

Consumer perception vs sensory assessment of the quality of clothes of selected brands available on the Polish market

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Abstract

Purpose – The aim of the study reported in this article was to establish whether the quality of clothes of a given brand is perceived and assessed by consumers at the same level. An additional purpose was to identify the features that characterize the quality of popular, among Polish young female consumers, clothing brands and to classify them according to their quality level (perceived and assessed).

Design/methodology/approach – The article presents two approaches to consumer assessment of the quality of clothes: the survey method, in which the product quality was determined by 320 Polish female young respondents (19–25) based on their own previous experiences and impressions related to a particular clothing brand, and a direct assessment of shirts of selected brands using a sensory quality assessment method, a five-point hedonic scale with the verbal anchor (115 evaluators).

Findings – The research has revealed a significant difference between the perception of selected quality features of brands and the consumer assessment of the products. The perception maps developed based on the PROFIT analysis (PROperty FITting) as well as on cluster analysis provided interesting information about the situation of selected brands and their features in comparison with others and allowed to identify strong and weak features characterizing a given category.

Research limitations/implications – This study has several limitations. First and foremost, the research results cannot be generalized to all consumers because they encompass the results from one national context and one population of respondents (young females). It should also be noted that the conducted research comprises only the most popular clothing brands available on the Polish market, in particular, the fast fashion segment brands. Furthermore, it would be advisable to carry out a sensory assessment of the quality of other clothing items offered under the brand names investigated.

Practical implications – This research could be a valuable source of information for clothing company managers, thanks to which they could better manage their brand and its position on the market. When undertaking marketing activities consisting of building positive perceptions about the product, it is important to make sure that the product offers an attractive sensory experience. When real quality deviates from consumer perceptions about the quality, managers should take corrective actions to restore and even improve the brand image in the eyes of the consumer, as well as to ensure the brand and the products offered under it a stable position on the market.

Originality/value – By comparing two approaches to consumer quality assessment, discrepancies between declared and real (sensory) quality of clothes have been identified and the distinctive features that differentiate selected brands regarding their quality level have been indicated.

Keywords Apparel quality, Apparel brands, Consumer research, Sensory assessment

Paper type Research paper



1. Introduction

Clothing market is particularly characterized by strong competition, which is why its most important value is the customer, who should be properly sought and retained. Therefore, each enterprise building its marketing strategy should, above all, understand consumer behavior and the principles that guide them when making purchasing decisions. The literature contains a number of studies on this subject. An important area of research into consumer behavior on the clothing market is the study of consumer attitudes toward product quality. Even a very general literature review on this topic reveals that two terms, i.e. perceived and real (objective) quality, quite often become the main focus of scientific interest. The perceived quality is defined as a consumer's judgment about a product's overall excellence or superiority, while objective quality refers to measurable and verifiable superiority over some predesigned standards (Zeithaml, 1988). It is worth emphasizing that the perceived quality is treated as a subjective category, characterized by high variability, while the objective one requires from consumers the use of their own experience and knowledge to evaluate a product. The objective assessment, referred to as observed quality, plays an important role during that stage of purchase when the product is physically evaluated by the consumer, and it is connected with sensations (sensory, emotional and expressive). Chi *et al.* (2009) indicate, however, that consumers seldom hold enough knowledge to evaluate a product objectively. That is probably a reason why the quality of a product is more often investigated as a perceived one, using surveys and questionnaires rather than experimental techniques (Chen-Yu and Kincade, 2001). A similar observation was made by Astous and Kamau (2010) and Grigoras (2018), who noted that consumer research in the discussed area focuses only on verbal information based on respondents' own beliefs and without any direct contact with the product. In other words, consumer declarations are analyzed much more often on the basis of surveys and questionnaires centering around the importance of individual factors, description of various dimensions of clothing quality and their possible impact on purchasing behavior rather than based on the research in which consumers are provided with clothing products of different quality, prices or brands, in order to perform a direct assessment. Considering the fact that the clothing market abounds in a wide range of products, confronting their perceived quality with the actual one, assessed by consumers, seems to be an interesting research challenge. This issue might further be of particular importance when comparing similar products of various brands.

The aim of this research was to find out whether brand-related consumer perceived quality of a product matches the actual level of its quality determined on the basis of the sensory assessment of a product. An attempt was also made to classify popular clothing brands available on the Polish market, based on the product quality criterion and quality parameters. Taking into account the literature sources, indicating a powerful force impact of young people on fashion, culture, politics and marketing (Solomon *et al.*, 2016), we decided to perform the study just on these group of consumers. Besides, we narrowed this group down on women aged 19–25 who are mainly responsible for clothing purchases (Van Staden *et al.*, 2017) and show a stronger interest in the clothing product category, visit clothing shops more frequently to see the new arrivals, make more frequent clothing purchases and spend more money on clothing Millan and Wright (2018).

2. Background of the study

The quality of a product is one of the most important features determining consumer purchasing decisions. Research on the behavior of consumers in relation to clothing products indicates that, next to the price, the quality plays a key role in the consumer decision-making process (Brijball, 2003; Palmowska and Karasek, 2019). Yet, it is quite difficult to define the quality of clothes and the attributes determining it, especially regarding consumers' point of view. This issue is widely but differently presented in the literature.

The majority of scientists distinguish two basic sets of attributes of clothing products that affect how consumers perceive and assess their quality. These are so-called intrinsic and extrinsic attributes of a product (e.g. [Davis, 1985](#); [Zeithaml, 1988](#); [Fiore and Damhorst, 1992](#); [Abraham-Murali and Littrell, 1995](#); [Saricam *et al.*, 2012](#)). According to the above-mentioned authors, intrinsic attributes are mainly physical features such as design/style, fabric type, fabric content, physical and chemical properties, materials and construction details, workmanship in sewing, as well as performance features such as aesthetics, or usefulness and functional aspects of clothing. These features are taken into account during physical contact with the product when the objective quality is evaluated. As mentioned before, consumers focus rather on intrinsic features of the product, which pertain to so-called observed quality, connected with sensations (visual and touch) ([Zeithaml, 1988](#); [Cho and Workman, 2011](#)). It is also worth mentioning that intrinsic features may affect the perceived quality of the products in the future as a result of the accumulation of consumers' own experiences. In turn, extrinsic attributes are of subjective character and include a brand name, suitability to individual preference and fashionability or trendiness, price, package and store image.

Intrinsic and extrinsic attributes are of different values for consumers making their purchasing decisions. Considering the consumers' approach to quality features, two basic categories of the values can be pointed out, i.e. performance and emotional values. Performance values are associated with satisfying the user's functional needs (e.g. comfort of use, reliability, durability, etc.), while emotional values are associated with satisfying the nonfunctional needs (e.g. the aesthetic value of the product). Depending on which values consumers prefer more, the set of product attributes (intrinsic and extrinsic) that consumers will pay attention to when assessing products in a subjective way will be different. Which, in turn, will have a direct impact on the perceived level of product quality ([Acquilla-Natale and Iglesias-Pradas, 2020](#)).

Considering the above, there are various theories regarding the role of attributes determining product quality; therefore, defining a universal set of consumer quality features seems rather difficult. In this situation, it is worth focusing on those qualitative features that will help to achieve a specific research goal and can be verified for the needs of the analyzed hypotheses.

Apart from the quality, also a product brand plays an increasingly important role in the purchasing behavior of the modern-day consumer. In a very competitive global market, branding is the mechanism by which a company creates and manages the brand and communicates its messages and values to its clients, and therefore represents an important strategic activity for companies that want to distinguish their products ([Posner, 2019](#)). They also aim to captivate new consumers and engage them in narratives personifying the values to which they aspire and perform by purchasing and wearing the brand ([Peirson-Smith and Hancock, 2017](#)).

According to [Horvath and van Birgelen \(2015\)](#), consumers' attitude toward the brand results from their personality. Noncompulsive buyers develop their brand trust, attachment and higher willingness to pay for their favorite brand than for other brands, but they seem to appreciate and focus mainly on functional benefits of branded products and avoid buying the unbranded ones; whereas compulsive buyers engage in more brands, value emotional and social benefits but often decide to buy "more and cheaper" items to achieve a variety in their purchases. In turn, [Hoeffler and Keller \(2003\)](#) point to the role of consumer knowledge about products. In their opinion, when deciding to buy a known brand, consumers assume that in this way they will reduce the risk of dissatisfaction. Moreover, products labeled well-known, especially perceived as a luxury brand, provide much more than functional benefits to consumers. They are products that consumers use to project an image of themselves to the public as an expression of their true selves or their ideal selves ([Okonkwo, 2007](#)). Such behavior may suggest that consumers equate a well-known brand with high quality of its

products, which is consistent with research results reported by [Maran *et al.* \(2017\)](#) who, examining the relationship between perception and satisfaction, indicated the quality factor as a decisive attribute taken into account in assessing satisfaction with a branded product. In other words, brand names are powerful sources of inferences concerning the quality of products (prestige, durability, etc.) ([Dodds and Monroe, 1985](#); [d'Astous and Saint-Louis, 2005](#); [Keller, 2008](#)). As [González Mieres *et al.* \(2006\)](#) claim, the level of a consumer's familiarity with a brand has a positive effect on perceived quality. The question then arises whether this perceived quality is equal with the real one.

Considering the above, it should be stated that the literature seems to be dominated by studies in which the emphasis is placed on the perception of the quality of clothing, defining the parameters and the importance of the product brand in the purchasing behavior of consumers. These are usually conducted with the use of survey methods based on consumers' experiences and ideas. However, very few of them touch upon the objective quality assessment involving consumers directly, which undoubtedly constitutes an interesting research gap. This gap could be filled by studies using sensory consumer research and carried out under controlled conditions. Such studies focus primarily on the hedonic quality assessment of the product during which the evaluator (consumer) makes an individual assessment of the product in terms of parameters that he/she is able to assess sensorially, usually by vision and touch. For example, a smooth fabric such as silk is equated with luxury, while denim is considered practical and durable ([Solomon *et al.*, 2016](#)).

At every stage of sensory evaluation, the most important assessment point is the product itself, especially its features, as well as (though to a lesser extent) information on the label (price, composition and brand name). The comparison of the results of such studies with the surveys, in which the product quality is determined by the respondents based on their own experience and ideas, can be a valuable source of information allowing to verify whether the image of the quality of the product, fixed through consumers' own experiences, coincides with the actually received level of quality of the product, which consumers appreciate only after making a purchase, usually at home, when they are free from external stimuli that accompany purchases, such as store design, music, advice from others, or when receiving a product purchased online. In the light of rapidly growing share of online sales, it should be particularly important for the manufacturers to keep this cognitive dissonance as low as possible since negative experiences may influence consumers' judgment on product quality in the future.

The second issue rather underreported in the scientific literature is the assessment and comparison of the clothing quality of various brands, regarding the perceived and assessed quality of these products. Typically, studies in this area focus on determining consumer preferences and satisfaction regarding the choice of clothing brands ([Maran *et al.*, 2017](#); [D'Astous and Saint-Louis, 2005](#)) or on objective assessment, but using laboratory techniques ([Farashahi *et al.*, 2018](#)), while there is still a very limited number of analyses concerning the quality assessment of clothes of various brands that show the differences in their quality level from the consumer point of view.

The two research hypotheses were adopted:

- H1. The perceived quality of clothes of a given brand is equal with the real quality of a product as evaluated by consumers using sensory assessment
- H2. There are sets of features that allow clustering of clothing brands in terms of quality

3. Methodology of the study and samples

The methodology of the study was designed in two stages: the first one consisted of a survey carried out among a group of respondents and the second one was a sensory evaluation of the products sold under the brands listed in the survey (first stage).

3.1 *The perception of the quality of clothes – a survey*

The perception of the quality of clothes of various brands available on the Polish market was surveyed. A short questionnaire with structured questions was used. The questionnaire contained questions related to the perception of factors determining the quality of a particular brand. An important aspect of the selection of quality determinants was whether it would be possible for the respondents to assess them in the second part of the study, by means of sensory evaluation. Considering the above, the following features were tested:

- (1) Product aesthetics (perceived as general appearance, first impressions),
- (2) Fabric composition (based on the information found on the label or by assessing the fabric by touching it),
- (3) Design/style (design, attractiveness of the pattern and meeting the preferences),
- (4) Careful workmanship (e.g. well-sewed pattern elements, high-quality hemming or hemstitching of pockets, collars and holes),
- (5) Additional elements (e.g. buttons, embroidery and applications that make the apparel more attractive) and
- (6) Overall quality.

The five-point hedonic scale with verbal anchors was used, where 1 point stands for a very poor quality and 5 points mean very good quality.

A targeted sample selection was used. Based on the literature mentioned in *Introduction*, the choice of respondents was made taking into account the following features: age (in the range of 19–25), gender (women) and knowledge of all assessed brands. The study was conducted at several universities in Kraków, in the period from March 2019 to June 2019. In total, 580 survey questionnaires were distributed; among which, 386 questionnaires were collected and 320 were included in the study. The return of the surveys was at the level of 67%. As assumed, the age of respondents was in the range of 19–25 years (average age 22.3). They represented various places of residence, such as rural areas 31%, a town with population up to 20,000-6%, between 20,000 and 100,000-9%, between 101,000 and 500,000-12%, 501,000 and more-42%. Most of the respondents, i.e. 85% were unmarried.

3.2 *The assessment of the quality of clothes of various brands – a sensory evaluation*

The consumer assessment of the quality of clothes of several brands was carried out based on the international standards and the literature in the field of sensory analysis and in accordance with the general guidance for conducting hedonic tests with consumers in a controlled area (ISO 11136, 2014). Consumers assessed the products using their senses of sight and touch, assigning them the degree of compliance with the requirements in relation to the quality parameters that had been the subject of perceived quality tests. Thus, the following features were assessed: product aesthetics, fabric composition, design/style, workmanship, additional elements and overall quality. A five-point hedonic scale (acceptability test) with verbal anchor was used for the purposes of the assessment.

The research was carried out in the sensory analysis laboratory at one of the universities in Kraków. Each of the consumers had comfortable conditions for assessing products, and there was no communication between assessors, thus ensuring the independence of assessments.

In total, 115 female students at the age of 19–25 (average age of 21.6) were recruited to perform the tests. Most of the assessors were unmarried (91%), and they represented various places of residence, i.e. rural areas 23%, a town with population up to 20,000-10%, between 20,000 and 100,000-13%, between 101,000 and 500,000-16%, 501,000 and more-38%. The assessment was carried out during one session without a time limit.

3.3 Samples

The subject of the study was white casual shirts (Table 1), either made of cotton or with a very high content of cotton (in the case of two brands, the offer did not include shirts made of 100% cotton) purchased in the retail chains of selected clothing brands available on the Polish market.

The choice of brands was mainly guided by their popularity (Szot, 2016). It is worth adding that two of them have been top global brands for several years now, and one can be found in the overall ranking of luxury clothing brands (HowToDressLike, 2019). The availability of products of a similar range was the second criterion of the brand choice; hence, five of the selected products represented the most popular brands among Polish consumers (H&M, Reserved, Zara, C&A, New Yorker), one product – a luxury brand (Tommy Hilfiger) and one product – a brand, which was not found in the ranking (Cubus). The price of shirts comprised three ranges: lower prices (from 13.50 to 18.00 euro), average prices (from 22.60 to 31.40 euro) and the highest price (81.00 euro).

3.4 Data analysis

The results obtained were subjected to statistical analysis using the *Statistica* software (2019, version 5.2.67). The existence of statistical differences between the average values of parameter ratings obtained in the consumer perceived quality survey and in the sensory assessment of the products was verified using the *t*-test for two independent tests. The significance level for all statistical analyses was set at $p < 0.05$.

In order to identify the similarities or differences between the assessed objects, considering the selected set of features (product aesthetics, fabric composition, design/style, workmanship, additional elements and overall quality), the PROFIT analysis (PROperty FITting) was performed for the obtained results. This method combines the results of multidimensional scaling and multiple regression analysis. Based on the input data, calculations of similarity between the analyzed products were made and a matrix of Euclidean distances was determined on the basis of all average ratings of the tested samples. The quality of matching data restored from the input data was measured using the STRESS (Standardized Residual Sum of Squares) function. The interpretation of the results of this analysis did not take into account the distance of the examined objects from the feature vector, but their ordering on such a vector (Borgatti, 1997). The projection of points representing individual brands into feature vectors makes it possible to determine the location of brands due to the intensity of occurrence of these features in given brands.

Brand taxonomy was conducted by using the method of cluster analysis, based on average values of the assessments of quality parameters of the products tested. The hierarchical clustering was elaborated using the Ward's method. The Euclidean distances formed the basis of agglomeration. The number of clusters was determined based on the

Brand number*	Brand name	Fabric composition, %	Price, euro
1	H&M	Cotton 100	13.50
2	Reserved	Cotton 100	18.00
3	Zara	Cotton/polyamide/elastane 77/19/4	31.40
4	C&A	Cotton 100	13.50
5	New Yorker	Cotton 100	15.80
6	Cubus	Cotton 100	22.60
7**	Tommy Hilfiger	Cotton/elastane 97/3	81.00

Note(s): *Ranked in order of brand popularity. **The most popular luxury brand

Table 1.
Characteristics of
shirts

agglomeration graph in subsequent steps, and the limit value of agglomeration distance was then calculated. The results of the analysis were interpreted on a dendrogram, on which clusters were determined based on the plot of the binding distance relative to the binding stages. Moreover, the hypotheses regarding the differentiation in the perceived quality of branded products forming subsequent clusters were verified using the Fisher–Snedecor test. The post-hoc analysis was performed with the least significant difference (LSD) test. Inferences were carried out at the significance level of $\alpha = 0.05$.

4. Results and discussion

4.1 *A comparison of the brand-based product quality perception with the sensory assessment of its quality*

In order to verify the [H1](#) hypothesis, it was determined whether there were any differences between the perception of the quality of clothes labeled with selected clothing brands and the consumer assessment of the quality of the products (shirts) tested. The conducted data analysis ([Table 2](#)) has shown that in 33 out of 42 cases, the p -values for all the pairs are 0.000, which is less than 0.005 (5% confidence level); therefore, the hypothesis [H1](#) was rejected. This means that there is a significant difference between the perception of selected quality features of brands and the real quality of the products assessed by consumers.

The largest discrepancies occurred in the assessment of the fabric composition. In one case, the difference amounted to 1.11 pts (it was the largest difference in all assessments carried out). In the case of five brands (shirts were composed of 100% cotton), consumers would assign higher values of this parameter in sensory assessments. Lower scores in the sensory tests were obtained by two products that contained admixtures of synthetic fibers. It is worth noting that during sensory analyses, the assessors also had access to a label specifying the composition of the fabric, which apparently influenced their assessment. Large differences were also observed when assessing the aesthetics of the products, a feature that is more often perceived as the most important in purchasing behaviors ([De Klerk and Lubbe, 2004](#), [Chattaraman and Rudd, 2006](#); [Swinker and Hines, 2006](#)). However, in this case, it turned out that the perceived aesthetics of the branded products received higher ratings than in the direct assessment. Similar results were obtained for the “additional elements”. Based on the average ratings, it was also found that the perceived overall quality of all analyzed brands is higher than in the sensory assessment. The study results are consistent to some degree with the conclusions formulated by [Maran et al. \(2017\)](#), who pointed out the significance of differences between the expected level and the satisfaction level of branded products. The results of our study suggest that brand-based assessment of quality may lead to overrating. No clear trends were obtained for workmanship; differences in perceived and sensory quality assessments showed both negative and positive values. In turn, the largest differences in the brand perception of quality parameters in relation to the results of consumer quality assessment were found for the cheapest brand.

As a result of using multidimensional scaling, six features analyzed in the study were reduced to two dimensions. Each of the examined units received two coordinates and a two-dimensional perception map was elaborated ([Figure 1](#)). The value of the STRESS coefficient for multidimensional scaling (taking into account all features) was 0.029, which indicates a good fit of the reproduced distance matrix to the observed distance matrix. The results of the PROFIT analysis with marked coordinates of individual features presented in [Figure 1](#) have facilitated the assessment of similarities and differences between the brands. The purpose of this analysis was to determine to what extent (and in relation to which features) the compared brands are perceived by the assessors as similar. Based on the distribution of points on the graph, it can be concluded that there are several clusters related to brand perception and consumer assessment. Generally, higher assessments of aesthetics, additional elements and

1-perception 1-assessment 2-perception 2-assessment 3-perception 3-assessment 4-perception 4-assessment 5-perception 5-assessment 6-perception 6-assessment 7-perception 7-assessment																
Product aesthetics		Mean	4.13	3.47	4.17	3.67	4.65	4.19	3.17	2.75	3.13	2.18	3.44	3.51	4.59	4.08
SD		0.77	0.93	0.70	0.92	0.57	0.97	0.87	1.03	1.10	0.98	0.82	1.00	0.82	0.75	
ΔPA		0.66		0.50		0.46		0.42		0.95		-0.07		0.51		
p		0.000		0.000		0.000		0.000		0.000		0.447		0.000		
Fabric composition		Mean	3.56	4.05	3.86	4.24	4.28	3.90	3.32	3.93	2.69	3.80	3.48	3.97	4.66	4.17
SD		0.83	0.98	0.69	0.92	0.61	0.84	0.84	1.07	0.98	1.25	0.74	1.12	0.53	0.66	
ΔPA		-0.49		-0.38		0.38		-0.61		-1.11		-0.49		0.49		
p		0.000		0.000		0.000		0.000		0.000		0.000		0.000		
Design/style		Mean	3.93	3.54	3.97	3.77	4.48	4.17	3.06	3.16	3.08	2.72	3.21	3.71	4.30	4.03
SD		0.87	0.94	0.77	0.81	0.64	0.95	0.97	1.01	1.00	1.12	0.86	0.88	0.67	0.87	
ΔPA		0.39		0.2		0.31		-0.1		0.36		-0.51		0.28		
p		0.000		0.019		0.000		0.365		0.001		0.000		0.001		
Workmanship		Mean	3.61	3.77	3.88	3.48	4.24	4.17	3.46	3.63	2.71	3.25	3.53	3.80	4.66	4.18
SD		0.85	0.84	0.73	0.96	0.66	0.77	0.83	0.73	0.83	1.04	0.95	0.79	0.68	0.50	0.73
ΔPA		-0.16		0.4		0.06		-0.1		-0.54		-0.28		0.48		
p		0.091		0.000		0.400		0.050		0.000		0.001		0.000		
Additional elements		Mean	3.94	3.50	3.78	3.41	4.43	3.99	2.94	2.28	3.07	2.06	3.14	3.53	3.88	3.98
SD		0.84	0.96	0.85	1.00	0.73	1.03	1.03	0.90	1.08	0.99	1.05	0.90	1.06	0.95	0.92
ΔPA		0.44		0.37		0.43		0.66		1.01		-0.39		-0.1		
p		0.000		0.000		0.000		0.000		0.000		0.000		0.312		
Overall quality		Mean	3.86	3.58	3.92	3.63	4.35	4.31	3.28	3.25	2.90	2.83	3.43	3.60	4.53	4.17
SD		0.77	0.73	0.68	0.73	0.61	0.71	0.71	0.7	0.76	1.01	0.94	0.75	0.67	0.57	0.63
ΔPA		0.28		0.29		0.04		0.03		0.06		-0.18		0.37		
p		0.001		0.000		0.568		0.680		0.566		0.029		0.000		
Note(s): ΔPA: the difference between brand perception and consumer assessment of a product of known brand																
Source(s): Own research																

Note(s): Δ PA: the difference between brand perception and consumer assessment of a product of known brand

Source(s): Own research

Table 2.
The average values and standard deviations of the ratings assigned to individual brands depending on the perceived and assessed feature of the product

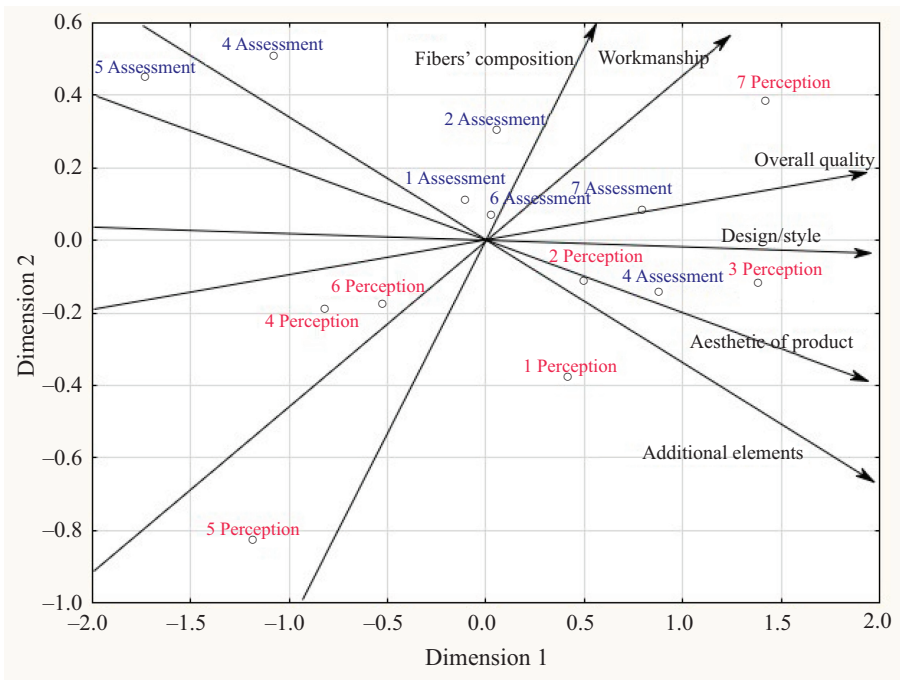


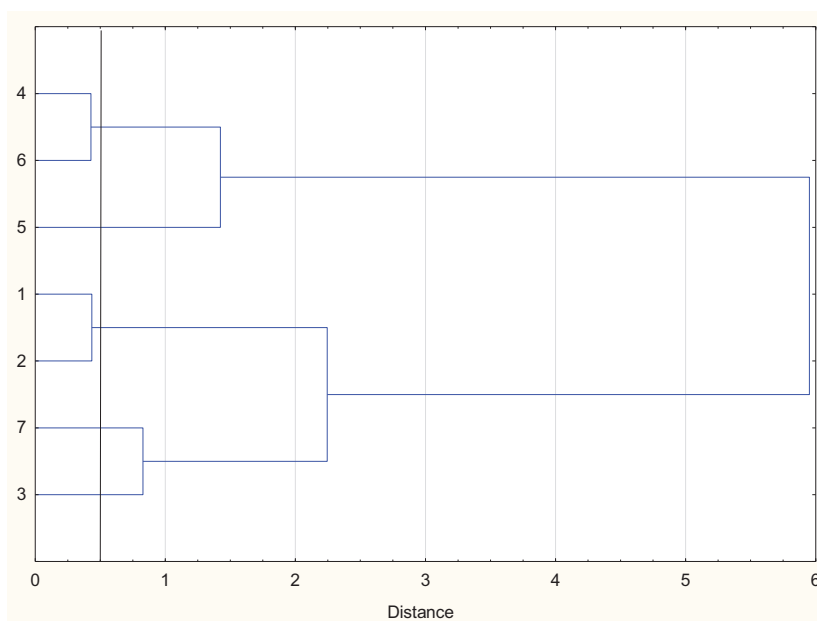
Figure 1.
The results of PROFIT
analysis of the
examined brands,
considering the quality
features of the
products

overall quality were obtained when consumers did not have direct access to the products, and their assessment was based on the perception of a given brand. On the other hand, in the case of assessing features such as fabric composition or workmanship, higher ratings were assigned when the respondents made the direct assessment of the product, knowing its brand and price. Although there is a significant discrepancy between the perception of the features of specific brands and the consumer assessment of products, the clusters within the studied groups are more visible here. Some similarities are exhibited by the brands that differed in the product price as no. 4 and no. 6 or no. 3 and no. 7.

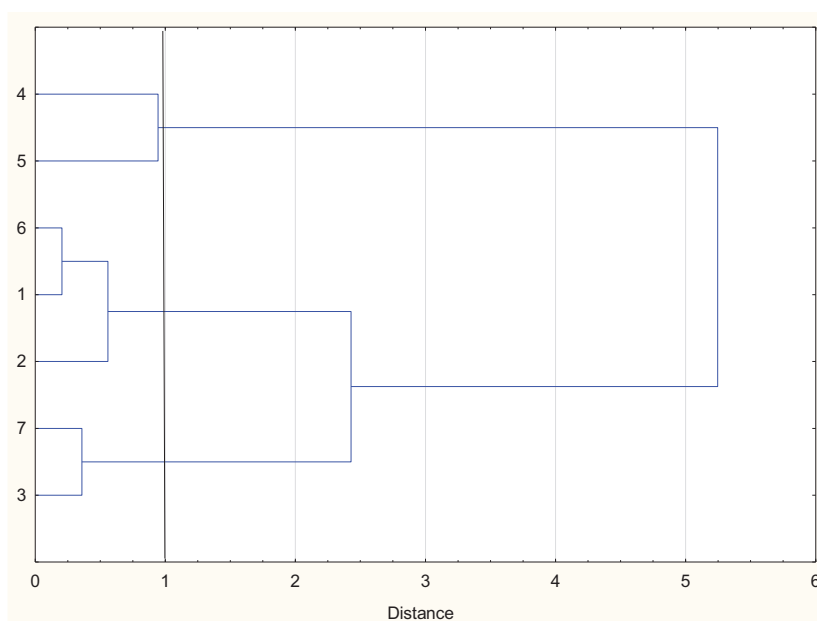
4.2 Taxonomy of clothing brands

In order to explore the differences in the perception and assessment of the quality of products from various brands, a cluster analysis was carried out to verify the [H2](#) hypothesis. The arithmetic average values illustrating the perception of the quality features of individual brands and the assessment of the quality of shirts of these brands were analyzed. The results of this analysis are presented in the form of dendrograms in [Figure 2](#).

In relation to the perception of the quality of the analyzed clothing brands, four clusters were distinguished, allowing the grouping of the analyzed brands by their quality level and their most striking features. The first cluster includes two brands: no. 4 and no. 6, the second cluster consists of the brand no. 5, the third – the brand no. 1 and no. 2, while the fourth – the brand no. 7 and no. 3. Taking into account the study results on sensory assessment of product quality, three clusters were distinguished. The first one consists of no. 4 and no. 5 brands, the second – no. 6, no. 1 and no. 2, while the third – no. 3 and no. 7. The analysis of average values of quality features, presented in [Table 3](#), allows a detailed interpretation of the differences between clusters, and the results of the Fisher–Snedecor test provide the basis for establishing the truth of the [H2](#) hypothesis.



(a)



(b)

Figure 2.
Taxonomy of clothing
brands based on a.
consumer perceptions
of products' quality
and b. sensory
assessment of shirts

Table 3.
Comparison of
perceived and real level
of the quality of
individual features of
branded product
clustering (arithmetic
average values)

Cluster	Product aesthetics	Fabric composition	Design/style	Workmanship	Additional elements	Overall quality
<i>Perceived level of the quality of individual features – survey</i>						
1	3.30a	3.40b	3.13a	3.49b	3.04a	3.35b
2	3.13a	2.69a	3.08a	2.71a	3.07a	2.90a
3	4.15b	3.71b	3.95b	3.74b	3.86b	3.89c
4	4.62c	4.46c	4.39b	4.46c	4.15b	4.43d
<i>F-Snedecor test results (p values)</i>						
	0.033	0.024	0.008	0.026	0.025	0.005
<i>Real level of the quality of individual features – sensory assessment</i>						
1	2.47a	3.87	2.94a	3.44a	2.17a	3.04a
2	3.55b	4.09	3.67b	3.68a	3.48b	3.60b
3	4.13c	4.04	4.10c	4.18b	3.99c	4.24c
<i>F-Snedecor test results (p values)</i>						
	0.004	0.338	0.008	0.037	0.000	0.004
Note(s): Different letter symbols at the mean values indicate significant differences between these means in the LSD test						

The highest quality among the brands tested was exhibited by two brands marked as no. 3 and no. 7. These brands create joint clusters for both values of the ratings obtained in perception studies (cluster 4) and the real (sensory) quality ratings (cluster 3). In both tests, the quality features of these brands were rated the highest on the five-point scale, assuming values above 4 points, with the exception of the additional elements feature in sensory assessment, which obtained a value of 3.99 pts. The quality of these brands is perceived as high because of the product aesthetics (4.62), workmanship (4.46) and fabric composition (4.46), while in the quality assessment they distinguish themselves by their overall quality (4.24) and workmanship (4.18). It should be noted that the products of these two brands had the highest prices in the entire group tested. What is more, the price of the premium brand product was 250% higher than the other one. Considering that both of these brands are perceived and rated at a similar level of quality, it can be concluded that the premium one uses the strength of its brand to generate higher profits. This observation is consistent with the findings of other authors (e.g. [Hoyer and Brown, 1990](#); [Hustvedt and Bernard, 2010](#)) who indicated that consumers are willing to pay more for products of reputable brands.

Considering consumer perception of the quality of clothes, cluster 2 represents the brands offering products with the lowest level of all quality features. This cluster has quality features ranging from 2.69 pts up to 3.13 pts. Among the features, which are particularly negatively perceived by the respondents are the fabric composition (2.69) and workmanship (2.71). The brands in cluster 1 exhibit higher levels of perceived quality than the brands in cluster 2. All quality features received ratings above 3 pts. It is worth noting, however, that the brands in cluster 1 show no differences in the perceived quality when compared to the brands in cluster 2 in terms of the product aesthetics, design/style and additional elements, as indicated by the results of the LSD test. The brands in cluster 3 offer goods whose quality is perceived as average. The quality features received ratings around 3.71–4.15 pts on a five-point scale. The respondents point to the product aesthetics (4.15 pts) and design/style (3.95 pts) as their biggest assets.

When looking at the clusters obtained for the sensory assessment of quality, apart from cluster 3, characterizing the brands of the best quality, two other clusters of varying levels of ratings were identified. The lowest quality is exhibited by two brands in cluster 1, which received particularly low ratings for additional elements (2.17 pts) and for the product aesthetics (2.47) – one of the most basic qualitative determinants ([Hines and Swinker, 2001](#)).

It is worth mentioning that although the perceived quality of one of the brands in this category received the lowest ratings as well, the other brand obtained better ratings in the perceived quality tests, and, as such, it can be found in a different cluster (slightly above the lowest ratings). The products of these two brands also belonged to the group with the lowest price levels. Cluster 2 comprises three brands, whose quality features were assessed as average (in the range between 3.48 and 4.09 pts). They obtained the highest ratings for the fabric composition and the lowest for additional elements. In this quality category, all rated products differed in the purchase price, from the lowest of 13.50 euro, through the average price of 18.00 euro, to the highest in this category, equal to 22.60 euro, so the difference between the cheapest and the most expensive product in this category was 30%. With this in mind, it can be concluded that a higher price does not always translate into a better product quality, which is consistent with the results reported by [Farashahi et al. \(2018\)](#).

5. Conclusions

The main purpose of the presented study was to find out whether the perceived quality of a product of a given brand matches the real level of its quality determined by consumers on the basis of the sensory assessment of a product. Based on the average ratings, it was found that the perceived overall quality of all analyzed brands is higher than the real one, evaluated using sensory assessment. The results have also shown that most of the other analyzed features, including product aesthetics, design/style, additional elements, regardless of the type of brand, received higher ratings in perceived quality compared to the real one. The differences between the compared features were statistically significant in 33 out of 42 cases. Therefore, it can be concluded that hypothesis [H1](#), which states that the perceived quality of clothes of a given brand is equal with the real quality of a product, as evaluated by consumers using sensory assessment, was not supported. Only in the case of the quality of workmanship, differences in ratings depended on the type of brand. The quality of more expensive brands received better ratings in the sensory assessment. Likewise, in terms of the fabric composition, higher scores were obtained in sensory assessment of the shirts made of 100% cotton. These conclusions are also confirmed by the PROFIT analysis that has facilitated the illustration of the positions of selected brands and their features in comparison with others.

The cluster analysis has shown that selected products were characterized by different levels of quality, for which it was possible to identify strong and weak features characterizing a given category. The hypothesis [H2](#) was verified positively. Four clusters were distinguished concerning the perception of the quality of the analyzed clothing brands, and three clusters in the case of sensory assessment of the real quality of shirts. The brands perceived as the highest quality stand out from the rest through features such as product aesthetics, workmanship and fabric composition, while in the quality assessment they distinguish themselves by their overall quality and workmanship. In turn, the brands offering products with the lowest level of all quality features were particularly badly perceived in terms of fabric composition and workmanship and in sensory assessment obtained particularly low ratings for additional elements and the product aesthetics.

Also considering the differences in the price level of the shirts assessed, an additional conclusion can be made that a higher price does not always translate into better product quality and that the premium brands use the strength of its brand to generate higher profits.

5.1 Implications

The authors of this article strongly believe that this research would be a valuable source of information for clothing company managers, thanks to which they could better manage their brand and its position on the market, and thus ensure the enterprise's economic development and success. When undertaking marketing activities consisting of building positive

perceptions about the product, it is important to make sure that the product offers an attractive sensory experience. In the case of products of the brands for which the results of sensory quality assessment (real) deviate from consumer perceptions about the quality (perceived), production managers should take corrective actions to restore and even improve the brand image in the eyes of the consumer, as well as to ensure the brand and the products offered under it a stable position on the market. Otherwise, there is a risk that consumers might feel dissatisfied and lose confidence in the brand, which in turn can lead to long-term losses.

5.2 Limitations

This study has several limitations. First and foremost, the research results cannot be generalized to all consumers because they encompass the results from one national context and one population of respondents (young females). Although this particular consumer group plays an important role in the retail clothing market (Cho and Workman, 2011; Millan and Wright, 2018), it does not provide an exhaustive description of consumer buying behavior. Therefore, further research should also include other consumer groups, in order to investigate whether the quality perception and direct quality assessment depend on gender, age, economic conditions and cultural background of the buyers. It should also be noted that the conducted research comprises only the most popular clothing brands available on the Polish market, in particular the fast fashion segment brands. It would be interesting to continue the study by investigating the products of other brands, which would make it possible to obtain a more complete picture of the segmentation of retail clothing brands based on their quality. Furthermore, it would be advisable to carry out a sensory assessment of the quality of other clothing items offered under the brand names investigated. The aim would be to verify the differences identified in this study between the brand-related perceived quality and the actual quality of the products assessed by means of sensory analysis and to establish whether it is possible to indicate a universal set of distinguishing features of products offered under a particular brand name and determining their level of quality.

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