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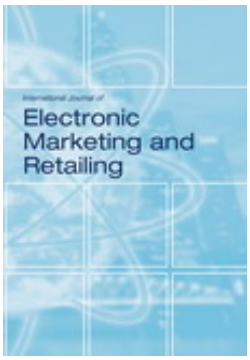

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Comparison of the consumers' need for touch in terms of high-touch and low-touch products in online and offline retail stores

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Abstract: In the current marketing literature, sensory marketing as an innovative marketing strategy has a growing interest. In order to manage sensory marketing effectively, it is crucial to handle each sensory stimuli in detail. Among the five senses, touch and its' effects on consumer behaviour have long been ignored in marketing literature. Based on the limited theoretical and empirical grounds of haptic (touch) issues, this study aims to empirically investigate the differences of need for touch between online and offline retail stores for high-touch and low-touch products. Analysis of covariance (ANCOVA) was used to test for differences among treatment groups. According to the results of the study, there was only a statistically significant difference in the context of the need for autotelic touch among the groups examined in the study. In the conclusion, some suggestions for future research and for the retailer and marketing managers are put forward.

Keywords: need for touch; high-touch products; low-touch products; consumer behaviour; online retail store; offline retail store.

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1 Introduction

The senses are one of the vital parts of human life. Almost everything in the world is understood by the senses (Sayadi et al., 2015). Creating senses or drawing attention to existing sensations can increase the attractiveness of products or services to consumers and thus increase purchasing and brand loyalty by establishing deeper and more personal relationships with existing products and services (de Waal Malefyt, 2015). Examples can be given for the effects of the senses on the competitive advantage of businesses, such as low lighting in IKEA's glassware division causing sales to increase, Starbucks achieving success through appealing to the different senses of consumers, or Singapore Airlines creating a unique brand identity with its 'Floridian Waters' fragrance containing rose, lavender, and citrus fruits (Balaji et al., 2011; Spence et al., 2014).

Since each individual becomes aware and perceives companies, products, and brands through the senses, more information about human senses can be obtained, enabling a firm to be more successful in marketing activities and making the individual's sensory experience more personal [Hultén et al., (2009), p.1]. In recent years, various studies on the role of senses in consumer behaviour in the field of marketing have been collected under the heading of sensory marketing (Krishna and Schwarz, 2014). Today, sensory marketing is seen as an innovative marketing strategy that focuses on the use of the five senses in marketing mix strategies to help marketers maintain the market value of their products and influence consumer behaviour (Khandelwal et al., 2020). Hussain (2019), examining the paradigm shift in marketing from traditional mass marketing to sensory marketing, stated that traditional mass markets are gradually disappearing and are being replaced by segmented markets with multiple segments where customisation and custom-made products are key.

Beyond various stimulus types, sensory stimuli (clues about sight, hearing, smell, touch, and taste) can be effective in creating a positive and memorable experience for the customer, which is one of the main goals of both online and offline stores (Biswas, 2019). It is thought that the marketing managers should be interested in the senses that may affect the behaviours of the consumers and try to activate them in order to influence the decision-making process of the consumer. On the other hand, it is known that marketing and advertising of products generally only appeal to the senses of sight and hearing and tend to neglect other senses. In this context, sensory marketing can be seen as an important and growing research area (Swahn et al., 2012).

Touch has been a remarkable element from Aristotle, who believes that it is a tool for all kinds of sensory perception, even seeing, to modern marketing researchers who have revealed that products play an important role in making purchasing decisions by

researching and evaluating (Peck and Childers, 2003). With the spread of non-touch environments such as the internet, touch has gained importance in conceptualising and measuring the individual difference, and more detailed research is needed in different product categories, especially in the context of online shopping, including consumer electronics, fashion products, and bags (Kühn et al., 2020). On the other hand, the need for touch has been a dynamic research subject in recent years due to the difficulties arising from the limitations of the digital environment, and in this sense, more and more diverse studies are needed in terms of scope to reveal the effect of the need to touch in online environments on consumer decisions (Duarte and e Silva, 2020).

In addition to being a source of information in consumers' shopping processes, the internet is a fast-growing retail channel where products can be purchased (Darley et al., 2010). The rapid popularity of online retailing and the fact that products or services can reach a wide audience in this way required the retailing industry to be examined more carefully and the issue of which marketing strategies should be applied according to the type of product to be purchased gained importance. Although online retail stores provide convenience in purchasing decisions of consumers, they may have different effects on consumer purchasing decisions according to different product types (for example, high-touch and low-touch products). While consumers may feel the need to touch these products when making their purchasing decisions and evaluations regarding some products such as clothing products, they do not feel the need to touch these products in their purchasing decisions such as flight tickets (Peck and Childers, 2003; Lynch et al., 2001; Cho and Workman, 2011). Krishna et al. (2017) stated that due to the presence of tactile differences, consumers should focus on how their attitudes towards a physical store and an online store affect product evaluations. Most of the previous studies investigate the consumers' need for touch separately in online retailing (Lee et al., 2017; Rathee and Rajain, 2019; Kühn et al., 2020; Silva et al., 2021) or offline retailing (Ringler et al., 2019; Ranaweera et al., 2021). Studies comparing consumers' need for touch between online and offline retailers focus on the mental representation of the product (Liu et al., 2017), willingness to pay (Kühn et al., 2020), and perceived quality (San-Martín et al., 2017). Among these studies, by conducting three separate experiments, Liu et al. (2017) have tried to reveal the importance of a consumer's ability to touch a specified product prior to purchase. They found that consumers feel more distance from the product in a no-touch environment and are less inclined to rely on haptic information for product evaluation. On the other hand, there is a need for an integrative study to explore the need for touch of consumers for high-touch and low-touch products within the context of both online and offline retailers. Thus, the aim of this study is to fill the gap in the literature by comparing the touch needs of consumers in terms of high-touch and low-touch products in online and offline retail stores.

2 Literature review and hypotheses development

In scientific studies conducted in the context of the senses related to consumption, it is known that sight is the most emphasised sense (Hultén, 2011; Kauppinen-Räisänen and Jauffret, 2018). Although studies on the sense of vision remain important, in recent years there has been an increasing interest in how other senses can affect consumer decision-making, product evaluation, and attention (Jansson-Boyd, 2011). The sense of touch has been accepted as an important sensory tool in conveying information to

individuals for many years and plays an important role in the evaluation and appreciation of many different products (Yazdanparast and Spears, 2013).

The skin, which is the largest organ of the human body, is the organ of touch (Koç, 2019). The skin has more than 4 million sensory receptors that can be easily manipulated by the materials, weight, softness, and comfort of the product (Hussain, 2014). Touch is defined as "active use of the hands to retrieve the attributes of an object stimulus, using both cutaneous and kinesthetic inputs" [James et al., (2007), p.219]. Haptic refers to the sense of touch and comes from the Greek word haptikos, meaning "I fasten onto, I touch" (Hussain, 2014).

One of the ways for consumers to make their purchasing decisions is to touch the products. Touch is a way of acquiring information helping the consumer to make their buying decisions by providing sensory forms of relevant information (Vieira, 2012). In fact, studies have shown that consumers prefer to choose products from stores that are allowed to touch the products (for example, McCabe and Nowlis, 2003). Specifically, when shopping for fashion products, it is important to touch or feel the product (Workman, 2010).

The need for touch is conceptually defined as a preference for revealing and using the information obtained through touch systems and is based on differences in motivation and ability among individuals (Peck and Childers, 2003). People with a high need for touch evaluate the properties of a product analytically and experimentally (Yazdanparast and Spears, 2012), in this context, the need for touch is considered as a kind of personality trait in the marketing literature (Elhai et al., 2016). Motivation for the need for touch is examined in both the retailing and psychology literature in two dimensions: instrumental (benefit-oriented) touch and autotelic (pleasure-oriented) touch (Peck and Childers, 2003; Alkaya and Devrani, 2018). The need for instrumental touch refers to aspects of pre-purchase touch that reflect the touch towards the result with a distinct purchase goal, including targeted evaluation results regarding the consumer (e.g., comfort and precision in their judgment) as well as the target product (e.g., quality or value) takes. These instrumental judgments are known to focus on tactile handling-compatible properties that reflect the texture, hardness, warmth, or weight of a product. On the other hand, the autotelic aspect of the need for touch (e.g., enjoyment and affect) is related to touch as an end in itself and includes a hedonism-oriented response seeking fun, arousal, sensory arousal, and pleasure. Autotelic touch corresponds to the sensory aspects of product touch, and multi-sensory psychophysical product relationships are investigated without necessarily involving purchasing goals (Peck and Childers, 2003).

While in the past, consumers generally purchased products and services from a single retail channel at all stages of the decision-making process, more recently, retailers have started to use different distribution channels (e.g., physical store, TV, catalogue and online) to present their products (Cho and Workman, 2011). After the advent of the internet, marketing scientists have begun to explore the effects of the internet on marketing activities for consumers. The suitability of the internet for marketing to consumers depends on the properties of the goods and services being marketed (Peterson et al., 1997). It is acknowledged by academicians and practitioners that there are some differences from traditional shopping environments to make transactions via a virtual environment, especially the methods of obtaining information about products by consumers (Danaher et al., 2003).

It has become important to conceptualise and measure the individual difference arising from the proliferation of various forms of non-touch media (e.g., catalogue and

internet shopping) (Peck and Childers, 2003). As it creates an intermediate barrier between skin and objects in virtual environments such as internet shopping channels, consumers' access to touch information is restricted and the properties of objects can only be evaluated through the sense of sight (Yazdanparast and Spears, 2012). Although there is a lack of physical contact in the purchasing process in online shopping, the desire of consumers to touch products may lose its importance in product categories where products are highly standardised (González-Benito et al., 2015).

When comparing online and offline shopping environments, the relative prominence of positive and negative features vary according to products, consumers, and situation (Levin et al., 2003). The channel preference of the consumers is affected by the type of product purchased, while consumers value different features in retail environments while shopping for different products (Cho and Workman, 2015). In the literature, a distinction has been made between the purchasing environment as tactile (traditional store/retailer) or non-touch (online store) (e.g., Jha et al., 2019). As an extension of this situation, the products are also classified according to their tactility. When the studies in which products are classified according to their tactility are examined, it can be said that mostly clothing products are evaluated in high-touch products and books in low-touch product categories (Levin et al., 2003; Cho and Workman, 2015; Wu et al., 2015). The sensory evaluation of the tactile properties of fabrics has been studied for years and has shed light on the tactile perception process of materials. Perceived touch is a multidimensional concept and especially softness perception has emerged as the most dominant aspect of fabric perception of texture (Kergoat et al., 2012). Purchasing clothing on the internet is perceived as risky, especially since the fit of body size, quality, and colour are important criteria for consumer decision-making, and product information similar to that obtained directly from product reviews can be obtained through technologies that use visual and sensory information effectively (Kim and Forsythe, 2009). For example, a study on apparel shopping by Cho and Workman (2011) found that shopping channel choice is influenced by need for touch as consumers who had a higher need for touch preferred local or non-local brick-and-mortar stores.

The concepts of low touch and high touch are closely related to ambiguity. While the qualities of low-touch products can be known before purchasing, the qualities of high-touch products are difficult to assess and can only be learned through direct experience (Wu et al., 2015). Most of the leading product categories in online sales (for example, computer hardware, software, financial services, music, videos, books, electronic goods, travel, and tickets) are low touch products, while some high touch products (for example, clothing, flowers, food, and drinks) can be sold electronically (Lynch et al., 2001).

An individual's involvement with something usually influences his/her attitude and behaviour relating to it (Slama and Tashchian, 1985). Specifically, product involvement can be defined shortly as the extent to which a consumer perceives a product to be important (Zaichkowsky, 1985). Depending on the level of involvement with the product, great variations can be noted among consumers' judgment, decision process, and search for information (Laurent and Kapferer, 1985; Park and Hastak, 1994). Similarly, consumers' levels of product involvement for high-touch and low-touch products may vary. In this respect, when the effects of the differences between these products on different variables are examined, it would be appropriate to eliminate the effect of product involvement.

In this study, which aims to compare consumers' need for touch in same online and offline stores in terms of predetermined high-touch and low-touch products, the following hypotheses have been developed based on the relevant literature:

H1 The need for touch of consumers in online and offline retail stores differs in terms of high-touch and low-touch products controlling for product involvement.

H1a The autotelic need for touch of consumers in online and offline retail stores differs in terms of high-touch and low-touch products controlling for product involvement.

H1b The instrumental need for touch of consumers in online and offline retail stores differs in terms of high-touch and low-touch products controlling for product involvement.

3 Research methodology

In this study, quantitative research methods were applied. In order to test the research hypotheses, an intergroup experimental design was applied and covariance analysis was performed. In this direction, as explained in the literature section of this study, two products with high touch and low touch were determined. In this study, it has been ensured those both products on which the research will be carried out have similar properties in terms of concreteness and are not among service products. In the determination of the product categories, among the high-touch and low-touch products that are most frequently discussed in the literature, the ones with the highest and lowest touch need were taken into consideration, and as a result, clothing products were selected as high-touch products and books were selected as low-touch products similar to previous studies (Levin et al., 2003; Cho and Workman, 2015; Wu et al., 2015). In this way, the characteristics of online and offline retail stores are compared for the same high-touch or low-touch products. Again, in the literature section, it has been concluded that apart from the product categories, the environment (online and offline) in which the products are sold should be evaluated in the context of research variables. Therefore, 2 × 2 ANCOVA was used to test whether consumers' need for touch differs in terms of product type (high and low touch products) and type of store (online and offline), with product involvement variable being covariance.

In the study, both dimensions of the need for touch was measured with the scale used by Peck and Childers (2003), and the scale used in the study of Yoo and Donthu (2001) was used to measure the product involvement variable, which was determined as the covariance variable. In addition, all of the scale items were measured using a seven-point Likert-type scale (1 = strongly disagree to 7 = strongly agree), as in the original studies they were taken.

3.1 Research sample

The population of this study is the university students studying in the south-central region of Turkey. Since, university students are known as effective surrogates for general consumers (Fan et al., 2013) with substantial spending power, student sample is appropriate for studying consumer behaviour (Cho and Workman, 2011). Prior studies on

online or offline shopping channels and the need for touch have used student samples (Flavián et al., 2016; Liu et al., 2017; San-Martín et al., 2017). Moreover, previous studies indicate that students are interested in buying books and clothing (e.g., Foucault and Scheufele, 2002; Van Kenhove et al., 2002; Lim et al., 2006) which the products are used for the comparison in this study, a student sample was intentionally chosen to reflect their views on the need for touch for these product categories.

Surveys were applied using online and face-to-face interviews on the sample selected from the population by convenience sampling. Between December 2020 and January 2021, 272 subjects were randomly assigned to the four experimental groups. Various methods are available to determine the sample size in tests such as ANOVA, in which different groups are included and therefore different samples are examined. The most common of these methods are statistical power approaches based on Cohen's (1988) effect size. Studies have examined the effects of variance heterogeneity on the empirical probability of a type I error for variance (ANOVA) F-test analysts and concluded that ANOVA is robust against variance heterogeneity when sample sizes are equal (Rogan and Keselman, 1977). Accordingly, in this study, a sample size of approximately equal size was chosen for each group. On the other hand, according to Cohen's (1988) formula, sufficient sample size for each group was calculated as 26 when $\alpha = 0.05$, effect size = 0.35, and power = 0.7. According to the sample size calculation, it can be said that the number of participants in this study is sufficient to examine the effects of the research.

3.2 Research application

The data of the research were obtained through the questionnaires applied to the students. Before applying the questionnaires, a pre-test was applied to ten students in order to evaluate the understandability of the items in the questionnaire. Considering the feedback obtained as a result of this application, the necessary corrections were made on the scale items and the scenario to be applied, and the final form of the questionnaire was given. In the study, four types of scenarios were created: purchasing clothing products from an offline store, purchasing clothing from an online store, purchasing books from an offline store, and purchasing books from an online store. With the scenarios presented before the scale items in the questionnaire form, the participants were asked to think that they were in a shopping situation for a specified product (clothing or book) from a store (online or offline). If the type of questionnaire answered by the subject participating in the study is related to the offline store, it is tried to facilitate the measurement of the participant's need for touch the products by manipulating it with the statement "in this store, the products are displayed in such a way that consumers can easily see and touch them."

4 Findings

When the socio-demographic characteristics of the students participating in the study are examined, it is seen that 53.3% are male, and most of the participants (55.9%) are in the 18-26 age range. The current education of the students participating in the study was asked and it was determined that the majority of the participants (73.5%) had undergraduate education. In terms of the income distribution, 15.8% of the participants were 1,000 Turkish Lira and less, 9.6% were between 1,001–2,000 Turkish Lira, 16.5% were between 2,001–3,000 Turkish Lira, 13.6% were 3,001–4,000 Turkish Lira, 15.1%

of them have a household income in the range of 4,001–5,000 Turkish Lira and 29.4% of them have a household income of 5,000 Turkish Lira or more.

Table 1 Factor analysis results

Items	*Factor 1*	*Factor 2*	*Factor 3*	*Cronbach's alpha*
When walking through stores, I cannot help touching all kinds of products.	0.859			0.920
Touching products can be fun.	0.843			
When browsing in stores, I like to touch lots of products.	0.825			
I like to touch products even if I have no intention of buying them.	0.820			
I find myself touching all kinds of products in stores.	0.794			
When browsing in stores, it is important for me to handle all kinds of products.	0.600			
I feel more confident making a purchase after touching a product.		0.789		0.877
The only way to make sure a product is worth buying is to actually touch it.		0.777		
If I cannot touch a product in the store, I am reluctant to purchase the product.		0.760		
I place more trust in products that can be touched before purchase.		0.758		
I feel more comfortable purchasing a product after physically examining it.		0.739		
There are many products that I would only buy if I could handle them before purchase.		0.665		
I use (wear/read) product category × (clothing/book) very often.			0.884	0.843
I am very involved with product category × (clothing/book).			0.882	
I am a product category × (clothing/book) expert.			0.773	
I am not interested in the product category (clothing/book).			0.722	
Variance explained	26.550	24.741	17.404	

4.1 Factor analysis and reliability analysis

In this study, factor analysis was used to discover the patterns in the relationships between items and to reduce the items to factors. It can be said that the data obtained in this study are suitable for factor analysis and the Kaiser-Meyer-Olkin value (KMO = 0.877; p = 0.000 < 0.05), which tests the adequacy of the sample size, is sufficient for the application of factor analysis.

Communality value is the sum of common variance and specific variance and is also used in interpreting the reliability of items (Büyüköztürk, 2007). The communalities

values for the items of the variables calculated as a result of the factor analysis should be greater than 0.5 and it is sufficient for each of these items to be loaded to the relevant factors with a factor load of at least 0.5 (Hair et al., 1998). The results of the factor analysis performed are summarised in Table 1 and it was observed that the common factor variance values of all scale items have a value higher than 0.5.

The Cronbach's alpha value was calculated to test the internal consistency and reliability of the scales used in this study. According to Nunnally (1978), Cronbach's alpha value should be higher than 0.7. As a result of the analysis, Cronbach's alpha values for all scales are respectively; 0.920 for the autotelic need for touch scale, 0.877 for the instrumental need for touch scale, and 0.843 for the product involvement scale, and according to these results, it can be said that the scales are very reliable.

4.2 Testing the research hypotheses

This study, it was aimed to test the differences between four different groups consisting of two retail environments (online and offline) and two product groups (high-touch and low-touch) in the context of autotelic and instrumental touch needs, which are considered as research variables. ANCOVA was applied to test the research hypotheses. In experimental designs, a common variable (covariance) is included in the study in order to evaluate the effects of the main factors (variables) of interest in the experiment more accurately and to control the effects of other factors that may affect the dependent variable of interest. In this sense, it is recommended to use ANCOVA in experimental designs (Schneider et al., 2015). Some prerequisites should be met for the selection of the covariance variable in ANCOVA (Stevens, 2009). In choosing the appropriate covariance, it is expected that the covariance variable has a continuous variable (measured at least in the interval scale), its reliability is sufficient (Cronbach's alpha value is at least 0.7), and it has statistically significant relationships with dependent variables [Büyüköztürk, (1998), p.94; Owen and Froman, (1998), p.558]. The involvement scale, which consists of four items, has been measured in a seven-point Likert scale, and it can be said to be a continuous variable. The reliability of the product involvement scale, which is considered as a covariance variable, is quite high. In Table 2, which shows the relationships between research variables, when the relationships between product involvement and the autotelic and instrumental need for touch discussed in the study are examined, it is seen that there are statistically significant relationships. As a result, it can be said that the product involvement variable selected as the covariance in this study meets the prerequisites.

Table 2 Inter-construct correlations

			1	*2*	*3*
1	Product involvement	Pearson r	1		
		Sig.			
2	Autotelic need for touch	Pearson r	0.239*	1	
		Sig.	0.000		
3	Instrumental need for touch	Pearson r	0.185*	0.584*	1
		Sig.	0.002	0.000	

Note: *p < 0.01.

For ANCOVA to be applied, some assumptions should be provided. These assumptions were named by Huitema (2011) as independent observations, normality, homogeneity, homogeneity of regression slopes, and linearity. In general, statistical packages ignore the assumptions and go directly to the main analysis. In programs that perform analysis such as ANCOVA, the Levene test is presented for variance homogeneity, but other hypothetical tests should be examined by the user of these programs (Owen and Froman, 1998). Because each participant is randomly assigned to the groups studied in the trial, it is thought to be more likely independent than the assignment of participants according to a non-random procedure.

As a statistical rule, skewness and kurtosis should fall between +2 and –2 if the data are normally distributed [Cameron, (2004), p.543]. In this study, for interest, skewness –0.945, kurtosis 0.603; for autotelic touch need skewness 0.140, kurtosis –0.966; for the instrumental need for touch, skewness –0.403, kurtosis –0.354 values were obtained, and by looking at these values, it can be said that all variables show normal distribution.

Since it is known that homogeneity will be achieved if there are equal and sufficient number of samples (n > 30) for each group (Pallant, 2005), it is thought that the homogeneity assumption is provided in this study (n1 = 66, n2 = 69, n3 = 70, n4 = 67). The b-coefficients for the covariate(s) for the homogeneity of the regression slopes should be equal across all subpopulations. When Table 3 is examined whether the regression tendencies are homogeneous according to the interaction between the research variables and the product interest, which is the covariance variable, it is seen that the regression tendencies are homogeneous since the significance value for touch need, trust and purchase intention is p > 0.05, and this assumption can be said to be met (Pallant, 2005).

Table 3 Homogeneity evaluation of regression slopes according to the interaction of the covariance variable with the dependent variable

Covariance	*Dependent variable*	*SS*	*df*	*MS*	*F*	*p-value*
Involvement	Autotelic need for touch	18.571	3	6.190	2.371	0.071
	Instrumental need for touch	6.182	3	2.061	1.107	0.347

Therefore, it was found appropriate to apply ANCOVA. After providing ANCOVA assumptions, the assumption of homogeneity of variances was examined by Levene's test. The Levene test calculated as a result of ANCOVA, in which the need for autotelic touch is the dependent variable, confirmed the assumption that variances are homogeneous [F(3, 268) = 0.534: p = 0.660 > 0.05].

Table 4 ANCOVA results for autotelic need for touch

Source	*Type III SS*	*df*	*MS*	*F*	*p-value*	*Partial eta sq.*
Adjusted model	64.032[a]	4	16.008	6.039	0.000	0.083
Intercept	80.471	1	80.471	30.355	0.000	0.102
Involvement	49.435[b]	1	49.435	18.648	0.000	0.065
Group	19.964	3	6.655	2.510	0.059	0.027
Error	707.810	267	2.651			
Total	5,024.417	272				

Notes: [a]R^2 = 0.083 (adj. R^2 = 0.069); [b]covariance variable.

According to the F statistics values in Table 4, where the test of differences between groups in terms of the autotelic need for touch is performed, it is said that there is no statistically significant difference at the level of $\alpha = 0.05$ in terms of autotelic touch need among the groups examined in the study when product involvement is covariance variable ($p = 0.059 > 0.05$). Accordingly, the H1a hypothesis cannot be supported. Therefore, consumers' need for autotelic touch does not differ in terms of high-touch and low-touch products in online and offline retail stores.

The Levene test calculated as a result of ANCOVA, in which the need for instrumental touch is the dependent variable, confirmed the assumption that variances are homogeneous [$F(3, 268) = 0.907$; $p = 0.438 > 0.05$].

Table 5 ANCOVA results for instrumental need for touch

Source	*Type III SS*	*df*	*MS*	*F*	*p-value*	*Partial eta sq.*
Adjusted model	54.335[a]	4	13.584	7.286	0.000	0.098
Intercept	205.010	1	205.010	109.967	0.000	0.292
Involvement	18.176[b]	1	18.176	9.749	0.002	0.035
Group	35.468	3	11.823	6.342	0.000	0.067
Error	497.767	267	1.864			
Total	6,347.250	272				

Notes: [a]$R^2 = 0.098$ (adj. $R^2 = 0.085$); [b]covariance variable.

Table 6 Mean and standard error values of the compared groups in terms of the instrumental need for touch

Group #	*Group*	*n*	*Mean*	*Std. error*
1	Clothing product/offline retail store	66	5.036	0.168
2	Clothing product/online retail store	69	4.774	0.165
3	Book/offline retail store	70	4.613	0.164
4	Book/online retail store	67	4.042	0.167

According to the F statistic values from Table 5, where the test of differences between groups in terms of the instrumental need for touch is carried out when product involvement is covariance variable, it can be said that there is a statistically significant difference ($p = 0.000 < 0.05$). Accordingly, the H1b hypothesis is supported. Therefore, consumers' need for instrumental touch in online and offline retail stores differs in terms of high-touch and low-touch products.

A post-hoc test was conducted to determine among which groups the difference emerged as a result of ANCOVA. The average and standard error values of the groups calculated as a result of the post-hoc test are shown in Table 6 and the pairwise comparison results are shown in Table 7. When product involvement was considered as a covariance variable and the mean values of the groups compared in terms of instrumental touch need were examined, it was calculated that the first group was 5.036, the second group was 4.774, the third group was 4.613, and the fourth group was 4.042.

Table 7 Pairwise comparison test results in the context of the instrumental need for touch

Group # (I)	*Group # (J)*	*Mean difference (I–J)*	*Std. error*	*p-value*
1	*4*	0.994*	0.237	0.000
2	*4*	0.733*	0.234	0.012

Note: *p < 0.05.

When the pairwise comparison results are examined in Table 7, it is revealed that there is a statistically significant difference between the need for instrumental touch when purchasing clothing from offline stores and the need for instrumental touch when purchasing books from online stores ($p = 0.000 < 0.05$). In addition, it is concluded that there is a statistically significant difference between the need for instrumental touch in the case of purchasing clothing products from online stores and the need for instrumental touch when purchasing books from online stores ($p = 0.012 < 0.05$).

5 Conclusions and recommendations

Touch is a sense whose importance is increasing day by day from past to present. Especially in the context of business practices, where sensory marketing and experiential marketing issues gain value in an intensely competitive environment, research on consumer senses has started to attract attention. On the other hand, as the internet supports non-touch shopping environments and the COVID-19 pandemic process increases the tendency to touchless shopping, it has become important to measure and examine the individual touch needs differences in consumers' shopping behaviour. When examining the differences in touch needs, it was necessary to investigate different characteristics of consumers, apart from purchasing environment differences (for example online store and offline store) and product differences (for example, high-touch and low-touch products) that may reveal these differences. In this direction, this study, it is aimed to compare online and offline retailer stores in terms of high-touch and low-touch products.

When the findings of the study were examined, it was determined that there were differences between the groups in the study in terms of the need for instrumental touch. The need for instrumental touch when purchasing clothing products from online or offline stores is felt more than buying books from online stores, the importance of obtaining information about the quality or value of clothing products through the sense of touch and thus obtaining a benefit. This result reveals that the consumers' need for touch differs in terms of the tactility of the product rather than the shopping environment. This result is consistent with the findings of Peck and Childers (2003) and Silva et al. (2021) which an individual consumer's need for touch varies depending on product categories. On the other hand, within the scope of the research, it was observed that there was no statistically significant difference between the purchase of the book, which is a low touch product, from traditional (offline) stores, and the purchase of clothing products selected as high touch products from online or offline stores in terms of any dimension of the need for touch. This result can be explained by the fact that the opportunity to examine the books in detail when purchasing books from traditional stores is realised by touching these books for benefit or pleasure. For example, before purchasing a book from traditional stores, the content of the books can be examined in detail and it is easier to

decide on the benefit and value of this book. On the other hand, the ability to view pre-purchase books in online stores is not as detailed as in traditional stores.

The differences in the context of online and offline retailing in the study reveal the importance of the development of website store designs that can eliminate or support the need of online retailers, especially the touch between consumers' senses. The success of the visual presentation quality in online stores, the ability to provide clues about the tactile structure of the product apart from the technical details (such as the material, colour of the product) will increase the level of knowledge that consumers can obtain about the product and positively affect their purchasing behaviour. On the other hand, the fact that the information they will provide about the product is an element of information for potential customers by allowing the consumers who have purchased the product and have gained product experience to write comments on the website where the product is sold, contributing to the increase of the knowledge level of these customers about the products. Liu et al. (2017) suggested that offline retailers may gain an advantage from online retailers by offering consumers the opportunity to physically touch a product prior to purchase, as their basic ability. A similar suggestion can be made here that offline retailers can challenge online retailers by identifying effective marketing strategies emphasising the tactile properties of their products. In this way, retailers may reveal the haptic cues to communicate the tactile experience.

In addition to performing this study for different high and low touch products, it is suggested to associate purchasing behaviours with different senses. In today's post-modern marketing approach, where senses and experiences are rapidly gaining importance, managers should focus more on the senses in their marketing strategies.

References

Alkaya, B.D. and Devrani, T.K. (2018) 'The effects of need for touch and written information on psychological ownership', *Journal of Marketing and Marketing Research*, Vol. 11, No. 22, pp.205–232.

Balaji, M.S., Raghavan, S. and Jha, S. (2011) 'Role of tactile and visual inputs in product evaluation: a multisensory perspective', *Asia Pacific Journal of Marketing and Logistics*, Vol. 23, No. 4, pp.513–530.

Biswas, D. (2019) 'Sensory aspects of retailing: theoretical and practical implications', *Journal of Retailing*, Vol. 95, No. 4, pp.111–115.

Büyüköztürk, Ş. (1998) 'Covariance analysis (a comparative analysis with analysis of variance)', *Ankara University Faculty of Educational Sciences Journal*, Vol. 31, No. 1, pp.91–105.

Büyüköztürk, Ş. (2007) *Manual of Data Analysis for Social Sciences*, 7th ed., Pegem, Ankara.

Cameron, A.C. (2004) 'Kurtosis', in Lewis-Beck, M., Bryman, A. and Liao, T.F. (Eds.): *The Sage Encyclopedia of Social Science Research Methods*, p.545, Sage, Thousand Oaks.

Cho, S. and Workman, J. (2011) 'Gender, fashion innovativeness and opinion leadership, and need for touch', *Journal of Fashion Marketing and Management: An International Journal*, Vol. 15, No. 3, pp.363–382.

Cho, S. and Workman, J.E. (2015) 'Effects of need for touch, centrality of visual product aesthetics and gender on channel preference for apparel shopping', *Journal of Global Fashion Marketing*, Vol. 6, No. 2, pp.120–135.

Cohen, J. (1988) *Statistical Power Analysis for the Behavioral Sciences*, 2nd ed., Lawrence Erlbaum Associates, Hillsdale.

Danaher, P.J., Wilson, I.W. and Davis, R.A. (2003) 'A comparison of online and offline consumer brand loyalty', *Marketing Science*, Vol. 22, No. 4, pp.461–476.

Darley, W.K., Blankson, C. and Luethge, D.J. (2010) 'Toward an integrated framework for online consumer behavior and decision making process: a review', *Psychology & Marketing*, Vol. 27, No. 2, pp.94–116.

de Waal Malefyt, T. (2015) 'The senses in anthropological and marketing research: investigating a consumer-brand ritual holistically', *Journal of Business Anthropology*, Vol. 4, No. 1, pp.5–30.

Duarte, P. and e Silva, S.C. (2020) 'Need-for-touch and online purchase propensity: a comparative study of Portuguese and Chinese consumers', *Journal of Retailing and Consumer Services*, Vol. 55, pp.102–122.

Elhai, J.D., Levine, J.C., Dvorak, R.D. and Hall, B.J. (2016) 'Fear of missing out, need for touch, anxiety and depression are related to problematic smartphone use', *Computers in Human Behavior*, Vol. 63, pp.509–516.

Fan, X., Liu, F. and Zhang, J. (2013) 'To be familiar or to be there? The roles of brand familiarity and social presence on web store image and online purchase intention', *International Journal of Electronic Marketing and Retailing*, Vol. 5, No. 3, pp.199–221.

Flavián, C., Gurrea, R. and Orús, C. (2016) 'Choice confidence in the webrooming purchase process: the impact of online positive reviews and the motivation to touch', *Journal of Consumer Behaviour*, Vol. 15, No. 5, pp.459–476.

Foucault, B.E. and Scheufele, D.A. (2002) 'Web vs. campus store? Why students buy textbooks online', *Journal of Consumer Marketing*, Vol. 19, No. 5, pp.409–423.

González-Benito, Ó., Martos-Partal, M. and San Martín, S. (2015) 'Brands as substitutes for the need for touch in online shopping', *Journal of Retailing and Consumer Services*, Vol. 27, pp.121–125.

Hair Jr., J.F., Anderson, R.E., Tatham, R.L. and Black, W.C. (1998) *Multivariate Data Analysis*, Prentice-Hall, Upper Saddle River, NJ.

Huitema, B. (2011) *The Analysis of Covariance and Alternatives: Statistical Methods for Experiments, Quasi-Experiments, and Single-Case Studies*, No. 608, John Wiley & Sons, Hoboken, NJ.

Hultén, B. (2011) 'Sensory marketing: the multi-sensory brand-experience concept', *European Business Review*, Vol. 23, No. 3, pp.256–273.

Hultén, B., Broweus, N. and Van Dijk, M. (2009) 'What is sensory marketing?', in *Sensory Marketing*, pp.1–23, Palgrave, Macmillan.

Hussain, S. (2014) 'The impact of sensory branding (five senses) on consumer: a case study on KFC (Kentucky fried chicken)', *International Journal of Research in Business Management*, Vol. 2, No. 5, pp.47–56.

Hussain, S. (2019) 'Sensory marketing strategies and consumer behavior: sensible selling using all five senses', *IUP Journal of Business Strategy*, Vol. 16, No. 3, pp.34–44.

James, T.W., Kim, S. and Fisher, J.S. (2007) 'The neural basis of haptic object processing', *Canadian Journal of Experimental Physiology*, Vol. 61, No. 3, pp.219–229.

Jansson-Boyd, C.V. (2011) 'Touch matters: exploring the relationship between consumption and tactile interaction', *Social Semiotics*, Vol. 21, No. 4, pp.531–546.

Jha, S., Balaji, M.S., Stafford, M.B.R. and Spears, N. (2019) 'Haptic information processing and need for touch in product evaluation', *Journal of Consumer Marketing*, Vol. 37, No. 1, pp.55–64.

Kauppinen-Räisänen, H. and Jauffret, M.N. (2018) 'Using colour semiotics to explore colour meanings', *Qualitative Market Research: An International Journal*, Vol. 21, No. 1, pp.101–117.

Kergoat, M., Giboreau, A., Nicod, H., Faye, P., Diaz, E., Beetschen, M.A. and Meyer, T. (2012) 'Consumer preference for tactile softness: a question of affect intensity?', *Journal of Sensory Studies*, Vol. 27, No. 4, pp.232–246.

Khandelwal, M., Sharma, A., Indoria, V. and Jain, V. (2020) 'Sensory marketing: an innovative marketing strategy to sustain in emerging markets', *International Journal of Public Sector Performance Management*, Vol. 6, No. 2, pp.236–245.

Kim, J. and Forsythe, S. (2009) 'Adoption of sensory enabling technology for online apparel shopping', *European Journal of Marketing*, Vol. 43, Nos. 9/10, pp.1101–1120.

Koç, E. (2019) *Tüketici Davranişi ve Pazarlama Stratejileri Global ve Yerel Yaklaşim*, 8th ed., Seçkin, Ankara.

Krishna, A. and Schwarz, N. (2014) 'Sensory marketing, embodiment, and grounded cognition: a review and introduction', *Journal of Consumer Psychology*, Vol. 24, No. 2, pp.159–168.

Krishna, A., Cian, L. and Aydınoğlu, N.Z. (2017) 'Sensory aspects of package design', *Journal of Retailing*, Vol. 93, No. 1, pp.43–54.

Kühn, F., Lichters, M. and Krey, N. (2020) 'The touchy issue of produce: need for touch in online grocery retailing', *Journal of Business Research*, Vol. 117, pp.244–255.

Laurent, G. and Kapferer, J.N. (1985) 'Measuring consumer involvement profiles', *Journal of Marketing Research*, Vol. 22, No. 1, pp.41–53.

Lee, Y.J., Yang, S. and Johnson, Z. (2017) 'Need for touch and two-way communication in e-commerce', *Journal of Research in Interactive Marketing*, Vol. 11, No. 4, pp.341–360.

Levin, A.M., Levin, I.P. and Health, C.E. (2003) 'Product category dependent consumer preference for online and offline shopping features and their influence on multi-channel retail alliances', *Journal of Electronic Commerce Research*, Vol. 4, No. 3, pp.85–93.

Lim, K.H., Sia, C.L., Lee, M.K. and Benbasat, I. (2006) 'Do I trust you online, and if so, will I buy? An empirical study of two trust-building strategies', *Journal of Management Information Systems*, Vol. 23, No. 2, pp.233–266.

Liu, W., Batra, R. and Wang, H. (2017) 'Product touch and consumers' online and offline buying: the role of mental representation', *Journal of Retailing*, Vol. 93, No. 3, pp.369–381.

Lynch, P.D., Kent, R.J. and Srinivasan, S.S. (2001) 'The global internet shopper: evidence from shopping tasks in twelve countries', *Journal of Advertising Research*, Vol. 41, No. 3, pp.15–23.

McCabe, D.B. and Nowlis, S.M. (2003) 'The effect of examining actual products of product descriptions on consumer preference', *Journal of Consumer Psychology*, Vol. 13, No. 4, pp.431–439.

Nunnally, J.C. (1978) *Introduction to Psychological Measurement*, McGraw-Hill, New York.

Owen, S.V. and Froman, R.D. (1998) 'Uses and abuses of the analysis of covariance', *Research in Nursing & Health*, Vol. 21, No. 6, pp.557–562.

Pallant, J. (2005) *SPSS Survival Manual: A Step by Step Guide to Data Analysis using SPSS for Windows Version 12*, 2nd ed., Open University Press, New York.

Park, J.W. and Hastak, M. (1994) 'Memory-based product judgments: effects of involvement at encoding and retrieval', *Journal of Consumer Research*, Vol. 21, No. 3, pp.534–547.

Peck, J. and Childers, T.L. (2003) 'Individual differences in haptic information processing: the 'need for touch' scale', *Journal of Consumer Research*, Vol. 30, No. 3, pp.430–442.

Peterson, R.A., Balasubramanian, S. and Bronnenberg, B.J. (1997) 'Exploring the implications of the internet for consumer marketing', *Journal of the Academy of Marketing Science*, Vol. 25, No. 4, pp. 329–346.

Ranaweera, A.T., Martin, B.A. and Jin, H.S. (2021) 'What you touch, touches you: the influence of haptic attributes on consumer product impressions', *Psychology & Marketing*, Vol. 38, No. 1, pp.183–195.

Rathee, R. and Rajain, P. (2019) 'Online shopping environments and consumer's need for touch', *Journal of Advances in Management Research*, Vol. 16, No. 5, pp.814–826.

Ringler, C., Sirianni, N.J., Gustafsson, A. and Peck, J. (2019) 'Look but don't touch! The impact of active interpersonal haptic blocking on compensatory touch and purchase behavior', *Journal of Retailing*, Vol. 95, No. 4, pp.186–203.

Rogan, J.C. and Keselman, H.J. (1977) 'Is the ANOVA f-test robust to variance heterogeneity when sample sizes are equal?: An investigation via a coefficient of variation', *American Educational Research Journal*, Vol. 14, No. 4, pp.493–498.

San-Martín, S., Gonzalez-Benito, O. and Martos-Partal, M. (2017) 'To what extent does need for touch affect online perceived quality?', *International Journal of Retail & Distribution Management*, Vol. 45, No. 9, pp.950–968.

Sayadi, M., Mobarakabadi, H. and Hamidi, K. (2015) 'Sensory marketing and consumer buying behavior', *Advanced Social Humanities and Management*, Vol. 2, No. 4, pp.100–104.

Schneider, B.A., Avivi-Reich, M. and Mozuraitis, M. (2015) 'A cautionary note on the use of the analysis of covariance (ANCOVA) in classification designs with and without within-subject factors', *Frontiers in Psychology*, Vol. 6, p.474 [online] https://doi.org/10.3389/fpsyg.2015.00474.

Silva, S.C., Rocha, T.V., De Cicco, R., Galhanone, R.F. and Mattos, L.T.M.F. (2021) 'Need for touch and haptic imagery: an investigation in online fashion shopping', *Journal of Retailing and Consumer Services*, Vol. 59, p.102378.

Slama, M.E. and Tashchian, A. (1985) 'Selected socioeconomic and demographic characteristics associated with purchasing involvement', *Journal of Marketing*, Vol. 49, No. 1, pp.72–82.

Spence, C., Puccinelli, N.M., Grewal, D. and Roggeveen, A.L. (2014) 'Store atmospherics: a multisensory perspective', *Psychology & Marketing*, Vol. 31, No. 7, pp.472–488.

Stevens, J.P. (2009) *Applied Multivariate Statistics for the Social Sciences*, Routledge, New York.

Swahn, J., Mossberg, L., Öström, Å. and Gustafsson, I.B. (2012) 'Sensory description labels for food affect consumer product choice', *European Journal of Marketing*, Vol. 46, Nos. 11/12, pp.1628–1646.

Van Kenhove, P., Wijnen, K. and De Wulf, K. (2002) 'The influence of topic involvement on mail-survey response behavior', *Psychology & Marketing*, Vol. 19, No. 3, pp.293–301.

Vieira, V.A. (2012) 'An evaluation of the need for touch scale and its relationship with need for cognition, need for input, and consumer response', *Journal of International Consumer Marketing*, Vol. 24, Nos. 1–2, pp.57–78.

Workman, J.E. (2010) 'Fashion consumer groups, gender, and need for touch', *Clothing and Textiles Research Journal*, Vol. 28, No. 2, pp.126–139.

Wu, K., Vassileva, J., Noorian, Z. and Zhao, Y. (2015) 'How do you feel when you see a list of prices? The interplay among price dispersion, perceived risk and initial trust in Chinese C2C market', *Journal of Retailing and Consumer Services*, Vol. 25, pp.36–46.

Yazdanparast, A. and Spears, N. (2012) 'Need for touch and information processing strategies: an empirical examination', *Journal of Consumer Behaviour*, Vol. 11, No. 5, pp.415–421.

Yazdanparast, A. and Spears, N. (2013) 'Can consumers forgo the need to touch products? An investigation of nonhaptic situational factors in an online context', *Psychology & Marketing*, Vol. 30, No. 1, pp.46–61.

Yoo, B. and Donthu, N. (2001) 'Developing and validating a multidimensional consumer-based brand equity scale', *Journal of Business Research*, Vol. 52, No. 1, pp.1–14.

Zaichkowsky, J.L. (1985) 'Measuring the involvement construct', *Journal of Consumer Research*, Vol. 12, No. 3, pp.341–352.