant, the arousal did not increase the purchasing intentions (DONAVAN and ROSSITER, 1982).

The authors laid stress on the practical implications that follow these discoveries: if customers rate a shop as pleasant, then their appreciation at the purchase time, spending money etc can be increased by the rise in the level of arousal caused by the store atmosphere, with brighter lights, lively music and so on. However, if the store atmosphere cannot be recreated in a pleasant way (in a discount store, for example), the level of arousal must be kept low by the use of soft lighting, spaced out showcases, relaxing music or no music at all. In other words, in a pleasant shop, an attempt must be made to increase the level of arousal; in a neutral or unpleasant shop, one must seek a lower feeling of arousal (DONAVAN and ROSSITER, 1982).

However, Donavan and Rossiter (1982) draw attention to the limitations of Mehrabian and Russell's

Figure 1 – The S-O-R Model

Environmental stimuli		Emotional states		Approximation and withdrawal behavior
(Physical characteristics)		(Pleasure and arousal)		(Willingness to buy)

Source: MEHRABIAN and RUSSELL, 1974

model and show that the store atmosphere is complex and multi-dimensional. It can stimulate people in various ways and this makes it difficult for any model to determine what kind of stimuli are the causes of particular effects and feelings; thus the model does not offer the retailer a tool that is easy to manipulate and that can serve to recreate a store atmosphere.

Bitner (1992) discussed the atmosphere of the POS as one of the strategic factors through which the company can adopt a stance towards customers and staff. Since the items or services are generally purchased and ¨consumed¨ at the same time, and usually require interaction between the customers and employees within the shop, the environment of the organization must cater for the needs and wishes of the employees and customers at the same time. This was the first study that underlined the fact that features of the atmosphere affect the activities of the employees who are also formative elements of the environment itself. Hence, the structure of the environment has a significant impact on the formulation of concepts about stores.

Setting out from Mehrabian and Russell's theory (1974), Baker, Levy and Grewal (1992) decided to study the effects of two factors from the retail store atmosphere: atmospheric indicators (lighting and music) and social indicators (the number/friendliness of the staff) with regard to pleasure, arousal and the willingness to make a purchase. The results suggest that the atmospheric indicators interact with the social and influence the degree of arousal in the store atmosphere. This lends support to the idea that states of arousal and pleasure are mediators of the effects of the store atmosphere on the willingness of customers to make a purchase.
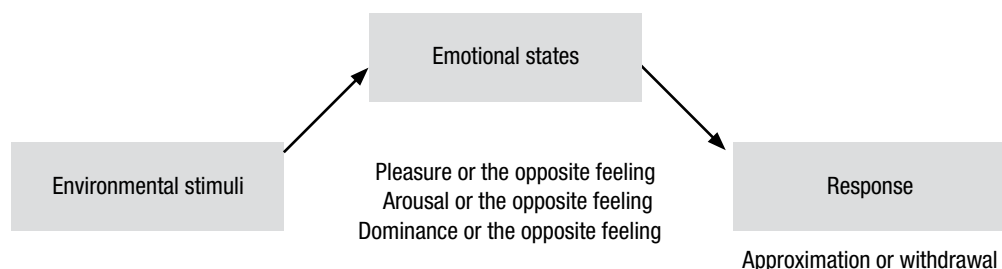
Donavan and others (1994) tested Mehrabian and Russell's model of environmental psychology again, laying emphasis on the effects of emotional factors – pleasure and arousal. They showed that the emotional variables occur as supplementary factors and independently of the cognitive variables, like the perception of quality and price. In this way, the emotional state of the employees inside the shop can predict the purchase behavior and not just attitudes or intentions. In other words, the emotional responses induced by the atmosphere can affect the amount of time and money that the customer spends in the shop (Donavan and others, 1994).

In their turn, Baker and others (2002) decided to test social and environmental factors (BAKER, LEVY, GREWAL, 1992), this time linked to the design factor present in the store atmosphere. They also categorized the environmental factors such as those that affect human feelings and arise from the lighting, sound or noise, smell and temperature of the atmosphere. Social factors are already linked to the people who are found at the POS – sales assistants and customers – and their characteristics determine the perception of the quality of the service and their image of the shop.

The elements of design were associated with decorative, aesthetic and functional features and related to the display, colors and layout of the products. The sequence of effects from the model showed that factors involving the store atmosphere influenced the customers with regard to their perception of the quality of service, quality of the merchandise, prices, expenditure of time and effort (linked to the time spent in the shop looking around or waiting for goods and services). The results showed that the three factors which comprise the atmosphere, affect the intentions of the clients in the same way as the design features that had a significant influence on the five customer choice criteria.

Figure 2 – The model of MEHRABIAN and RUSSELL, 1974

Environmental stimuli → Emotional states (Pleasure or the opposite feeling / Arousal or the opposite feeling / Dominance or the opposite feeling) → Response (Approximation or withdrawal)

Zorrilla (2002) extended the model of Baker and others (2002) by showing the effects of merchandising decisions on the display of products and different environments and argued that the value of the purchase is an inner response of the customer to the effects of the store atmosphere. The model put forward divides the POS environment into four areas: exterior design, environmental conditions, interior design and the social dimension. The POS dimensions can have a positive influence on the shopping experience, as well as the perception of the products, services and image of the firm and this influence can be felt by the clientele who return to the POS, prolong their shopping experience and buy more goods.

Turley and Chebat (2002) studied the predisposing factors that can be found among the strategies of retail establishments, environmental design and the resulting purchase behavior. This study makes an addition to this research to the extent that it characterizes three factors employed in the preparation of the planned experiment. First of all, it suggests the possibility of setting out sales strategies that can cover a number of controllable variables of the store atmosphere (including the description of these variables) and second it shows that these strategies can be implemented in the sales environment as a means of redesigning the shop and configuring the particular required atmosphere. Finally, it recognizes that these design features can result in real effects on consumer buying behavior.

One of the prominent studies carried out in Brazil is that of Espinoza, DAngelo and Liberali (2005) which replicated the model outlined by Baker and others (2002) in the supermarket sector. When compared with the original study, the results confirmed the influence of design features on the five store-choice criteria (perception of service quality, the quality of the merchandise, price, expenditure of time and effort and psychic cost). However, the theories regarding the atmosphere were not confirmed, which perhaps suggests that design and social factors may be greater determinants of perceptions and customer intentions in retailing.

Among the Brazilian studies, Sanzi (2007) identified and tested seven design features that can give rise to a greater degree of proximity and choice in a store. These validate Zorrillas model (2002) in the Brazilian context by suggesting that the design features exert an influence on functional and hedonic values and highlight the importance of layout in the value perception of the shop. Following the same line of approach but employing an experimental method, Sampaio and others (2009) confirmed that the design features (arrangement of the setting, display of merchandise, adjustment of lighting and easy-to-reach locations) have a positive effect on the perception of purchase value.

What is most significant about the hedonic values, which are expressed in delight, fun, arousal and spontaneity, are the benchmarks in the settings where sofas, plants, natural lighting and the use of colors can be found? The study also mentioned that the perception of a lack of arrangement in ordering physical space caused signs of extreme discomfort and had an adverse effect on the feelings of the customer. Among the design features that had a positive and significant impact on the purchasing value perceived by the customers, what was most striking in the three situations outlined, was the display of the merchandise in way that made it easy to handle the items (SAMPAIO and others, 2009, p.283).

Finally, Geargeoura (2010) confirmed the view of the psychological contingency models that regard perception from two opposing theoretical viewpoints: one of them views the perception of environmental stimuli in a holistic way, that is in a set, and the other supports the view that perception can occur through stimuli that can be processed separately. The results suggest that environmental stimuli can take plcae separately, in a set or on groups of limited stimuli, which supports the argument of this article. According to the author, "the wide variety of stimuli in the environment of the store together with the large number of variables that are moderated between the environment and the purchase behavior of the customers in the shop, also adds to the great complexity of the phenomena being studied" (GEARGEOURA, 2010, p.108).

As well as the studies cited above, the following authors have made significant advances to knowledge in this area: Zimmer and Golden (1988) who analyzed whether the customers impressions of the image of retail stores gave rise to specific attributes or global affectivity; Babin, Barden and Griffin (1994), who devised a shopping value scale which highlighted utility and hedonistic values in assessing the shopping experience; Smith and Burns (1996) whose research explored the relationship between merchandising policies and consumer relations; Sherman, Mathur and Smith (1997) who carried out a field study on the influence of the store environment and emotional states on purchasing behavior; Evereles (1998) who characterized the role played by feelings in marketing and strategic activities; and Turley and Molloman (2000)

who conducted a survey of the research results of the effects of environmental stimuli on customer behavior.

In Brazil, Carvalho and Mota (2002) examined the interaction of clients with the settings proposed for service companies; Neto, Espinoza and D'Angelo (2003) studied the influence of the elements that make up the POS for the customers; Ângelo, Fávero and Siqueira (2004) analyzed how the length of time spent in the shopping areas and the importance attached to the display of the goods for sale, affect the total amount spent, in particular unplanned expenditure; Alvarez, Fávero and Luppe (2006) investigated what variables in the store environment are able to yield better results ; and Kny and Nique (2006) tested the impact of aromas in the store atmosphere on the behavior of customers experiencing real consumer conditions in retail stores.

Thus it can be stated here that the features of the environment which include merchandising factors, are important components of the shop's image and that this is a determining factor in the decision-making of consumers. In the following section, there is a description of the method of research employed in this study.

METHOD

This research consists of a case-control study in which the sample is restricted to the stores of a single organization subdivided into two groups: the experimental group formed of shops where the variable merchandising factors have been manipulated; and the control group made up of shops where the merchandising factors are maintained in an unaltered way. Thus a quasi-experimental method was employed which originated in the field of Environmental Psychology, a science which seeks explanations about the relationship between behavior, human experience and the physical and social environment, with the aim of establishing the best possible relationship between people and their environments (DIAZ, 2005).

The experiment was tried out in a sample from footwear and accessories retail sector in the south of Brazil and comprised 148 local stores in streets, arcades and shopping centers that sell products to both the male and female public. The priority profile of the customers is the middle class (B and C), between 20-45 years old, with approximately 70% of sales for women. The company operates with a wide range of products, which are separated into departments on the basis of categories of similarity. Each sector in the shops occupies its own space in the lay-out (feminine, masculine, sports equipment, suitcases and backpacks, accessories etc) and the customer can choose between self-service or the assistance of the sales staff.

The research was divided into eight stages: i) review of the bibliography to define the merchandising model which underpins the experiment; ii) planning a merchandising model by the marketing and merchandise professionals in the company; iii) pre-testing the field to adjust and validate the merchandising model that will be employed in the shops; iv) selection of the sample of stores and the separation between the experimental group and the control group; v) training the team to implement the procedure in the shops belonging to the experimental group; vi) identification of the test measurements; vii) temporal analysis of the intragroup to measure the applied merchandising; viii) analysis of the income statements of the shops in the experimental and control groups.

The pre-testing of the experiment took place in three shops during the months of September, October and November (2008) and was aimed at discovering the merchandising factors that were most suited to the business strategies of the company, the type of shop, the characteristics of the product and the conduct of the staff. The merchandising factors in the study were grounded in research studies on this question in the literature and defined in accordance with the knowledge of the marketing area and strategic decisions of the company.

On the basis of definitions of merchandising, handbooks were prepared that contained text and photos of the features that make up the ambience of shops: shapes, spaces, colors and positions between items and the layout of the store, all of which were shown to the sales staff in the form of technical training. Periodical visits were also carried out by professionals from the company in the area of merchandising, as a back-up support in implementing the techniques which were put into effect and replaced every month in all the departments of the stores.

At the end of each month, the 48 employees in the shops answered a questionnaire which was designed to assess which merchandising techniques were most suited to the type of shop, products for sale and the kind of conduct of the sales staff. As well as this, the merchandising models were tested to find out which led to the best results in the sales area of the shops. This was carried out by taking account of the temporal

relationship of their application when compared with the average sales achieved in periods in the past. The results of this phase defined the particular features of the merchandising model used in the experiment.

55 shops were selected to form the sample of the experiment, 43 of which belonged to the deployment group and 12 to the control group. The selection was based on typical (not probabilistic) features regarding the physical and local structure (the district, center and shopping precincts), while taking into account other characteristics that remain almost constant, by dealing with the same network of stores. The shops that had wide variations in income for reasons that were expected or known, were withdrawn from the sample (those for example that had been recently inaugurated or which had great mixture of products or which had new direct competitors, for example).

The deployment (merchandising factors) was undertaken over a period of seven months (June-December, 2009). The measurement of the dependent variable (income from sales) was carried out both before and after the deployment, a longitudinal line in the monthly information about the statement of income for the years 2008-2009. The shops in the control group were kept in their original state until September, 2009 and the merchandising was implemented in the period, October-December, 2009. As an additional comparative parameter, statistics issued by the Retail Development Institute (IDV) and the Brazilian Institute of Geography and Statistics (IBGE), were employed to assess the performance of the textile, clothing and footwear retail sector during the period of the research.

Carrying out the experiment involved restructuring several features of the shops, as illustrated in Chart 1 and Figure 3. The arrangement of the layout was aimed at allowing the customers to walk around in a purchasing atmosphere that was suited to the commercial objectives of the business. This was achieved in a way that allowed the strategically most important product lines with the highest turnover, to be located in areas of most traffic so that the customers would be encouraged to walk around the shop in a pleasant way. The decisions sprang from an analysis of physical structures, the different departments of the shop, the physical features of the products for sale and a consumer profile.

The product lines were assembled in a way that

Chart 1 – Merchandising factors (deployment) employed in the shops

Merchandising factors (deployment) employed in the shops

Layout of the shops: planning the inner structure of the shops

Arrangement of the products: product lines grouped into sectors: footwear, socks, belts, folders and men´s wallets – forming the men´s department

Location of the goods in the baskets and display stands: relating to the physical characteristics of the products and brand strategies, price and turnover of the merchandise.

Volume of products: mixture of products adjusted in terms of their amount to a better procedure for giving information

Pricing: prices shown in promotional displays, posters and labels, arranged in particular places for the products and display stands.

Visual communication: material used to inform the customer in displays and decorative or informative boards about the goods, prices, special offers and brands

Combination of colors: use of combinations of colors and downgraded displays.

Highlighting special conditions: highlighting promotional items or special conditions in shops.

Equipment: use of display stands for the products. The goods displayed that were not on the shelves began to be separated on the shop floor so as not to be undervalued by the customers.

Shop-window: the shop-window modeled by the requirements of the product lines, the way of displaying the products, the combination of models, colors and other features, as well as the way of displaying the prices and the posters for communication.

Cleanliness and organization: product lines reviewed routinely, observing the organization and maintenance of the items and the cleanliness of the goods and equipment in the store.

could make it easy to identify each department of the store and reduce the psychological cost of buying (Figure 3). The mix of products began to be adjusted in terms of amount, to allow a better means of exchanging information between the sales personnel and the purchasing department.

The shops in the experimental group began to have a visual unit which was used to provide notices giving information about products, prices, advertising, special offers, product brands and decorative designs, all of which constituted the visual identity of the organization. The items were planned and took into account the physical features of the size and shape of the goods, and the place where they could be best displayed with the aim of making it easy for the labels to be read from a distance.

An attempt was made to form an attractive combination of colors for the products on the shelves and set up promotional display stands to create an ambience for the shops. The items subject to special offers, or special conditions in the shops, were given preferential treatment and highlighted so that they could have a visual appeal. The products were placed on the shelves in a way that could allow them to have both a functional and hedonistic appeal and thus promote specific brands or a product line; these were a significant factor in establishing a relationship between value and price.

The way the goods were displayed in the shop-window was modeled by a sequence of product lines, means of presentation, combinations of models, colors and other features, together with the way

Figure 3 – Clustering, positioning, arrangement, display, volume, combination of colors and signposting of products (before and afterwards)

Nota: Imagens publicadas com autorização.

of showing the prices and posters. As a means of ensuring a continuous improvement in the ambience of the shops, the sectors that did not comply with the model began to be photographed and analyzed by the company's merchandising staff so that they could be their atmosphere could be improved by the sales staff every day.

Information was gathered about the standard of merchandising that prevailed in the store environment by means of a spreadsheet for the measurement of perception in the Thurstone scale. This showed equal appearing intervals and the principle of concordance and discordance with regard to a particular stimulus (BRANDALISE, 2005). The items that form the scale are given a point when there is concordance with the merchandising model, or no point in the cases of discordance. The items evaluated included the following: layout and the communication sector, location, clustering, positionsing, arrangement, display, volume, combination of colors of products, labelling the price tags, promotional offers and the use of equipment. Measurements were carried out in all the departments of the shops.

The sum total of the concordance between the techniques showed an average percentage of compliance for the shops with regard to the merchandising model set out for the experiment, which is called here the level of merchandising. A student's t-test was conducted for the independent samples, to analyze the effects of the deployment on income and the Mann-Whitney test for samples that did not show a normal distribution. To achieve this, an income variation variable was created which was obtained by dividing the total income of the months in 2009 by the income of the months in 2008 so that a comparison could be made between the average figures for the variable incomes of the experimental and control groups.

RESULTS

Before the comparative test procedure was carried out, a Kolmogorov-Smirnov normality test was conducted for each sample of variable income. Apart from the need for the samples to be independent, the non-rejection of the normality test is a requirement for the t-test. The t distribution can only be correctly applied if the distribution of the values is reasonably close to a normal distribution. If the distribution is not normal, the t distribution cannot solve the problem in a satisfactory way (CALLEGARI-JACQUES, 2003).

As shown in the results of Table 1, it was only in the month of May that the normality test was not significant. Since it failed to fulfill the assumption of the parametric test, the results for the month of May had to be subjected to the non-parametric Mann-Whitney test and this led to a comparison of the medians of the experimental and control groups for this month. (CALLEGARI-JACQUES, 2003). In the other months, the samples of the tests showed a p value greater than 0.05 which means that they could not be rejected as normal.

In proceeding with the analysis of the variation in the income from sales between the groups, a comparison was carried out of the averages and medians of the experimental and control group of stores over a period of 12 months in 2009 by means of t tests and Mann-Whitney tests, as shown in Table 2.

Table 2 shows that during the period when the

Table 1 – The kolmorogov-smirnov test

Group/Month (2009)		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Experimental shops	N	43	43	43	43	43	43	43	43	43	43	43	43
	Value K-S Z	0,694	0,620	0,523	0,935	1,655	0,741	0,886	0,932	0,645	1,099	0,868	0,527
	p-value	0,721	0,836	0,948	0,347	0,008	0,643	0,412	0,350	0,800	0,179	0,438	0,944
Control shops	N	12	12	12	12	12	12	12	12	12	12	12	12
	Value K-S Z	0,449	0,501	0,583	0,540	0,546	0,897	0,372	0,482	0,520	0,541	0,777	0,896
	p-value	0,988	0,963	0,886	0,932	0,927	0,398	0,999	0,974	0,950	0,931	0,582	0,398

control group was compared (from June to September 2009), the shops in the experimental group had higher averages in the months of July and August, which suggests that in this period, the results of the tests were significant for the model with an income variation that favored the shops in the experimental group (p value < 0.05).

In contrast, the results obtained for the months of June and September did not show any significance. The results of the measurements of the level of merchandising factors indicate that in June, the shops in the experimental group had a lower level of merchandising ambience (average 66.16), like the sample in Table 3, and as a result, had little impact on the store income. This can explain the similarity in the variation of the store incomes between the two groups in this month.

The second phase of the experiment began in

September 2009 when the shops in the control group were also given information for the implementation of merchandising. The training stage and the introduction of merchandising in the control group shops, might have had a positive influence on the income and caused a balance between the percentile averages.

Table 4 provides a comparative summary of the income variation in the period when the control group was employed and in the months that followed which shows that, at the time when the merchandising was also employed in the control group shops, from October onwards, a significant difference could be observed in the income averages that favored this group.

Table 5 shows the comparative results between the averages of the incomes of the experimental group of shops, the control group and the textile, clothing and footwear retail sectors in 2009 in the States of Rio Grande do Sul and Santa Caterina. It can be

Table 2 – t-Test and Mann-Whitney test

t-test				
Month	**Levene test (p value)**	**Value of t**	**GI**	**p value**
January	2,947 (0,092)	0,200	53	0,842
February	0,033 (0,857)	0,312	53	0,756
March	9,890 (0,003)	0,547	12,877	0,594
April	1,979 (0,166)	-0,136	53	0,892
June	0,007 (0,933)	0,681	53	0,499
July*	1,300 (0,259)	2,835	53	0,006
August*	0,223 (0,639)	5,672	53	0,001
September	2,029 (0,161)	1,303	53	0,198
October*	6,300 (0,015)	-2,242	13,018	0,043
November	16,123 (0,001)	-1,064	12,933	0,307
December	1,920 (0,172)	0,291	53	0,772
Mann-Whitney Test				
Month (May groups)	N	Average Rank Score	Sum Total of rank scores	
Experimental shops	43	26,651	1146	
Control shops	12	32,833	394	
Statistical Test				
U of M-W	200			
Z Value	-1,182			
p-valor	0,237			

* Months with a significant difference between the groups

confirmed that in the months immediately preceding the experiment (January-May 2009), the shops in the experimental group and the control group showed variations that were very close to the income averages, with a difference of only 1.01% for the entire period. In the period of the experiment (June-September 2009), the variation in accumulated income of the shops in the experimental group, was 8.62%, whereas for the control group it was – 0.93% , which indicates a difference of 9.55% in the average variation of the sales income.

Even in the months of June and September, the averages for the income variation in the experimental group (13.19% in June and 0.39% in September) were higher than the averages of the control group (9.40% in June and - 4.39% in September). In the period when

merchandising was also employed in the control group (October-December, 2009), the shops in this group showed a rapid recovery of income, with a total amount of 15.97%, as against 9.74% in the experimental group of shops (Table 5).

During the previous period of the experiment, both the shops in the experimental and control group maintained a variation of accumulated income that was close to the indices for income of the textile, clothing and footwear sectors in 2009. During the period of the experiment, there was a notable fall in the income of the control group shops and subsequently, a rapid recovery in October, November and December, when there were results above the experimental group of shops and the sector, which indicates that a good performance

Table 3 – Level of merchandising techniques employed in the shops

Averages of the assessment of the ambience in the experimental shops				
June/ 09	July /09	August/09	September /09	October /09
66,16	80,73	86,63	86,56	89,14

Table 4 – Averages for the variation of income in the seven months of the experiment (experimental group and control group)

Group	Month	N**	Average	DP***
Experimental	June	43	0,132	0,169
	July*	43	0,099	0,093
	August*	43	0,110	0,110
	September	43	0,004	0,103
	October*	43	0,054	0,104
	November	43	0,046	0,128
	December	43	0,193	0,118
Control	June	12	0,094	0,176
	July*	12	0,006	0,123
	August*	12	-0,093	0,109
	September*	12	-0,044	0,143
	October*	12	0,178	0,185
	November	12	0,120	0,231
	December	12	0,181	0,157

*Months with significant similarities between the groups
**Number of shops tested
***Standard deviance

was achieved by the shops after merchandising was employed.

The explanation for the fluctuations of income found between the shops researched and the other shops in the sector, can be attributed to the retail sales point and the sales strategies of the shops researched. The structure of shops that operate in a network means that the promotional strategies and value have a particular impact on the chain of shops (experimental and control) and do not interfere with the parameters of the research results but make it difficult to carry out a periodical comparison with the other shops in the sector.

As Baker and others (2002) and Zorilla (2002) point out, the incremental revenue might be an indicative element that merchandising factors exert an influence on store-choice criteria and on the behavior of the customer in the sales environment.

FINAL CONSIDERATIONS

The various research studies of behavior in commercial environments suggest that the store atmosphere has a positive influence on consumers. For this reason, the configuration of the environment outlined in this experiment was designed to support the needs and preferences of the sales personnel and the customers at the same time, in accordance with the concepts of Bitner (1992).

The meaning of the concept of functionality in the design of the store was interpreted as a way of allowing a purchase to be made more easily and quickly with the aim of increasing the functional value, but without ignoring hedonistic issues. The use of merchandising factors is represented here by the following: the signposting of sectors and prices, the

Table 5 – Percentile variation of the sales income: control group shops, experimental group shops, textile, clothing and footwear industry (averages for the States of Rio Grande de Sul and Santa Caterina for 2009)

Period before the experiment						
Period	**Jan**	**Fev**	**Mar**	**Apr**	**May**	**Acum.**
Control	11,38%	-3,79%	5,39%	-2,41%	2,99%	2,71%
Experimental	12,47%	-2,40%	9,08%	-2,99%	2,45%	3,72%
Sector	6,16%	3,66%	1,79%	-4,55%	1,26%	1,66%
Period of the experiment and training of the experimental and control group of shops						
Period	**Jun**	**Jul**	**Aug**	**Sep**		**Acum.**
Control	9,40%	0,62%	-9,33%	-4,39%		-0,93%
Experimental	13,19%	9,85%	11,03%	0,39%		8,62%
Sector	11,30%	14,94%	3,38%	5,55%		8,79%
Period following the experiment						
Period	**Oct**	**Nov**	**Dec**			**Acum.**
Control	17,83%	11,99%	18,08%			15,97%
Experimental	5,36%	4,59%	19,28%			9,74%
Sector	14,19%	13,00%	13,59%			13,59%

Source: prepared from the IDV database (2010)

furniture arrangement, the space for circulation and placement of items, volume, and the positioning and combination of colors of the products on the shelves. These seem to have had a positive influence on the act of buying, which arises from display items in a suitable way, together with the surrounding products, as was recommended by Zorrilla (2002). Introducing a visual self-service point is important because it is not always possible to ensure that a sales assistant is present in all the sectors of the shop and thus the visual aspect of the products in the shop plays a key role in communicating with the customer.

The application and maintenance of merchandising features in the shop on a day-to-day basis was a task undertaken by the staff themselves in the shops and was configured in a way that involved technical questions which are not a part of the skills of store professionals. As well as this, the required interaction between the shop and the customer alters the ideal way of displaying goods and this ends up by constantly disturbing the atmosphere. These issues added to the value of the experiment, in so far as the shops have to be technically organized and constantly reorganized to improve the shopping experience.

The second phase of the experiment also confirms the effect of merchandising factors on income. At the time when the shops in the control group began to acquire an atmosphere that conformed to the merchandising model, they showed distinct signs of recovery and their performance was superior to that of the shops in the experimental group and the average for the business. In December, the averages were in equilibrium, which was expected, as a result of the learning curve between the shops in the same chain. This naturally occurred in the following stage when extraneous variables, such as the motivation of the sales personnel, were spread among the experimental and control stores.

The results corroborated the previous history of studies that assessed the design variables that compose the commercial environments (BAKER and others, 2002; ZORRILLA, 2002; TURLEY and CHEBAT, 2002; NETO, ESPINOZA, D'ANGELO, 2003; ESPINOZA, D'ANGELO, LINERALI, 2005; SANZI, 2007; SAMPAIO and others, 2009). As Zorrilla (2002) makes clear, constructing experiences goes beyond conducting a simple promotion campaign; it is a question of providing the establishment with a knowledge that can bring about a particular personality linked to an idea that is expressed in the various activities at the POS

over a period of time and forming positive perceptions for the clients. At the moment of purchase, there are several means of allowing the customer to have a positive experience: an appropriate layout, cleanliness, colors, communication about the goods and prices, the training of the sales assistant etc and a large financial investment is not necessary to achieve this (SHERMAN, MATHUR, SMOTH, 1997).

This study points out some the limitations that can be overcome in future studies. For example, the empirical research is restricted to the case study of a sample; the income of the shops can be affected by a number of extraneous factors such as the specific seasonal changes of each place, variations in the public profile and in particular, the situational effects of the sales staff in the shops. The use of a quasi-experimental method, with a sample of 55 stores, can reduce the interference of these factors.

The study is restricted to footwear and accessories shops. According to Geargeoura (2010), depending on the kind of product for sale, the atmosphere can to a considerable extent influence the results of the purchasing process. In view of this, there is a need to determine the way that these factors can interact in other kinds of shops and make it possible to distinguish between the means by which particular determinants can have a more significant impact.

The introduction of the merchandising model directly involved the sales personnel in the stores who were willing to use handbooks and be assessed. This could have influenced their behavior in terms of motivation and cooperation with the group and also led to an increase in sales. Future studies can test the interaction with other variables such as the motivation of the salesmen, together with merchandising factors.

The influence of the experiment on the state of mind of the staff is more apparent in the control group of shops, which had an immediate effect on income from the moment when the merchandising model was implemented, whereas there was a delay of one month before the expected results for the experimental group could be noticed. This explanation can be attributed to the anxiety caused by the procedure: whereas the staff in the experimental group of shops operated in a different routine and were constantly assessed, those in the control group were already familiar with the experiment and this might have made it easier for them to adapt to it more quickly.

Future research studies should take account of the involvement of the sales staff and determine the influence

of individual income or the conversion rate and sales data on the levels of merchandising factors. It is also suggested that there should be experimental tests of other factors, such as social and environmental issues, that form the store atmosphere and are outlined in the model of Baker and others (2002), where they are analyzed individually as influences of purchase behavior, from the standpoint of the customer or the outcome of sales results, from the standpoint of the company.

The theory of affective experience outlined by Mehrabian and Russell (1974), links the configuration itself of each store environment to resulting behavior and describes it as a result of emotional states caused by the atmosphere on the individuals. The dependent variable that was measured here was only the income of the shops and thus no inferences can be made about the feelings of the customers in the shopping experience with regard to merchandising factors. Future studies should test the effects of these factors on the financial performance of the shops and the way this is mediated by the feelings and attitudes of the customer.

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