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Underwear Purchasing Behavior of Turkish Consumers and A Quality Function Deployment Application

Türk Tüketicilerin İç Giysi Satın Alma Davranışları ve Kalite Fonksiyon Göçerimi Uygulaması

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Arastırma Makalesi / Research Article

UNDERWEAR PURCHASING BEHAVIOR OF TURKISH CONSUMERS AND A QUALITY FUNCTION DEPLOYMENT APPLICATION

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ABSTRACT: In this study, it was aimed to determine the underwear preferences and expectations of Turkish consumers and to evaluate the factors affecting them. In addition, the quality function deployment (QFD) technique was used to establish the importance level of various technical requirements in order to develop underwear which satisfied consumer expectations. The results indicated that gender played an essential role in consumers' underwear preferences. Furthermore, the findings of QFD revealed that the most important technical requirement in underwear production was the selection of appropriate raw material. The results of this study will help underwear manufacturers and designers to develop underwear taking into account consumer expectations.

Keywords: Consumer expectation, consumer preference, quality function deployment (QFD), underwear

TÜRK TÜKETİCİLERİN İÇ GIYSİ SATIN ALMA DAVRANIŞLARI VE KALİTE FONKSİYON GÖÇERİMİ UYGULAMASI

ÖZET: Bu çalışmada Türk tüketicilerin iç giyim tercihlerinin ve beklentilerinin belirlenmesi ve bunları etkileyen faktörlerin değerlendirilmesi amaçlanmıştır. Ayrıca, tüketici beklentilerini karşılayan iç giysiler geliştirmek için çeşitli teknik gerekliliklerin önem düzeyini belirlemek amacıyla kalite fonksiyon göçerimi (KFG) tekniği kullanılmıştır. Sonuçlar, cinsiyetin tüketicilerin iç giyim tercihlerinde önemli bir rol oynadığını göstermiştir. Ayrıca, KFG'nin bulguları iç giysi üretiminde en önemli teknik gerekliliğin uygun hammadde seçimi olduğunu ortaya koymuştur. Bu çalışmanın sonuçları, iç giyim üreticileri ve tasarımcılarının tüketici beklentilerini dikkate alarak iç giysi geliştirmelerine yardımcı olacaktır.

Anahtar kelimeler: Tüketici beklentisi, tüketici tercihi, kalite fonksiyon göçerimi (KFG), iç giysi

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1. INTRODUCTION

Performance, functionality, and usefulness of textile products have become important for consumers in recent years, and consumer expectations and purchasing behaviors have highly changed. Therefore, textile producers have started to take into consideration their customers' preferences and expectations, as well as innovations in the textile industry in order to manufacture high-quality and marketable products and to increase their competitive abilities in the market. Also, the research of consumer purchasing behavior is an essential tool for the companies to analyze their target market and purchaser society and is beneficial to develop the right marketing strategies. In the literature, many researchers have evaluated factors influencing the textile consumers' purchasing behaviors and expectations. Eckman *et al.* [1] conducted free-response interviews with female customers to explore the factors affecting garment buying decisions. It was observed that the color/pattern, styling, and fabric of garments were the most crucial factors influencing the garment selection from display racks. Also, the fit, styling, and appearance of garments affected the adoption or rejection of garments. Shim and Bickle [2] investigated female apparel market segments and developed a profile of each segment regarding psychographics, shopping orientations, patronage behaviors, and demographics. They reported that there were three groups of female consumers: symbolic/instrumental, practical/conservative, and apathetic users of clothing. Yoo [3] examined factors influencing the jacket design preferences of females. According to the results of this study, their preferences were related to age, ethnicity, clothing design elements, ability to modify self-presentation, self-monitoring, and body shape. Young adult consumers' buying behavior for casual clothes and sports shoes were examined by Lu Hsu and Chang [4]. They pointed out that the brand of products and the suggestions of salespersons and consumers' friends had significant impacts on the buying decisions of consumers. Kinley [5] determined that the female consumers shopping from specialty store preferred garments which gave fashion-forward, sexy, and reputation benefits. In addition, these benefits sought had effects on their clothing purchase frequency, shopping behavior, and the amount of money spent on a product. Risius *et al.* [6] conducted a survey in order to identify primary bra variables. The findings showed that these variables were the comfort, bra's ability to stay in place, optimal fit, the appearance under clothing, support, discreetness, shoulder strap design, upper torso silhouette, breast shape, fabric and the breast lift for survey respondents.

In an attempt to make contact with customers and to understand their demands, suppliers and researchers use various data collection tools such as questionnaires, keeping statistics, tracking shopping data and so on. Also, many different methods are used to analyze gathered data, to understand what consumers want and to translate consumer expectations into product specifications [7-9]. Quality Function Deployment (QFD), which links production techniques and consumer demands, is one of these methods and

helps to develop new products meeting consumer expectations [10-12]. While Akao [13] described QFD as "a method for developing a design quality aimed at satisfying the customer and then translating the customer's demand into design targets and major quality assurance points to be used throughout the production phase", Shahin [14] identified this term as "a customer-driven product development". Translating the textile market demands from consumers' viewpoint into technical product characteristics through QFD is essential for the textile industry. Huang and Tan [11] examined factors influencing garment design and product quality using the QFD approach. They found that keen observation ability, marketing analysis and market development of a company were crucial factors in order to manufacture high value-added products. Golshan *et al.* [15] gathered information about the factors affecting male customers' garment selection through a questionnaire and also, determined the most critical technical characteristics using the house of quality considering customer expectations. The findings showed that suitable design, printing and packing specifications, essential requirements, optimization of production planning, and appropriate sewing machine settings influenced on the purchase of a textile product. Kamal *et al.* [16] used the QFD method to redesign a textile cultural product, called Malaysia Batik sarong. The source of fiber and the finishing had the highest relative weights among all examined factors.

Even though many studies about textile consumer preferences and perceptions were done, there were a few studies about the underwear market in the literature [8, 17-19]. This study was aimed to evaluate the underwear preferences and expectations of consumers through a questionnaire. Besides, the importance level of technical characteristics to produce underwear considering consumers' perspective was investigated through the Quality Function Deployment approach. This knowledge will assist underwear manufacturers and designers to manufacture marketable products which meet customer expectations.

2. RESEARCH METHODS AND PROCEDURES

This study aimed to investigate the factors influencing the preferences and expectations of Turkish underwear consumers. Therefore, two research models were designed (Figure 1 and 2), and a questionnaire structured into three sections was used to collect data. The first part of this questionnaire was about the demographic details of respondents. The second part consisted of multiple-choice questions about their underwear preferences (e.g., shopping frequency, preferred raw material, and price). In the last part, their expectations from the underwear were determined through 16 questions using a 5-point Likert-type scale (5-very important, 1-not important).

In this study, convenience sampling method, which is the least expensive and time-consuming method, was used to collect the data. The sample size was calculated as at least 384 individuals ($d=0.05$, p and $q=0.5$ at 5% tolerance with a 95% possibility) [20]. 462 questionnaires were responded through emails or were

filled directly by participants, and a total of 438 usable questionnaires were analyzed. This research was done from January to March of 2015. The composition of respondents was 156 males (35.6%) and 282 females (64.4%) who work in the office (28.3%), class (32.6%), home (9.6%), outdoors (8.4%), factory (8%), and other places (13%). 40% of the respondents were aged between 15-25 years old, and 30.1% of them belonged to the age group of 26-35 years. The remaining respondents (29.9%) were more than 35 years of age.

The statistical analyses were done using the Statistical Package for the Social Sciences Statistics version 22.0 (IBM, Armonk, NY, USA). The results were evaluated with variance analysis, and $p < 0.05$ was considered to be significant. The differences between two groups were determined using the Mann-Whitney U test. On the other hand, the Kruskal-Wallis test was used for comparing data from three or more independent groups, followed by pairwise comparisons by using the Mann-Whitney U test with the Bonferroni correction method. Also, the Quality Function Deployment (QFD) method was used to turn the demands of consumers into technical product requirements. For this purpose, a house of quality (HOQ) was formed to link the voice of customers to the voice of the product development team.

3. RESULTS

3.1. Consumer Preferences

Table 1 provides information about the underwear preferences of consumers and shows the relationship between their choices and demographic data. The chi-square test revealed that significant differences existed between males and females regarding their responses to people who buy their underwear ($p < 0.05$). 86.1% of the respondents stated they bought their own underwear. More than half of these respondents who answered the question in this way were female. The number of male consumers who said that their underwear was bought by their parents/spouses was more than that of females. Age and workplace were related to the responses of people who reported that their underwear was bought by their parents/spouses ($p < 0.05$). 34% of the respondents who said that their underwear was bought by their spouses were the office worker. Besides, more than half of the respondents who stated that their spouses bought their underwear were older than 36 years old. 76.9% of the respondents who said that their underwear was bought by their parents were in the 15-to-25 year age range.

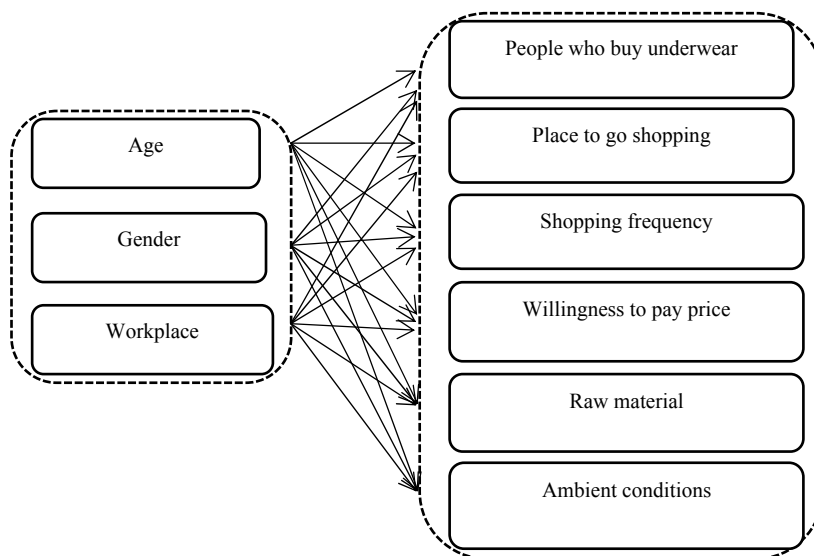


Figure 1. A conceptual model for underwear preferences of consumers.

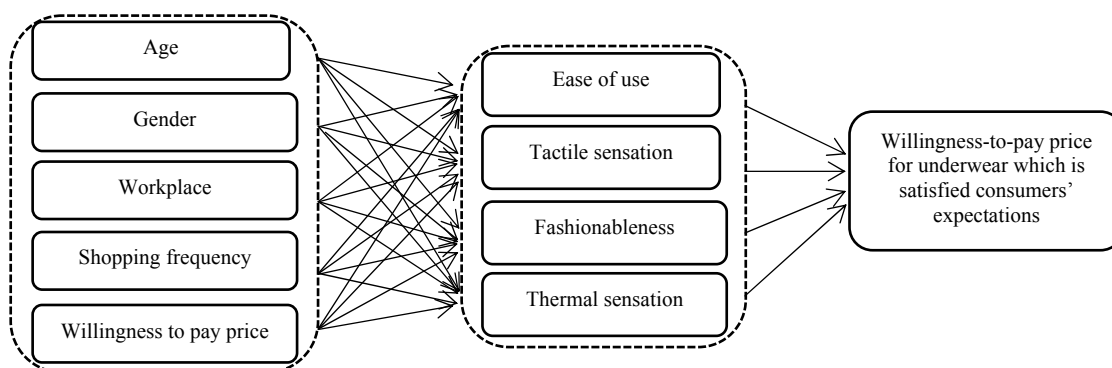


Figure 2. A conceptual model for underwear expectations of consumers.

Table 1. The relationship between the consumer preferences and demographic characteristics.

Consumer preferences	Frequency	%	p		
			Age	Gender	Workplace
People who buy underwear					
Myself	377	86.0	0.398	0.000	0.125
My parents	52	11.9	0.000	0.001	0.000
My spouse	50	11.4	0.000	0.000	0.025
Other	8	1.8	0.081	0.391	0.133
Places to go shopping					
Supermarket	36	8.2	0.334	0.000	0.850
Online shopping	38	8.7	0.621	0.050	0.009
Mall	130	29.7	0.686	0.347	0.242
Underwear store	279	63.7	0.000	0.000	0.054
Open-air market	84	19.2	0.000	0.002	0.001
Other	17	3.9	0.256	0.002	0.933
Shopping frequency					
Once a year	33	7.5	0.005	0.000	0.086
Once every six months	76	17.4			
Once every three months	170	38.8			
Once a month	124	28.3			
More than once a month	35	8.0			
Willingness-to-pay price					
between 1 and 10₺	157	35.8	0.010	0.000	0.000
between 11 and 20₺	131	29.9			
between 21 and 30₺	108	24.7			
between 31 and 40₺	20	4.6			
between 41 and 50₺	15	3.4			
over 50₺	7	1.6			
Raw materials					
Cotton	368	84.0	0.049	0.000	0.015
Wool	46	10.5	0.009	0.841	0.352
Blending	31	7.1	0.389	0.123	0.210
Synthetic	16	3.7	0.190	0.079	0.000
Other	57	13.0	0.416	0.202	0.343
Underwear preference depending upon environmental conditions					
Yes	291	66.4	0.060	0.233	0.038
No	147	33.6			

By examining the shopping place preferences of respondents to buy underwear, it was observed that 63.7% of them preferred shopping in underwear stores. Age and gender factors affected significantly the preferences of respondents who shop from underwear stores ($p < 0.05$). 71% of them were female, and more than 70% of the respondents aged 36 and over also stated that they prefer shopping from underwear stores. The supermarket shopping behavior was statistically only related to gender ($p < 0.05$), and there were twice as many males as the females who shopped from the supermarket. Moreover, online shopping was statistically associated with people's workplaces ($p < 0.05$), and the majority of respondents who preferred online shopping stated that their workplaces were the classrooms. Age, gender, and workplace were related to the responses of people who prefer to buy underwear from the open-air market ($p < 0.05$). 60.7% of these respondents were between the ages of 15 and 25 years. Also, males and the people working in the classroom (i.e., students, teachers) had more tendencies to shop from the open-air market than other respondents.

The results of the shopping frequency revealed that 38.8% of respondents bought the underwear once every three months. Gender and age affected the shopping frequency significantly ($p < 0.05$), and 72.4% of females reported that they bought underwear once a month or every three months. On the other hand, approximately 60% of males stated that they went shopping to buy underwear once every three or six months. While the respondents aged 15-35 years said that they generally bought underwear once a month or every three months, the respondents aged 36 and over had a tendency to buy underwear once every three or six months.

The maximum price that people would be willing to pay for underwear was mostly under 30₺, and 35.8% of the respondents stated that they could pay less than even 10₺. The willingness-to-pay price was found to be associated with gender, age, and workplace ($p < 0.05$). It was determined that 50.6% of males wanted to pay less than 10₺ for underwear, and 62.4% of females were willing to pay between 11₺ and 30₺. Almost 50% of the respondents who want to pay less than 10₺ were between 15 and

25 years old, and 85.7% of people who would pay over 50₺ were above 36 years of age. In addition, 32.4% of people working outdoors stated that they would pay more than 30₺ for underwear.

The results of raw material preferences of underwear consumers indicated that the vast majority of people preferred cotton underwear, and this preference varied with the age, gender and workplace of the respondents ($p < 0.05$). People working outdoors preferred cotton underwear less than other working groups, and 43.8% of people working outdoors stated that they preferred synthetic underwear. Furthermore, females tended more to prefer cotton underwear in comparison with males. The workplace of people played an essential role in how they chose their underwear depending on environmental conditions ($p < 0.05$). 66.4% of the respondents stated that their underwear preferences depended on the environmental conditions.

3.2. Consumer Expectations

In this study, Cronbach's coefficient alpha (α) was calculated to assess reliability and internal consistency. All the reliabilities ranged from 0.772 to 0.824 and were over 0.7, which is the recommended value [21]. To assess the suitability of the respondent data for factor analysis, Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy and Bartlett's Test of Sphericity were used. The KMO index was 0.861, and Bartlett's test was statistically significant for the factor analysis ($p < 0.05$). The exploratory factor analysis (EFA) was used to identify the

number of latent constructs and the underlying factor structure of a set of variables [22]. The factors were rotated by an orthogonal Varimax rotation. To determine the number of factors, Kaiser's criterion (eigenvalue > 1) was considered. The EFA identified four dimensions of consumer expectations from the underwear named as the ease of use, tactile sensation, fashionable, and thermal sensation, which are shown in Table 2. These factors accounted for 65% of the total variance in the dataset.

The tactile sensation (i.e., itchy, softness, wetness) was the most regarded factor that its mean score was 4.62. On the other hand, the mean score of fashionable dimension (i.e., trendy, branded, color assortment) was 3.56, which was the lowest value among others. As can be seen in the research model given in Figure 2, the effect of gender, age, workplace, shopping frequency, and willingness to pay the price on these dimensions were examined, and the significant differences are shown in Table 3. Females have higher expectations from underwear than males, and this difference was statistically significant regarding all the factors ($p < 0.05$). The age of respondents played a role in how they rated the factors, except for the fashionableness dimension, and all factors were more important for people above 35 years old. The people working in the classroom and the office had lower expectations from underwear in terms of the factors of ease of use and fashionableness as compared to the people working in other places. Besides, the fashionable dimension was related to people's shopping frequency and willingness-to-pay price for underwear. As expected, the fashionableness of underwear was more important for people who often go shopping and spend more money.

Table 2. Exploratory factor analysis of consumer expectations regarding underwear.

Consumer expectations	FACTORS			
	Ease of use	Tactile sensation	Fashionableness	Thermal sensation
Should not be tight	.779			
Should not restrict movement	.730			
Should be washable	.703			
Should be easy-care	.639			
Should fit tightly to the body	.611			
Should be thin and lightweight		.767		
Should be soft		.756		
Should not produce body sweat		.692		
Should not cause a wet feeling		.676		
Should not itch		.550		
Should be trendy			.878	
Should be branded			.833	
Should have different color options			.792	
Should keep warm in winter				.888
Should keep cool in summer				.769
Should give a warm feeling				.608
Eigenvalue	5.954	1.963	1.401	1.086
Reliability	0.810	0.818	0.824	0.772
Mean score	4.446	4.619	3.563	4.290
Percentage of total variance explained: 65.024 ($p = 0.000$)		KMO: 0.861		Bartlett: 3089.891

Table 3. Mann-Whitney U and Kruskal-Wallis test results.

Factors	Test statistics	
Ease of use	p	Differences (5= very important; 1= not important)
Gender	.000	Male (Median=4.40); Female (Median=4.60)
Age	.000	15-25 (Median=4.40); Above 35 (Median=4.80)
Workplace	.006	Classroom (Median=4.40); Other places (Median=4.80)
Tactile sensation	p	Differences (5= very important; 1= not important)
Gender	.004	Male (Median=4.60); Female (Median=4.80)
Age	.000	15-25 (Median=4.60); 26-35 (Median= 4.80) 15-25 (Median=4.60); Above 35 (Median=5.00)
Workplace	.048	-
Fashionableness	p	Differences (5= very important; 1= not important)
Gender	.001	Male (Median=3.33); Female (Median=3.66)
Workplace	.023	Office (Median=3.67); Other places (Median=4.00) Classroom (Median=3.33); Other places (Median=4.00)
Shopping frequency	.000	Once a year (Median=3.00); Once a month (Median=4.00) Once a year (Median=3.00); More than once a month (Median=4.00) Once every six months (Median=3.33); Once a quarter (Median=3.67) Once every six months (Median=3.33); Once a month (Median=4.00) Once every six months (Median=3.33); More than once a month (4.00)
Willingness-to-pay price	.002	between 1 and 10₺ (Median=3.33); between 31 and 40₺ (Median=4.83) between 1 and 10₺ (Median=3.33); over 50₺ (Median=5.00)
Thermal sensation	p	Differences (5= very important; 1= not important)
Gender	.010	Male (Median=4.17); Female (Median=4.33)
Age	.004	15-25 (Median=4.33); Above 35 (Median=4.67)

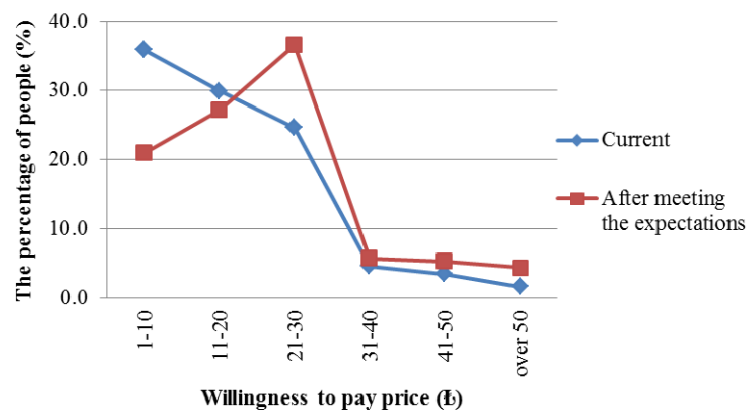
**Figure 3.** The willingness-to-pay price for underwear at present and after meeting the expectations.

Figure 3 illustrates the difference between the underwear prices that consumers would pay at present and after meeting their expectations. Most people tended to pay between 1₺ and 30₺ for underwear in both cases. With regards to the willingness-to-pay price at present, as the price increased, the percentage of people decreased. The percentage of people who would pay between 21₺ and 30₺ for underwear after meeting the expectations increased significantly, rising from 24.7% to 36.5%. It was observed in both cases that there was a sharp drop after the 21-30₺ range, and the percentage of people remained steady. Examining the effect of factor dimensions on the maximum price that people are willing to pay after meeting their underwear

expectations, the price was statistically related to the ease of use, the tactile sensation, and fashionableness of underwear. However, there was not any significant effect of the thermal sensation factor on this price ($p < 0.05$).

3.2. The House of Quality (HOQ)

In this study, the QFD tool was used to determine the importance score of the technical requirements of underwear, and the HOQ was occurred by using consumer expectations and the evaluation of the product development team for underwear. The findings obtained from the factor analysis were used in the classification

of customer expectations. However, since the dimension of fashionableness had the lowest mean score amongst others, it was not used in the HOQ. The relationship between customer demands and technical characteristics are listed in a matrix in Table 4. This matrix was developed by a focus group. This group consisted of 8 members including textile engineers and garment designers because the customer requirements were needed to translate into technical specifications that are significant for underwear producers. The results of questionnaires were used to determine the importance of quality demands for underwear, and there were three correlation symbols were used in the matrix. The symbol (Θ) represents a strong relation (value of 9); the symbol (O) represents a medium relation (value of 3); the symbol (Δ) represents a weak relation (value of 1). The importance score of technical requirements in the quality house was calculated by multiplying the factor importance and the correlation values.

Examining these importance scores (in the bottom of Table 4), the mean relative importance of physical and structural properties of underwear was the highest among others. It was observed that the most crucial factor in the production of underwear, which meets customer expectations, was the selection of appropriate raw material (15.3%), followed by the selection of proper knitting structure (11.7%) and finishing process (9.3%). The fabric color and the preliminary finishing processes were of the least importance according to the matrix.

4. DISCUSSION AND CONCLUSIONS

This study was aimed to evaluate the effects of various factors (e.g., gender, age, and workplace) on the preferences and expectations of underwear consumers living in Turkey. In addition, the importance level of technical features of underwear to take into consideration during the production was determined by using the quality function deployment (QFD) approach.

As with the studies of Ling and Yazdanifard [23] and Grębosz and Wrońska [24], it was found that gender played an important role in consumers' underwear preferences in our study. Although the great majority of consumers bought their own underwear, spouses/ parents were more effective on the males' preferences. According to these findings, underwear companies should develop marketing strategies considering female customers.

While males tended to prefer supermarkets and open-air markets to buy underwear, females preferred to go shopping in underwear stores. This result is consistent with Shim and Kotsiopoulos [25] who revealed that male consumers did not care about underwear fashion. On the other hand, adult female consumers followed the fashion in our study and can be described as the Fashion-Forward who preferred to shop in specialty stores for desired benefits [5].

Examining the age groups of consumers, younger people's underwear were mostly bought by their parents. Their shopping

frequency was higher than that of older people, and younger people tended more to buy their underwear from the open-air market. The shopping frequency of people being older than 35 years old was lower. However, they paid more money for underwear than younger people and shopping from the underwear store was more popular among older people. This result is in accordance with the study of Moye and Giddings [26] who reported that older people spend more money on shopping.

The workplace was also crucial for consumers' underwear preferences. As with the study of Khan *et al.* [27], online consumers were generally younger in our research, and people who work in the classroom (i.e., students, teachers) preferred to buy underwear from the online shopping and the open-air market. Also, people working outdoors tended to buy more synthetic underwear and were willing to pay the highest price among other groups because they expect additional properties from their underwear.

According to the results of the HOQ study, selecting appropriate raw material to use in different environmental conditions is the most important technical feature for the satisfaction of underwear consumers. To exemplify, the producers should use moisture management fibers (e.g. Coolmax, Aerocool) in the production of the underwear of the people doing sports. In addition, keeping warm might be provided with the utilization of modified cross-section fibers [28-30]. Another crucial factor that should be considered in the production of underwear was the selection of the appropriate knitting structure. For instance, the usage of fabric structure having high porosity might help to solve some problems with underwear, such as unsatisfied wet feeling, the restriction of movement. Convenient finishing process was another essential technical requirement determined in the house of quality. This feature might provide some advantages to underwear, such as softness, easy-care, preventing itching. This study can contribute to underwear producers and designers to manufacture the underwear considering both technical requirements of the underwear and consumer expectations.

Although the study could be used as a first step to understand the underwear consumers, this study had some limitations. The main limitation of the study was conducted in Turkey only, and we focused on the preferences and expectations of underwear consumers lived in İzmir that is a metropolitan city in Turkey. Therefore, the usefulness of findings might be limited in other places. Future research should include the evaluation and the comparison of the expectations and preferences of underwear consumers living in other countries using the modern (blitz) QFD approach.

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Table 4. The house of quality for underwear.

CUSTOMER DEMANDS	TECHNICAL CHARACTERISTICS		PHYSICAL AND STRUCTURAL PROPERTIES								FINISHING			DESIGN			CARE		
	1 st level	2 nd level	Appropriate raw material	Usage of fine fiber	Appropriate yarn number	Decreasing fabric density	Appropriate knitting structure	Adding optimum elastane to the fabric	Convenient finishing processes	Applying preliminary finishing process	Applying mechanical finishing	Using different knitting structure in the parts of underwear	Using the different raw material in the parts of underwear	Clothing size table	Functional design	Selecting color	The accuracy of care label	Laundrying instructions	
TACTILE SENSATION	1 st level	2 nd level	Importance																
		Should not itch	4.76	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Should not produce body sweat	4.66	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Should not cause a wet feeling	4.59	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Should be soft	4.56	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Should be thin and lightweight	4.53	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EASE OF USE		Should be washable	4.55	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Should not restrict movement	4.52	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Should not be tight	4.49	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Should be easy-care	4.44	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
THERMAL SENSATION		Should fit tightly to the body	4.23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Should keep cool in summer	4.45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Should keep warm in winter	4.30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Should give a warm feeling	4.12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Absolute importance			399.7	165.3	118.6	204.8	307.6	133.7	242.8	36.9	144.4	179.4	177.1	107.8	212.4	31.9	85.7	80.9	
Relative importance (%)			15.3	6.3	4.5	7.8	11.7	4.7	9.3	1.4	5.5	6.9	6.8	4.1	8.1	1.2	3.3	3.1	

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