

Sensory cues as in-store innovations: Their impact on shopper approaches and touch behaviour

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Abstract. What impact do visual and auditory sensory cues as in-store innovations exert on shopper's approach and touch behaviour at point-of-purchase in a retail setting? The presented research depicts shopper's behavioral response in relation to the influence of sensory cues for an appealing and attracting store atmosphere and design. The author presents a review of theoretically relevant work and a field study through experimental and observational methods in examining the impact of visual and auditory sensory cues as in-store innovations in a retail setting. In the reported study, the author finds significant behavioral impact of introducing visual and auditory sensory cues on shopper's approach and touch behaviour. The findings offer guidelines for retail managers in applying sensory cues as retailing innovations in relation to the human senses in creating successful sensory experiences at point-of-purchase.

Keywords. In-store innovations, retailing, sensory cues, store atmosphere, point-of-purchase

1 Introduction

Human senses, consumer experiences and sensations are considered in emerging marketing paradigms as a major subphenomenon (Achrol and Kotler, 2012). It is obvious that consumers as shoppers experience brands, products and servicescapes through vision, sound, smell, touch and taste, which highlights the significance of sensory cues and stimuli. It has been suggested that the use of subconscious sensory triggers in sensory marketing might be an efficient way to engage consumers and influence their behaviour and perceptions (Krishna, 2011).

Through research, it has long been evident that retail atmospherics as environmental stimuli and sensory cues affect shopper behavior in retail settings (Bettman et al., 2008; Hultén, 2012). Adding such stimuli to a retail environment can result in an emotional response leading to a willingness to approach/avoid a product (Russell and Mehrabian, 1978). This underlines the importance of investigating how different stimuli can affect consumer behavior (Sweeney and Wyber, 2002). Moreover, retailers may earn positive returns through offering an exciting shopping environment (Kaltcheva and Weitz, 2006).

Acknowledging that retail atmospherics are of a sensorial nature, the human senses have been recognized as major channels through which a retail environment is experienced (Kotler, 1974). Despite this recognition, the human senses and their impact on shopper behaviour have been mostly neglected in the marketing and

retailing literature, although some empirical studies do reveal the significance of the senses of sight (Turley and Milliman, 2000), sound (Kellaris et al., 1993; Yalch and Spangenberg, 1990), smell (Bone and Ellen, 1999) and touch (Citrin et al., 2003; Peck and Shu, 2009).

Moreover, the question of how sensory cues in the form of in-store innovations, might impact on shopper behaviour, remains unanswered in the literature. As an object, idea or practice innovation may be perceived as positive by an individual or any other party concerning products, services, processes or any social system (Rogers, 1995; Schumpeter, 1934). Marketing innovation, in its many and varied forms, is seen as critical to customer loyalty and company success (Reichheld, 1996). It has been proposed that innovation should be a fundamental means by which marketers retain customers, emphasizing its importance for brand experiences derived from products and services. In business-to-consumer relationships, the innovation-customer interface is often neglected by producers and retailers as a means in enhancing consumer-based brand equity (Flint, 2006).

Especially in retailing, innovations are a common phenomenon which range from changes in business models, new concepts and ideas for global brands, as well as the introduction of new store formats and technologies. They support the pursuit of growth in mature and emerging markets (Shankar and Yadav, 2011). In shopper marketing, innovations are regarded as a way to enhance brand equity in the long run and are related to manufacturer and retailer innovations.

It has also been suggested that innovations in shopper marketing should be strategic or tactical. These include innovations in store atmospherics and design, related to such areas as shopper-centric store layout and design, as well as customized sensory experiences (Shankar et al., 2011). In this study, I define in-store innovations as “the application of sensory cues that intentionally draw shoppers attention to a brand and impact on shopper behaviour at the point-of-purchase”.

The aim of the paper is to analyse how the deliberate application of sensory cues, as in the form of in-store innovations, could be seen as an appropriate means for retailers to draw shopper attention to a certain brand or product category in a retail context. Nevertheless, the application of sensory cues as in-store innovations has rarely been investigated in order to understand its influence on shopper attention and behaviour.

The paper is structured as follows. Firstly, the theoretical framework, research model and hypotheses are presented. Secondly, the methodology for the investigation is discussed and thirdly, the results are presented, followed by an analysis and discussion of the application of sensory cues as in-store innovations. Finally, the theoretical and managerial implications, as well as avenues for future research are considered.

2 Theoretical framework

The question of how sensory cues as retail in-store innovations could lay the ground for sensory experiences and sensations, is unanswered in contemporary research. This

is the case, despite the consensus on the importance of creating a pleasant and inspiring store atmosphere through attractive and facilitating sensory stimuli (Noad and Rogers, 2008; Soars, 2009). It is obvious that when shoppers visit a store, consider its assortment and investigate point-of-purchase for a certain brand or product category, a sensory consumption experience is taking place. The presented experimental research builds upon the experiential perspective of consumption experiences in terms of feelings, fantasies and fun (Holbrook and Hirschmann, 1982), as well as shopping and consumption as an entertainment experience (Moss, 2007).

2.1 Sensory cues

The sense of sight

Vision is the most dominant sensory system and most humans rely to a great extent on visible and tangible sensory cues that create attention for certain objects and products in the environment (Schiffman, 2001).

Research has documented that visual stimuli impact on consumer behaviour when it comes to judgments and purchase decisions related to product choice, purchase quantity or consumption (Krishna, 2008). Brand logos, colours, graphics, names, packages and product design are examples of visual stimuli that could be part of any branding strategy. Moreover, it has been shown that visual stimuli are more important in the absence of verbal material about a product. The reason is that the stimuli provide a quality perception, creating strong associations with a brand, and the use of graphic information might make it easier to create attention around a product (Henderson et al., 2003). This is especially so in a competitive clutter, where a positive influence on consumer judgment and purchase decision might result in a possible purchase decision (Kahn and Deng, 2010).

Studies have also confirmed that consumers may be either positively or negatively affected by visual stimuli without having access to other information. The use of graphics can enhance an aesthetic response to a certain product (Kahn and Deng, 2010) and visual stimuli may create an emotional response, besides drawing attention.

A common opinion is also that cognitive as well as non-cognitive reactions are based on visual stimuli, such as product design in relation to aesthetics (Hoegg and Alba, 2010). It is also evident that a human's product preference is based upon product design, that is, form or layout, instead of its functionality or brand name. Moreover, the form of a product creates an affective response, but the quality is related to cognitive evaluation.

It has been suggested that an unattractive product design might result in people searching for, expecting and detecting problems, as well as observing details instead of ignoring small problems. A visually attractive product design may enhance creativity in problem solving, as well as having an impact on mood (Norman, 2004). Altogether, design as visual sensory stimuli, might influence shopper approach and touch behaviour at the point-of-purchase.

In addition, studies have confirmed the significant effects of colour on individual affective and cognitive evaluations of products and store environments. Colour has been emphasized as an important visual stimulus and it is through colour that the sense of sight allows us to detect a store environment. In making a colour more

intense or through the contrast of colours, it becomes possible for an object or a product to be more conspicuous among other sensory distractions (Shiffman, 2001).

It is evident from research that people's emotions and feelings are influenced by colour, which in turn impacts on how active consumers will be and how they evaluate products (Babin et al., 2003). For that reason, the choice of colour is significant in a store environment or for the display of a product in creating attention, but especially with regard to what feelings could be evoked towards a brand (Gorn et al., 1997).

A general opinion is that cultural differences might explain how different colours influence consumer affections. It is evident that blue and red are two colours that affect people differently. Among the two colours, blue is often the most preferred, because it is perceived as more relaxing than red, which creates arousal (Chattopadhyay et al., 2010).

The sense of sound

In the literature, sound has long been recognized as a significant stimulus with positive effects on consumer mood, preferences and behavior (Alpert et al., 2005). In this regard, music is identified as the "shorthand of emotions" in creating emotional responses (Kellaris and Kent, 2001). Accordingly, music is suggested as touching consumers in different ways, so that perception and mood towards a certain brand might be influenced by music (Gorn et al., 1997).

There are many sources of sound, in the environment around us wanted and unwanted. Humans seem to experience sound highly individually and react in different ways to the same sound (Rossing et al., 2002). Music is not the only sound in the environment and especially noise creates physiological as well as psychological effects, which impact on communication.

Research has focused on music for decades examining the effects on consumer affections and behaviour in relation to different objects or products. The human voice has not received the same attention among researchers (Peck and Childers, 2008). However, it is evident from research that the human voice impacts on consumer behaviour in terms of its persuasive power, and its pitch and speed can enhance an advertising message.

The human voice is different from other sounds in the environment, standing out in its own personal way. For that reason, the human voice can reinforce emotions and feelings, affecting the actual message through for example: coughing, laughing, speech, yawning etc. (Schiffman, 2001). It has been argued that a language need not be heard, because the sound of a voice might create the feeling of a message being perceived and interpreted, even though the real meaning itself could be hard to understand. It is also possible to give human voice different characteristics including flat, hollow, robust and sharp types of voices (Sonnenschein, 2001).

2.2 Shopper approach behaviour

The interplay between store environment and shopper behaviour is reflected in the stimulus-organism-response (S-O-R) paradigm, following Mehrabian and Russell's (1978) approach/avoidance model of environmental psychology. It is suggested that

affective shopper reactions in terms of arousal or mood, are a result of the influence of store atmospherics that lead to an approach or avoidance behavior from the shopper.

The S-O-R paradigm in retail settings is supported by a number of studies that yield useful predictions about shopper behaviour. Furthermore, it is generally accepted that different cognitive and affective responses are a result of atmospheric cues and stimuli impacting on shopping behaviour (Bitner, 1992; Turley and Milliman, 2000).

Various sensory cues, such as colour, lighting, music, odours which constitute store atmospherics, have a positive effect on shopper reactions (Darden and Babin, 1994; Spangenberg et al., 1996). Moreover, shopper behaviour and perceptions are influenced by in-store components, as well as resulting in positive emotions and feelings.

2.3 Shopper touch behaviour

Touching objects, people or products enables the sense of touch, the largest sensory organ of the body, to incorporate physical contact through the skin into the shopping experience (Klatzky, 2010). In this regard, the hands are identified as our “principal source of input to the touch perceptual system” (Peck and Childers, 2003, p. 35). From research, it is evident that human touch, as a tactile input, is significant in product evaluations of goods as well as services. By touching products, shopper behavior, purchase intentions and attitudes are influenced positively (Peck and Wiggins, 2006).

A general opinion in the literature is that consumers gather information about products by touching them (McCabe and Nowlis, 2003). Studies have also shown that people have different needs for touch and that the effects vary between individuals. It has also been shown that those store environments that allow consumers to physically inspect products by picking them up and touching them are preferred (Krishna and Morrin, 2008; McCabe and Nowlis, 2003). Therefore, allowing shoppers to interact and touch the products should be a competitive advantage for retailers (Grohmann et al., 2007).

Other studies provide evidence that if shoppers are not allowed to touch products in order to evaluate them, they become frustrated and annoyed (Citrin et al., 2003; Peck and Childers, 2003). One of the reasons could be the fact that vision alone is not necessarily enough to judge such products as computers or mobile phones. Important sensory input about hardness, surface, texture or weight is disregarded, so that there may be no purchase decision at all.

Therefore, shoppers generally want to touch products they are interested in and the ability to do so is essential for evaluation. In addition, research reveals that most people use more than one sense at a time in processing sensory information (Elder et al., 2010). For this reason, touch might have significant implications for store atmospherics, especially in the form of point-of-purchase displays. Peck and Wiggins (2006) suggest that displays could encourage touch and enable shoppers to interact with products that otherwise would be ignored, perhaps resulting in impulse and unplanned purchases (Peck and Childers, 2008).

2.4 In-store innovations

Hollander (1960) presented a major theory “The wheel of retailing” as a way to explain retail development and innovations. One aspect was that new types of retailers are established by entrepreneurs, who are innovative in different marketing activities, such as assortment, price and promotion. The theory also attempts to explain the growth of small retailers, as low-margin operators, into large retailers in the form of high-price merchants, such as department stores and supermarkets.

The ‘retail revolution’ in Britain during the 1980’s, characterized by a shift from manufacturing economies of scale to retailing economies of scope, entailed by retailers developing innovative information and supply systems, as well as “new principles of production, a new pluralism of products and a new importance for innovation” (Murray, 1989, p.44). Furthermore, innovations were taking place among retailers with own-label products positioned as retail brands (de Chernatony, 1989). The active role of retailers as innovators was also reflected in developing own-label networks for high-margin and strategically important product areas (Sayer and Walker, 1992).

Recently, innovations have received attention in different aspects of shopper marketing defined as “the planning and execution of all marketing activities that influence a shopper along, and beyond, the entire path-to-purchase, from the point at which the motivation to shop first emerges through to purchase, consumption, repurchase, and recommendation” (Shankar, 2011). Shopper marketing is different to traditional marketing at the strategic and tactical levels. Shankar et al. (2011) suggest that shopper marketing focuses on targeting shoppers in shopping mode, while traditional marketing focuses on consumers and their consumption patterns.

In shopper marketing, innovation is regarded as essential in retail practice, mainly because of changes in shopper behavior. Four major drivers of change are the economy, globalization, regulation and technology that impact on the need for innovations in shopper marketing. Shankar et al. (2011) suggest that shopper behavior impact the need of innovations in shopper marketing, which at the same time, impact shopper behavior why the relationship is bidirectional.

One of the proposed areas for innovation is store atmospherics and design, to which shoppers respond positively and could be related to a more shopper-centric store layout and design. Also, innovations related to customized sensory experiences in traditional stores or on-line channels, are considered as an alternative in understanding how shoppers react to different sensory cues. Also, innovations related to aisle placements and shelf positions could be an alternative in shopper marketing (ibid.).

Moreover, Shankar et al. (2011) suggest that retailers should experiment with such elements as colors, lighting, music, or odors. The authors also express that marketers should conduct controlled field experiments to learn more about shopper behaviour. Following this call from Shankar et al. this is a major argument for the present experimental research.

3 Research question, model and hypotheses

The theoretical and experimental context of this study is intended to answer the following research question: What influence do visual and auditory sensory cues as in-store innovations have on shopper approach and touch behavior at the point-of-purchase in a retail setting?

The basic assumption is that the application of visual and auditory sensory cues as in-store innovations will influence shopper approach as well as touch behaviour at the POP. It is assumed that if the application of visual and/or auditory sensory cues draw shopper attention to a brand, it will lead to approach behaviour, indicating a desire to examine the brand. If this desire is followed by touch behaviour, it will indicate a deeper interest in examining and evaluating the brand. The use of fingers indicates a positive relationship between attention, approach behaviour and touch behaviour.

The research model illustrates the relationships between visual and auditory sensory cues, shopper approach behaviour and shopper touch behaviour (Figure 1).

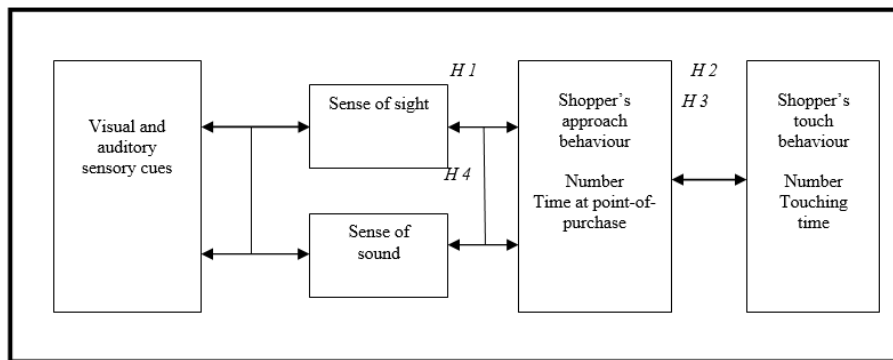


Fig.1 Research model

In order to investigate the positive relationship between visual and auditory sensory cues, shopper approach and touch behaviour, the following hypotheses are tested:

H 1: *Visual sensory cues exert a positive impact on shopper approach behaviour at the point-of-purchase.*

H 2: *Visual sensory cues exert a positive impact on shopper touch behaviour at point-of-purchase.*

Hypothesis 1 assumes a positive relationship between the application of visual sensory cues, shopper attention and approach behaviour at the point-of-purchase. Accordingly, Hypothesis 2 assumes a positive relationship between visual sensory cues and shopper touch behaviour at point-of-purchase.

H 3: *Visual sensory cues exert a positive impact on shopper touching time at point-of-purchase.*

Moreover, Hypothesis 3 assumes a positive relationship between the application of visual sensory cues and shopper's touching time at the point-of-purchase.

H 4: *The combination of visual and auditory sensory cues exerts a positive impact on*

shopper attention and approach behaviour at the point-of-purchase.

Hypothesis 4 assumes a positive relationship between the application of the combined visual and auditory sensory cues and shopper attention and approach behaviour at point-of-purchase.

4 Methodology

The aim of the empirical study was to examine how the application of visual and auditory sensory cues as in-store innovations can influence shopper approach and touch behaviour at the POP in a retail context (Eriksson and Larsson, 2011). It was relevant to study shopper behaviour in relation to hard (durable) products like electronic items with a low degree of product differentiation with regard to vision, sound, smell and touch, compared to products like clothing. For this reason, laptops in the computer department of the German retailer Media Markt was chosen for the study, also given the intense competition between Apple and the PC laptops, which result in lower attention and interest for PC laptops in general in the hypermarket.

4.1 Conclusive research and field experiment

A conclusive research strategy was chosen, since we were interested in confirming the basic assumption of the study that the application of sensory cues should impact shopper's behaviour. Moreover, it was of interest to find out whether we could confirm our hypotheses, in order to advise retail managers on applying sensory cues as in-store innovations at the point-of-purchase. It was also important to conduct an empirical study based on a large sample of respondents, with a quantitative approach measuring cause and affect relationships.

An experimental research design has the aim of generating data presenting the causal relationship between different variables, where these are manipulated. The main purpose of the chosen experimental design was to focus on understanding the relationship between cause and effect and not to prove causality between the chosen dependent and independent variables. The intention was to determine whether the hypotheses that suggest a cause and effect on shopper behaviour could be confirmed through the experiment.

A field experiment was chosen instead of a laboratory one, in order to study shopper behaviour as it really occurs at the POP in a hypermarket. The advantage of having access to natural data was regarded particularly important, in order to bridge the gap between a controlled and real environment. The fact that full control of the experiment would not be possible was accepted, and for that reason we tried to control contextual factors that could affect shopper behaviour during the experiment e.g. low price offerings and music played in the hypermarket.

4.2 Experimental design and observational method

The reason for choosing an experimental design was the possibility to study the impact of sensory cues on shopper behaviour in a real rather than a controlled environment. In a real environment, the shoppers are not controlled and would

experience control as unnatural or strange. Moreover, the shoppers should not know in a real environment that they are being observed during the manipulation, so that their behaviour is natural and transparent, without any influence from the researcher side. It was also obvious that since the manipulation only concerned two possible causal variables, namely visual and auditory sensory cues, and their impact on other controlled variables, the choice of an experimental design was very appropriate.

It was logical to use the observational method, since observations normally take place in real environments where the observed behaviour reflects actual shopper behaviour. Another advantage is the fact that the results of the research are not affected by the respondents' willingness to contribute or participate in the study. Thus, the observational method has the advantage of recording and studying behaviour that is ongoing, without any attempt from the researchers to influence it.

When using the observational method, the role of the researcher is crucial with regard to how the observations are conducted. In this experiment, the role of "complete" observer was chosen, meaning that we did not interact with the respondents we observed. Furthermore, the respondents did not have to take us into account at all and through direct observations, the shopper behaviour was studied as it occurred in real time during the experiment.

In order to document the observations, a category scheme was developed based on eight (8) dependent and independent variables, where four (4) dependent variables measured shopper behavior (variable 1, 2, 3 and 4) and four (4) independent variables (variable 5, 6, 7 and 8) were measured to understand their impact on actual behavior (Table 1). The chosen variables were developed in relation to the research question of whether there is a positive relationship between the application of visual and auditory sensory cues and their impact on shoppers' approach and touch behavior.

Shoppers approach and touch behavior was investigated in terms of how active they were, whether they approach the POP, the time spent at the POP, as well as whether they touch the laptop and the touching time. For the time measurement, two stopwatches were used by the observers, with one in each hand for the time spent in relation to approach and touch behavior. The measurement started when a shopper entered the observation area and stopped when the shopper left the area again.

Table 1. Observation scheme

<p>Dependent variables</p> <ol style="list-style-type: none">1. Active behaviour of shoppers in terms of discussions, pointing at the laptop etc.<ul style="list-style-type: none">– The observed person– The accompanying person– Both2. Approach behaviour of shoppers in terms of getting close to the laptop at the POP<ul style="list-style-type: none">– Yes– No3. Touch behaviour of shoppers in terms of physical interaction with the laptop with the fingers<ul style="list-style-type: none">– Yes– No4. Shopper behaviour in terms of buying a laptop<ul style="list-style-type: none">– Yes– No <p>Independent variables</p> <ol style="list-style-type: none">5. Time spent at POP in seconds6. Time touching the laptop in seconds7. Age: _____8. Gender: _____

The observation scheme was tested before the experiment started and a trial experiment was also conducted. As a result, some minor changes of the observations were made in order to have reliable data from the control group and the two experimental groups.

4.3 Sampling, experiment and procedure

The empirical study is based on an experimental design and was in fact quasi-experimental, with a convenience sample of shoppers assigned to a control group (n = 319), an experimental group 1 (n = 342) and an experimental group 2 (n = 323), in total 984 shoppers. In the sample, female and male participants aged between 20 to 70 were represented. The observations took place during five weeks, from Friday to Sunday, at the same time from 12 a.m. to 4 p.m. in the computer department with a focus on one of four shelves of laptop computers.

In order to investigate the influence of visual and auditory sensory cues on shopper approach and touch behaviour the experiment had two experimental groups. Each group was observed for two weeks and before that, the control group was observed.

For experimental group 1, a visual sensory cue was introduced through a large sign with the text “Touch me” that was placed behind the laptop on the shelf, to investigate its influence on shopper approach and touch behaviour. The sign and the message

were chosen as a design element with the colours black and red at the point-of-purchase, in so as to stimulate the sense of sight. The choice of a visual cue was related to the fact that vision is the most important sense for discovering changes in an environment. In order to attract shoppers, the sign was to communicate a personal message, so that the shoppers would approach the laptop and touch it.

For experimental group 2, a combination of visual and auditory sensory cues was investigated through adding a human voice to the large sign beside the laptop. A male voice sequence was played for 10 seconds at the laptop with the following message: "Hey there, you haven't missed what I have to offer? Do you know that you are allowed to touch me, test me and pick me up to better experience me and what I can do?" The voice sequence was played in an interval at 60 seconds in stimulating the sense of sound. The choice of an auditory cue was related to the fact that sound is a sense that reacts emotionally to music and voices. Since laptops often are considered as quiet products, a human voice could be used to communicate with the shoppers and attract their interest, so that further they examine the laptop by approaching and touching it.

In this experimental context, the introduction of visual and auditory sensory cues as innovations at the POP should encourage shoppers to pay attention to the laptops. It was postulated that this should have a positive impact on shopper approach and touch behaviour.

A manipulation check through a questionnaire was conducted after each of the two experimental groups to find out if the manipulation had been noticed by the shoppers. In total, more than 200 respondents from the two experimental groups were asked. For the first group, five questions were used and the respondents were asked to grade their overall experience of the laptops on a Likert scale. For the second group, the focus was on the human voice and the same questions were asked but the sign was changed to the voice instead. A final question for both groups was also put in the questionnaire, to test whether the respondent had bought a laptop or not (Appendix 1).

4.4 Validity and reliability

The present empirical study demonstrates internal validity, because the chosen independent variables have caused the hypothesized impact on shopper approach and touch behaviour. In experimental research, causality is significant and if there is internal validity, the conclusions from the study can be verified. The suggested hypotheses are accepted and for that reason, internal validity is high.

Concerning external validity, it should be possible to reach the same results for another sample of respondents or in another retail context. The present empirical study is based on a large sample of more than 900 observations and 200 manipulation check questions. This means that the results of the present empirical study are generalizable and that there is high external validity.

When it comes to construct validity, the theoretical framework shows how the present empirical study is supported by previous research. The research model contains the constructs, relationships between independent and dependent variables, and lays the ground for the hypotheses, indicating that construct validity is high.

Finally, the present empirical study demonstrates reliability and should be replicable

without any measurement errors in another research context. The observation scheme and the manipulation check allow other researchers to do the same kind of observations with a large scale. Accordingly, the study has high reliability.

4 Analysis and discussion

Analysis of variance (ANOVAs), Pearson's r as well as descriptive statistics, were used. The main findings are analysed and discussed below, in relation to the hypotheses.

4.1 Hypothesis 1

H₁: Visual sensory cues exert a positive impact on shopper approach behaviour at the point-of-purchase.

More shoppers approached the laptop when the red sign with the text in black was introduced. In the experimental group, 44.7 per cent of the shoppers show an increase in approach behaviour, compared with 29.2 per cent in the control group, which corresponds to an overall increase of 53 per cent. Thus, 50 shoppers more approached the laptop during the experiment, compared with the control group.

The difference was statistically significant ($F = 17,557$, $p < .000$), therefore confirming the hypothesis (Table 2). The findings indicate that the introduction of visual sensory cues affect shopper approach behaviour and encourage them to approach the laptop at the point-of-purchase.

Table 2. Shopper approach behaviour

	Sum of squares	Df	Mean square	F	Sig.
Between groups	4,008	1	4,008	17,557	,000
Within groups	150,440	659	,228		
Total	154,448	660			

The analysis shows that the application of a visual sensory cue, as in-store innovation, draws attention and influences shoppers in approaching the laptop at the point-of-purchase. Under normal conditions, as for the control group when no sign was present at the POP, the analysis shows that the visual sensory cue caused an impact on shopper approach behaviour.

4.2 Hypothesis 2

H₂: Visual sensory cues exert a positive impact on shopper touch behaviour at the point-of-purchase.

More shoppers touched the laptop when the sign with the text was introduced. In the experimental group, 14.6 per cent of the shoppers show an increase in touch behaviour, compared with 8.2 per cent in the control group, which corresponds to an

increase of 78 per cent. This means that 20 shoppers more touched the laptop during the experiment, compared to the control group.

The difference was statistically significant ($F = 6,838$, $p < .009$), thus confirming the hypothesis (Table 3). The findings indicate that the introduction of visual sensory cues affect shopper touch behaviour and encourage them to touch the laptop at the point-of-purchase. According to the manipulation check, 36.2 per cent of the respondents stated that they had been stimulated to touch the computer to a high or even the highest degree.

Table 3. Shopper touch behaviour

	Sum of squares	Df	Mean square	F	Sig.
Between groups	,691	1	,691	6,838	,009
Within groups	66,571	659	,101		
Total	67,262	660			

The analysis shows that the application of a visual sensory cue as in-store innovation influences the shoppers in touching the laptop at the point-of-purchase. Under normal conditions, as for the control group when no sign was present at the POP, the analysis shows that the visual sensory cue caused an impact on shopper touch behaviour.

Moreover, a positive correlation between shopper approach and touch behavior at the point-of-purchase was also confirmed through Pearson's r test (Table 4). This confirms the impact of a visual sensory cues regarding the close relationship between approach and touch behaviour. If a visual sensory cue attracts the attention of shoppers, it leads to an approach response, as well as touch behaviour at the point-of-purchase.

Table 4. The relationship between approach and touch behaviour

		Touch	Buy
	Pearson correlation	1	-,494(**)
	Sig. (2-tailed)		,000
	N	886	885
	Pearson correlation	-,494(**)	1
	Sig. (2-tailed)	,000	
	N	885	885

The analysis shows that the application of a visual sensory cue as in-store innovation influences shoppers in approaching as well as touching the laptop at the point-of-purchase. It also highlights the intentional, subconscious impact on attention through the eyes, and the relationship between approaching and touching the laptop. This implies that a visual sensory cue impacts not only on shopper approach behaviour, but also their touch behaviour and without the visual cue, no touch behaviour would be evident.

4.3 Hypothesis 3

H₃: Visual sensory cues exert a positive impact on shopper touching time at the point-of-purchase.

Shoppers touched the laptop for a longer period of time when the sign with the text was introduced. In the experimental group, the mean value of touching the laptop was 2.2 seconds, compared with the mean value of 1 second in the control group.

The difference was statistically significant ($F = 3,420$, $p < .065$), thus confirming the hypothesis (Table 5). The findings indicate that the introduction of visual sensory cues positively affects shopper touching time at the point-of-purchase.

Table 5. Shopper touching time

	Sum of squares	Df	Mean square	F	Sig.
Between groups	,074	1	,074	3,420	,065
Within groups	14,329	659	,022		
Total	14,403	660			

The analysis shows that the application of a visual sensory cue as in-store innovation influences shopper touching time of the laptop at the point-of-purchase. It is evident that a sign as an in-store innovation will have such an impact on shopper touch behaviour, inducing them to touch, test and interact with the product. It also allows shoppers to better experience the product and will probably enhance their opinion of the product before a purchase decision.

4.4 Hypothesis 4

H₄: The combination of visual and auditory sensory cues exerts a positive impact on shopper approach behaviour at the point-of-purchase.

More shoppers approached the laptop when a human voice was introduced together with the sign at the POP. In the experimental group, 48.0 per cent of the shoppers display an increase in approach behaviour, compared with 29.2 per cent in the control group, which corresponds to an increase of 64 per cent. Therefore, 60 shoppers more approached the laptop during the experiment, compared to the control group.

The difference was statistically significant ($F = 24,870$, $p < .000$), thus confirming the hypothesis (Table 6). The findings indicate that the combination of visual and auditory sensory cues affect shopper approach behaviour and encourages them to approach the laptop at the point-of-purchase. Moreover, it is evident that the number of shoppers increases with the introduction of the human voice, which means that the effect is greater for the combination of sensory cues than only for visual sensory cues.

Table 6. Shopper approach behaviour

	Sum of squares	Df	Mean square	F	Sig.
Between groups	5,693	1	5,693	24,870	,000
Within groups	146,506	640	,229		
Total	152,199	641			

The analysis shows that a combination of visual sensory cue and an auditory sensory cue as in-store innovation attracts attention and influences the shoppers in capturing attention and in their approaching the laptop at the point-of-purchase. It is clear that the combination of the two sensory cues has a stronger impact, compared to only the visual sensory cue.

According to the manipulation check, some respondents expressed an opinion about the combination of visual and auditory sensory cues in the following way: *“It made me curious. It is good to know that we are allowed to touch the computers”* and *“I expected something like this from Apple, but not for a PC”*.

5 Conclusions

Firstly, in responding to the research question, the findings support the basic assumption that the application of visual and auditory sensory cues, as in-store innovations, will influence shopper attention, resulting in approach as well as touch behaviour.

Secondly, the application of visual and auditory sensory cues impact on shopper approach behaviour at the point-of-purchase in a hypermarket. The analysis reveals that more shoppers approached the laptop after the introduction of a visual sensory cue and this aroused the shopper’s desire to investigate the laptop further. The auditory sensory cue through a human voice, in combination with the visual sensory cue, further enhances shopper approach behaviour.

In this regard, the combination of the two had a greater impact on the number of shoppers who approached the laptop. A possible interpretation is that the interplay between the sense of sight and the sense of touch stimulated a multi-sensory brand-experience of the laptop.

Thirdly, in order for the shoppers to investigate the laptop, touch behaviour follows approach behaviour, which illustrates the positive relationship between approaching and touching. The sign with the text Touch me encouraged the shoppers to approach and touch the laptop, resulting in a physical and psychological interaction with the computer. As a consequence, shoppers spent more time at the point-of-of purchase, and touched the laptop for a longer period of time.

Finally, a major conclusion of the presented research is that shopper approach behaviour has a positive correlation with touch behaviour, indicating that if a shopper approaches a product, he or she will probably also touch it. This highlights the significant relationship between approaching and touching, meaning that without approaching, there is no touching.

5.1 Theoretical implications

The research has demonstrated the positive impact on shopper approach and touch behavior at the point-of-purchase of the application of visual and auditory sensory cues as in-store innovations. This confirms the subconscious influence of sensory cues on shoppers and it is evident that sensory cues positively impact on shopper attention, which stimulates approach as well as touch behaviour at the point-of-purchase.

The empirical study also confirms the significance of in-store innovations in shopper marketing, especially related to such considerations as store atmospherics and design, as well as a more shopper-centric store layout (Shankar et al., 2011). The research is a response to the call from Shankar et al. (2011), on the need to conduct controlled field experiments to learn more about retailing innovations. In this sense, the study contributes to the literature on sensory marketing, shopper marketing and retailing in offering new knowledge.

5.2 Managerial implications

The presented research offers guidelines for managers of retail and service outlets regarding the advantages of in-store innovations in enhancing shopper approach and touch behaviour at the point-of-purchase. It is clear that the application of visual and auditory sensory cues encourages and stimulates shoppers to further examine and evaluate products in a retail setting.

In this case, the introduction of a sign, as well as a human voice, had a significant impact on shopper approaching and then touching the laptop. The multi-sensory combination of the sign and the voice was a successful display of PC laptops in the competition with Apple laptops. The cues created an appealing point-of-purchase atmosphere for the shoppers.

In conclusion, the research suggests that the application of visual and auditory sensory cues as in-store innovations, in relation the senses of sight and touch, is a useful strategy in developing an attractive store atmosphere and design.

5.3 Limitations and future research

This field experiment was conducted at the point-of-purchase of laptops in a computer department of a hypermarket, which means that in other retail settings such as stores or supermarkets, the findings could look quite different. Also, the fact that the combination of visual and auditory cues was observed, is another limitation of the study. Accordingly, further research avenues should address other products, other retail settings and other combinations of sensory cues.

Additional avenues for further research could be to examine the role and significance of different sensory cues as in-store innovations. Also, it would be worth investigating how these cues might influence shopper approach and touch behaviour in creating an appealing and attractive store atmosphere and design. To sum up, more field study research is needed, which creates interesting opportunities in developing new knowledge for retail management practice.

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Appendix 1

Q1 *How was your experience of the laptop?*

Very negative (1) Negative (2) Neither (3) Positive (4) Very positive (5)

Q2 *Did you notice the sign/voice?*

Not at all (1) To some extent (2) Neither (3) To a high degree (4) To the highest degree (5)

Q3 *How were you affected?*

Not at all (1) To some extent (2) Neither (3) To a high degree (4) To the highest degree (5)

Q4 *Were you stimulated to touch the computer?*

Not at all (1) To some extent (2) Neither (3) To a high degree (4) To the highest degree (5)

Q5 *Did you notice the sign? (only experimental group 2)*

Not at all (1) To some extent (2) Neither (3) To a high degree (4) To the highest degree (5)

Q6 *Did you buy a laptop?*

Demographics

Age and gender