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How to Understand the Customer Preferences Regarding Spectacle Frames? A Grounded Theory Approach

Maria Roxana ENE
Politehnica University Timisoara, Timisoara, Romania
roxana.ene@student.upt.ro

Sabina Alina POTRA*
Politehnica University Timisoara, Timisoara, Romania
**Corresponding author, sabina.potra@upt.ro*

Adrian Pavel PUGNA
Politehnica University Timisoara, Timisoara, Romania
adrian.pugna@upt.ro

Rebecca Ioana CHINCEA
Politehnica University Timisoara, Timisoara, Romania
rebecca.chincea@upt.ro

Abstract. *The digital voice-of-customer provides information to companies about the products and services available on the market from customer's perspective. The paper aim is to find out what are the preferences of customers in the matter of spectacle frames, analysing the comments left by customers on social networks, Facebook and Instagram. The online content is analysed using the qualitative method, named grounded theory. In the specialized literature, studies on the preferences of eyeglass wearers regarding spectacle frames have been carried out to a large extent, using the Kano method and to a small extent on the grounded theory basis. Grounded theory methodology used is based on several stages, data collection, the coding process, theoretical saturation, theoretical sampling and constant comparison, in order to obtain the answer to the question: "Is grounded theory a reliable source of information from which we can understand customers' preferences on eyeglass frames?". The results obtained in this study will be used to carry out the eye-tracking experiment, in a future study, to test if the preferences of customers from Western part of Romania match the preferences of customers from all over the world.*

Keywords: Grounded theory, spectacle frames, digital voice-of-customer, customer, social networks.

Introduction

Following the increase of market competitiveness, business survival lies in customer enjoyment (Psarommatis *et al.,* 2020). Thus, is necessary for companies to monitor product or service performance over time. The key factors that influence the products or services quality, also known as quality elements, allow the organization to measure, control and correct consumer's perception of their offer (Franceschini *et al.,* 2009; Mukherjee, 2019).

The industry producing eyeglass frames, has turned nowadays into a giant industry, which produces frames in various styles, shapes, sizes and colours for customers all over the world (Kouchi and Mochimaru, 2004). The eyeglass frame market is defined by the total elements of design, production, and sales of eyeglasses and sunglasses (Sicari *et al.,* 2020). The countries that dominate the European market of Eyeglass frames are France, Germany and Italy. Also, the

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national markets are led by the European and Global leaders, having an impressive number of store chains and a vast portfolio of quality and premium products (Mieze *et al.,* 2016).

Glaser claims that grounded theory represents what is, not what should be (Glaser, 2009). This theory takes an unbiased approach and produces the knowledge found in the data and emerging from it (Charmaz, 2012). Data from any source (clinical experiment, survey or content), in grounded theory, can be used without being linked to them (Glaser, 2002). Therefore, grounded theory is a data collection and analysis driven method for the mid-level theories development (Charmaz, 2012).

The purpose of this work is to analyse the preferences of customers from all over the world, regarding eyeglass frames, based on the information provided by consumers in the online environment. Therefore, this study aims to answer the following question: "*Is Grounded Theory a reliable source of information from which we can understand customers' preferences on eyeglass frames?"*.

The paper is organised in five sections. The first section provided an overview of the paper. The second section focuses on the presentation of the paper's literature review. Section three outline the methodology for carrying out the grounded theory, to process the results obtained from the analysis of the reviews. Section four includes the methodology for performing the grounded theory. Finally, the conclusion section brings back into discussion main aspects of the paper and the possible future directions of research.

Literature review

Defining grounded theory

The qualitative research method called Grounded Theory (GT), which "generate new theory from data" (Birks *et al.,* 2012). The grounded theory is the research result of two American sociologists and the importance of the research method is given by its ability to create exhaustive descriptions of a field in everyday life (Wronowski, 2018), thus grounded theory is suitable to analyse customer preferences in the field of spectacle frames.

The qualitative research method, through which the words and their meaning are processed, represents the grounded theory method (Glaser, 2002). The technique was first elaborated and used by Anselm Strauss and Barney Glaser, American sociologists, having an incredible ability to create detailed descriptions and understand social life (Elliott, Lazenbatt, 2005).

Barney G. Glaser, 1992, one of the sociologists who created this theory, claims that the application of this method is based on quantitative data. The term "grounded theory" is based on the premise, theory is developed on the basis of the systematic analysis of empirical data (Glaser, 1992). The person responsible for researching the data, gives meaning and understands what they say, having the ability to separate relevant data from irrelevant data. Thus, through theoretical sensitivity and perspicacity, the researcher has the capacity to develop a grounded, solid and coherent theory (Glaser, 1978).

Grounded Theory has been chosen because it "helps the applier understand and explain to clients what is going on in the context to which it is being applied" (Glaser *et al.,* 2014). The researchers also argue that a "consumer's taste is also an important element for the preference of a glasses design" (Inoue, 2004). Also, the grounded theory is used when research must deal with qualitative data collected through observation (Turner, 1983).

Grounded theory approaches

The first model, developed by American sociologists Strauss and Glaser, can be called "classical grounded theory". Following the development of the model, the break between the two sociologists occurred, leading to the emergence of the Straussian and Glaserian schools, and other emerging schools.

The Glaser approach describes emergent design, based on data, classified into predetermined categories, the study relying to a small extent on the characterization of categories. The approach has increased utility among sociological and anthropological sciences, being conceived on the extraction of a large amount of information from the analysed data, being free of preconceptions (Mead, 1994).

Charmaz's approach refers to constructivist design, based as the name suggests, on constructivism and social construction. Constructivism refers to the construction of reality by people, including researchers. Grounded constructivist theory is based on the theories configuration in the analysis process and in the interaction among researcher and informant (Gonzalez-Teruel, 2015).

Corbin and Strauss developed the systematic design, being considered an open and structured approach, being the most used method nowadays. The method has a broader configuration, and the process includes coding, create categories and a detailed analysis (Mills *et al.,* 2006).

Grounded theory data analysis

The memo construction represents the first step in data analysis. Memo-writing is "an analytic and essential process that is ensuring the quality in grounded theory" (Mohajan *et al.,* 2022). Also, the memo creation represents the transitional step among "data collection and writing drafts of papers" (Charmaz, 2006), which personalizes the event (Saldana, 2006). The constituent elements of the memos are presented in Figure 1.

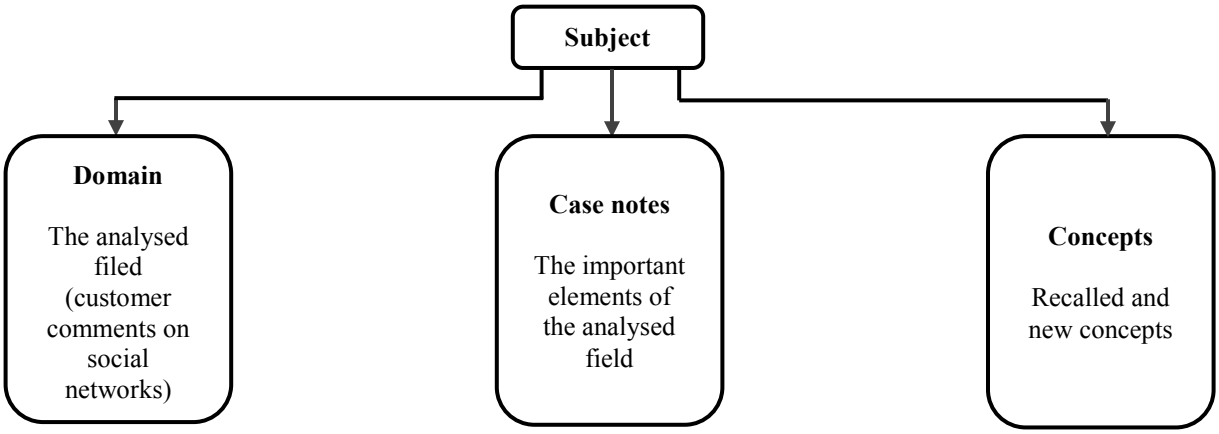

Figure 1. Example of memo

Source: author's own research.

Capturing ideas in process and in progress is the writing of memos. The memos that are part of the same category follow the development of this category, based on the amount of information obtained by the researcher. Memos can be classified into 3 categories: partial, provisional and exploratory. The method of writing and storing memos creates a favourable

framework for exploring, verifying and developing ideas. Also, making memos, offers the opportunity to find out information about data, in a more simplistic way, compared to summarizing the material. Through this method of writing, the searcher's ideas appear along with the unfolding of the discoveries (Charmaz, 2008).

Grounded Theory emphasizes the concepts and the relationships between them, being measured by the data obtained during the research. This theory measures and studies concepts, categories, relationships between concepts, themes, patterns and theoretical concepts.

Grounded Theory was designed for building theories from qualitative data. It also emphasizes the development of new theories, through an inductive process, contrasting with deductive methods that test existing theories (Charmaz *and Thornberg*, 2021; Chapman *et al*., 2015). Based on data collected from the candidates; in order to generate theoretical perspectives, this method ensures that the resulting theories are closely related to realities and candidates' experiences, making it particularly valuable in various fields, as understanding the customer preferences regarding spectacle frames (Chapman *et al*., 2015). Practical applications, such as measuring the feat of small-scale and medium-scale companies, demonstrate that grounded theory can incorporate financial as well as non-financial measures. The hybrid approach allows the evaluation of performance in relation to the established objectives and deadlines (Chong, 2008). Specific criteria for quality assessment are included in this theory, helping to ensure the rigor and validity of the constructed theories (Charmaz *and Thornberg*, 2021).

Data analysis is carried out through the open, axial and selective coding, as can be seen from Figure 2. In all these stages, the researcher is like a detective investigating concepts, not excluding any variation of the concepts until the final form of the theory (Corbin, 2007).

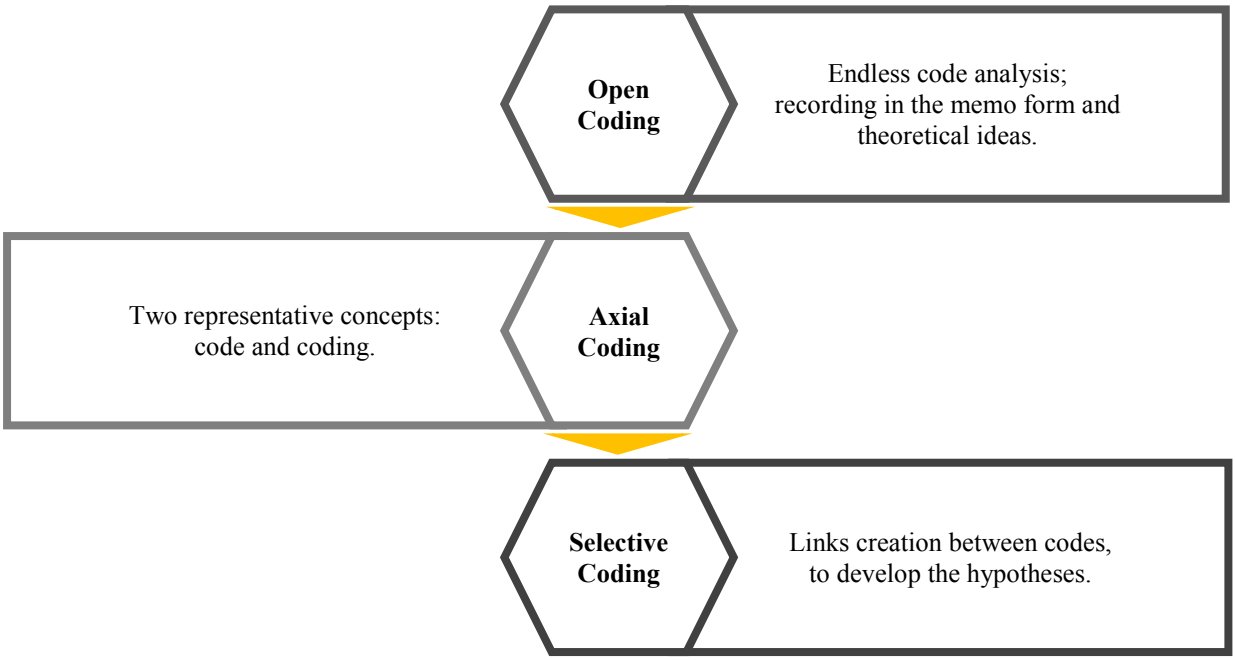

Figure 2. Grounded theory data analysis stages

Source: author's own research.

The first stage of open coding involves coding in detail (line-by-line). Key concepts and phrases are identified, highlighted, and organized into subcategories, and then into categories. Following the completion of this stage, the data is divided into "conceptual components and the researcher can start to theories or reflect on what they are reading – making sense of the data" (Noble, 2016). Also, data obtained from consumers will be "constantly compared" to avoid similarities (Strauss *et al.,* 1990).

The second phase of the method consists of axial coding. Relationships between the concepts are identified and the connection is made (Strauss *et al.,* 1990). In the second phase, the method uses two key concepts: code and coding. According to Glaser, code represents "the essential relationship between data and theory" and coding represent "a process that gets the analyst of the empirical level by fracturing the data, then conceptually grouping it into codes that than become the theory which explains what is happening in the data" (Holton, 2007).

The final stage consists of selective coding, involving the identification of the main category, and then its correlation with other categories. The relationships are then authenticated, the categories refined, and these categories are then integrated (Strauss *et al.,* 1990).

Spectacle frames

The life quality of visually impaired people is improved by wearing correctly fitted glasses, giving them the chance to see the world more clearly and preventing vision deterioration. The capacity to touch, taste, smell, see and hear are the five human senses, being very important in everyday life, among them, sight is considered one of the primary senses, providing between 80% and 85% of information regarding learning, perception and the activities carried out (Ripley and Politzer, 2010).

In the 21st century, glasses have a double function, to correct the vision and to be used as a fashion accessory (DeLong and Daly, 2015). The studies regarding the contemporary design elements of the eyeglass frames were carried out in order to evaluate the aesthetic and functional elements, but also to observe their impact on the preferences of eyeglass wearers (Huarng and Lin, 2020). These studies come to the aid of specialists in the field of optics (optometrists), increasing the portfolio of options in the retail activity. Also, changes in design are occurring rapidly, due to cultural and popular influences, emphasizing the synergy between colour and image in the creation of spectacle frames (Jung, 2005).

Anthropometric dimensions can also produce changes in the design elements of eyewear frames. Therefore, it should be mentioned that the vast majority of frames available on the market are mass-produced products, based on standard anthropometric dimensions. In mass production, elements such as: age and evolutionary changes in body size are not taken into account. But, an important factor in the decision to buy these products is the good relationship between comfort and fit. Studies show that there can be differences in the size of the head and face between people of different races, genders and ages (Kouchi, 2004). Human head diversity and complexity morphology makes it difficile to create specially made eyeglass frames for each wearer. Thus, it leads to the identification of common design elements such as: shape, lens size and colour, which are preferred by the majority of people.

Customer preferences and social networks

To improve product or service-related customer satisfaction, businesses need to understand all the elements that can influence it (Mukherjee, 2019). Second step of internet expansion and dispersion is generically called Web 2.0. This stage is characterised by a considerable boost between the site

and user interactions as follows: users, who often become authors, have a higher degree of participation; information is shared in a more efficient way and can be easily recovered and replaced, using peer-to-peer tools or mixed media content spread scheme; social network assertion (Tirunillai and Tellis, 2014).

The information published by customers on social platforms, regarding satisfaction with the products or services used, represents the digital voice-of-customers (Özdağoğlu *et al*., 2018). The digitization of businesses, has favoured the development of unique opportunities, through which goods and services quality cand be managed (Sony *et al*., 2020). One of the ways of identification the quality characteristics of services and products is to analyse digital voice-of-customers, more precisely by following online reviews, being considered an economical, unbiased and solid source of data to understand consumers preferences. The literature has shown how online revies cand be used to understand the latent dimension of quality and the consumer preferences (Mastrogiacomo *et al*., 2021).

According to recent studies, the digital analysis of voice-of-customer can be used to identify the characteristics of products and services, but also to classify them according to the consumer's perception (Barravecchia *et al*., 2020; Barravecchia *et al*., 2021)

The sentimental and intellectual association among the goods attributes and necessities or desires of the users is called perceived quality. This comparison is based on two types of perception, conscious and unconscious, having a close connection with the experiences and expectations of clients (Schmitt *et al*., 2008). To understand the concept of perceived quality, the following figure shows the connection between customer perceptions and the characteristics of product and services.

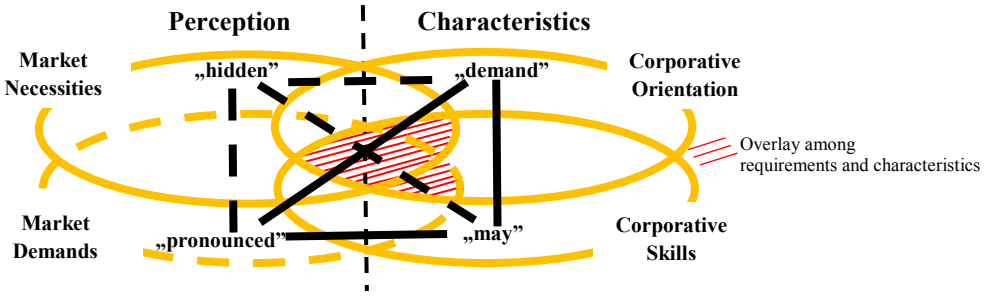

Figure 3. The connection between customer perception and products or services characteristics
Source: Köhler *et al*., 2013 based on Schmit *et al*, 2008.

As can be seen in Figure 3, the user is initially attracted by the first impression created by a product. This impression can persist, leading to repeated uses (Ulrich and Eppinger, 2016).

Methodology

The methodological steps undertaken can be seen in Figure 3. To explain the research question, the responses of customers from the online environment were analysed. The review collection took place in two stages. In the first phase, customer reviews of the most important optical stores worldwide were analysed. It was found that in the optical shop's review section, customers express their opinion on the services offered by these companies, not on their preferences regarding eyeglass frames. Thus, in the second stage, the largest companies producing eyeglass frames (EssilorLuxottica S.A., Safilo Group S.p.A., Silhouette International Schmied A.G., Marcolin S.p.A. and De Rigo Vision S.p.A.) and the most well-known frame brands (Ray-Ban, Oakley, Persol, Oliver Peoples, Silhouette, Safilo, Porsche Design, Rodenstock, Police) were selected.

It was decided that 10 reviews should be chosen for each brand, which refers to people's preferences, both women and men, regarding spectacle frames. To collect the information, the Facebook and Instagram platforms were used, by accessing the official pages of the eyeglass frame brands. On these pages, the comments section was consulted, the comments being followed for a period of five years (2019-2024), and the device used was a personal phone. Therefore, for the eight chosen brands, a total number of 80 reviews were selected from both, men and women.

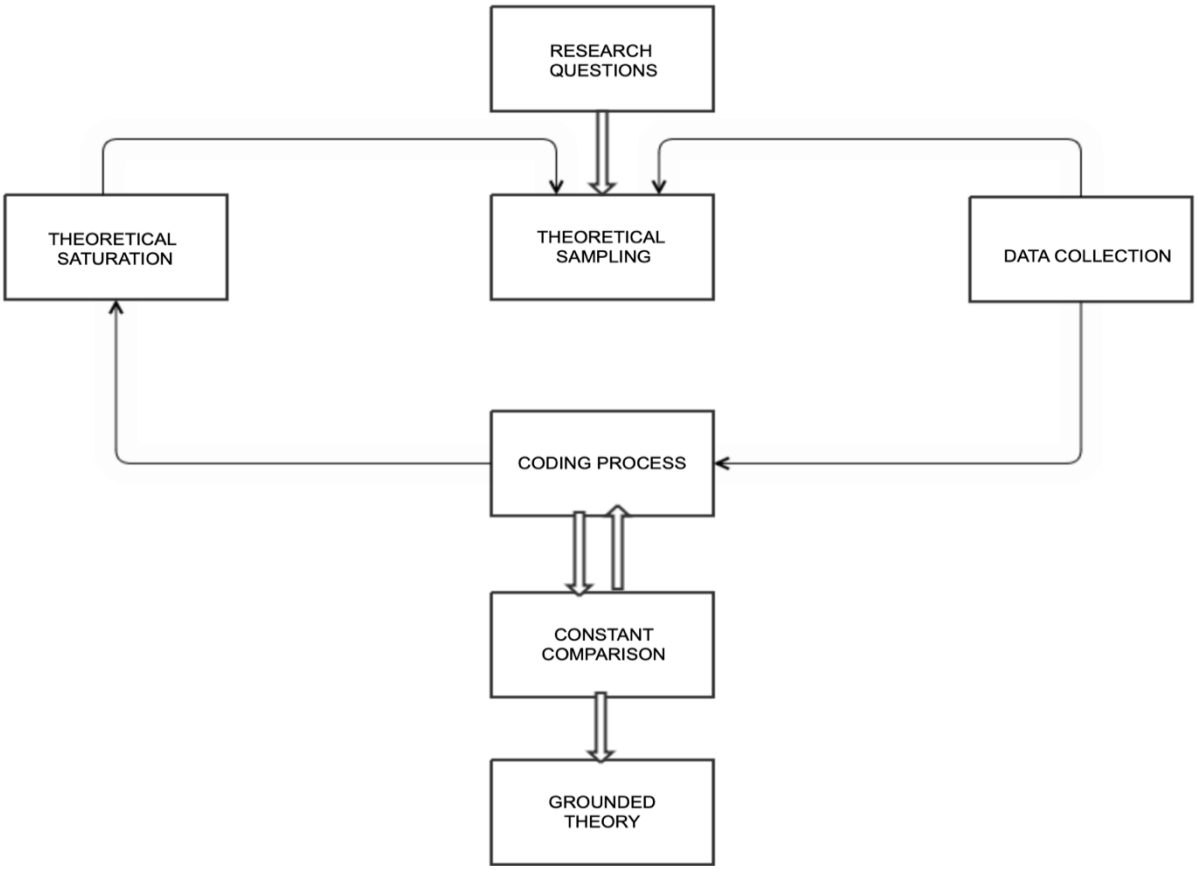

Figure 4. Methodological steps of the present research

Source: author's own research.

As can be seen from Figure 4, the steps taken in order to realize the grounded theory are as follows: establishing the research question, then the theoretical sampling is carried out, followed by data collection, the coding process and the theoretical saturation. After the coding process, the constant comparison is made, finally resulting the grounded theory.

The data used in the application of the Grounded Theory come from comments section on social networks, Facebook and Instagram. As previously mentioned, customer comments were analysed for the most famous brands of eyeglass frames, of the main manufacturing companies at the moment. Within the grounded method, both qualitative and quantitative data can be used. Although it is associated with qualitative data, interviews and observations, quantitative data can be also utilised within theory to enrich the analysis and provide a more comprehensive understanding of the research subject (Noble and Mitchell, 2016; Hadley, 2022). In this paper, qualitative data were used, some of them are presented in the following table.

Table 1. Customer reviews for the main spectacle frames manufacturing companies

No.	Brands	Time period	Number of reviews read	Social networks	Example of review
1.	Essilor-Luxottica (Ray-Ban)	2023-2025	1000	Facebook	"It does look nice but round lenses do offer …."
2.	Essilor-Luxottica (Oakley)	2023-2025	500	Facebook	"Bring back the frames in the round shape and bigger frame and lens width."
3.	Essilor-Luxottica (Persol)	2023-2025	400	Facebook	"I bought a pair just like these, I appreciate this model especially for the larger temple length."
4.	Essilor-Luxottica (Oliver-Peoples)	2023-2025	300	Facebook	"Bring back the cat-eye shape in yellow-gold colour."
5.	Safilo Group (All brands)	2023-2025	400	Instagram	"Soft-edge cat-eye frames are amazing!"
6.	Silhouette Int. (Silhouette)	2023-2025	350	Facebook	"These oval glasses look really great, I love them!"
7.	Marcolin S.p.A. (All brands)	2023-2025	800	Instagram	"An oval frame carefully designed to enhance the eyes and gaze with sophistication."
8.	De Rigo Vision S.p.A. (Police)	2023-2025	600	Instagram	"Awesome design and comfort and the red version are perfect for winter holidays."

The table above includes customer reviews for the most well-known brands of the largest spectacle frames manufacturers. A very large number of comments are available on social networks. Their selection was made manually by using the following sampling criteria: time period – two years (2023-2025); social networks – existing comments on social networks; keywords such as size, colour and shape, but also their derivatives. Also, the inclusion criteria include the keywords and the time period mentioned above. The main exclusion criterion was the removal of comments that are not related to the analysed topic and do not contain the previously mentioned words. Also, as can be seen from table 1, the words contained in the inclusion criteria were underlined to aid the data research, by going through three stages: open coding, axial and selective coding, to be presented in results section.

Results

Throughout the present study, information has been collected, which has been later coded and analysed to better understand factors that influence the customers who left comments on both online platforms regarding spectacle frames.

Therefore, first phase of coding (open coding), involves transcribing comments of the 80 subjects into a memo for each subject, according to Figure 5. At this stage, 102 codes were outlined, which highlights the factors that have an impact on consumer preferences when it comes to spectacle frames.

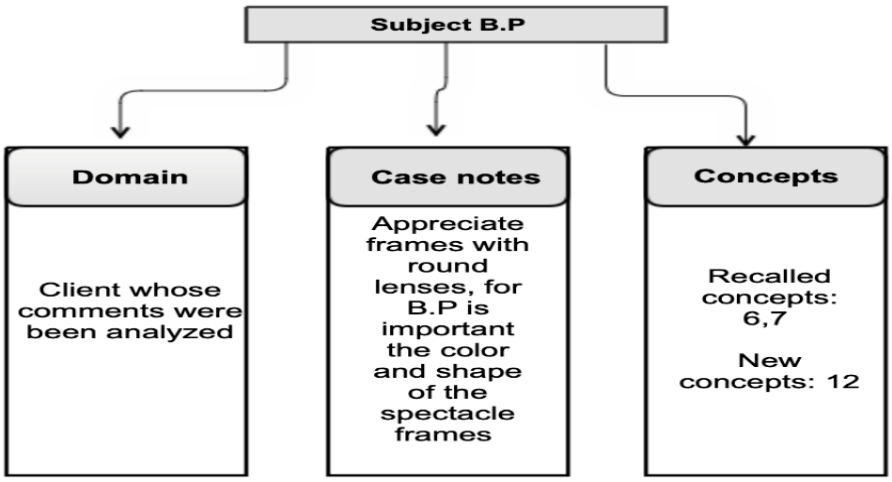

Figure 5. Memo example for one of the analysed subjects

Source: author's own research.

Previous figure presents the way of making a memo. For this study 80 memos were made, for each comment of the glasses frame brands. Based on these memos, a total of 102 codes were obtained, which describe customer's preferences on eyeglass frames.

The characteristic elements of the axial coding phase are the concepts of code and coding. They are described by Glasser, 2002, as follows: code represents fundamental relationship among theory and data. Coding is represented by dividing data into codes and grouping them in categories, to explain the theory. The axial coding phase compresses the 102 codes into 22 categories, as can be seen in the following figures.

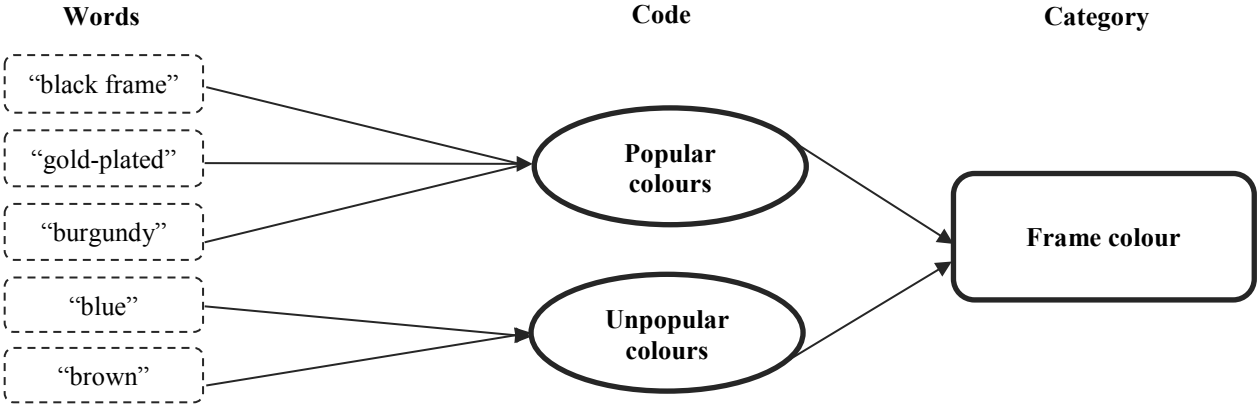

Figure 6. Grouping by category of the resulting codes

Source: author's own research.

From Figure 6, it can be seen that the axial coding stage involves compressing the resulting codes into one of the three core categories, frame colour. The following figure includes the creation of the category, by compressing the results for the frame shape.

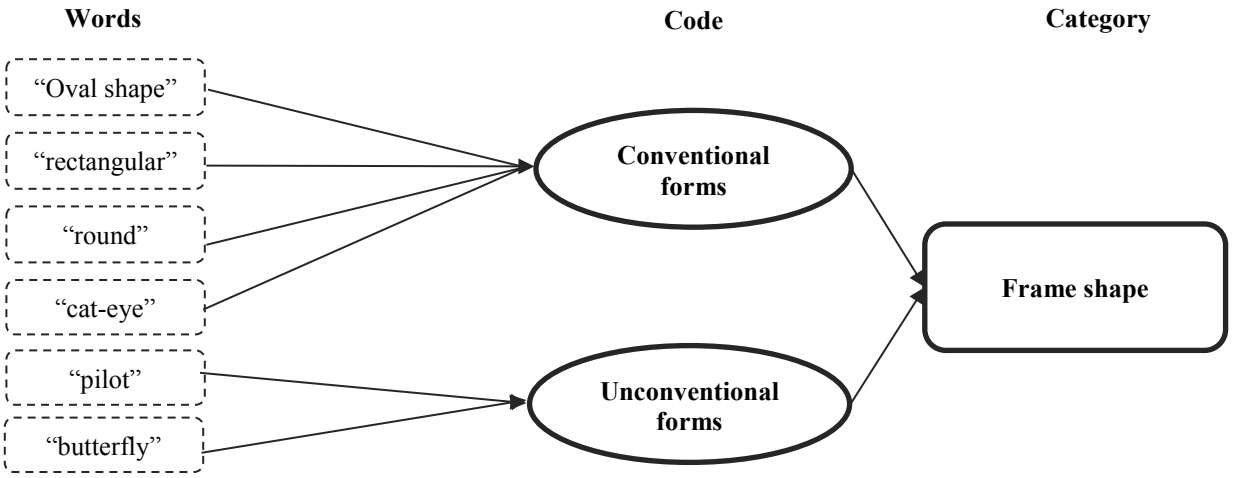

Figure 7. Grouping the resulting codes to create frame shape category

Source: author's own research.

According to Figure 7, the selected words are grouped into codes, which are then compressed into the core category called frame shape. The compression of the codes in order to obtain the frame dimension category is represented in the following figure.

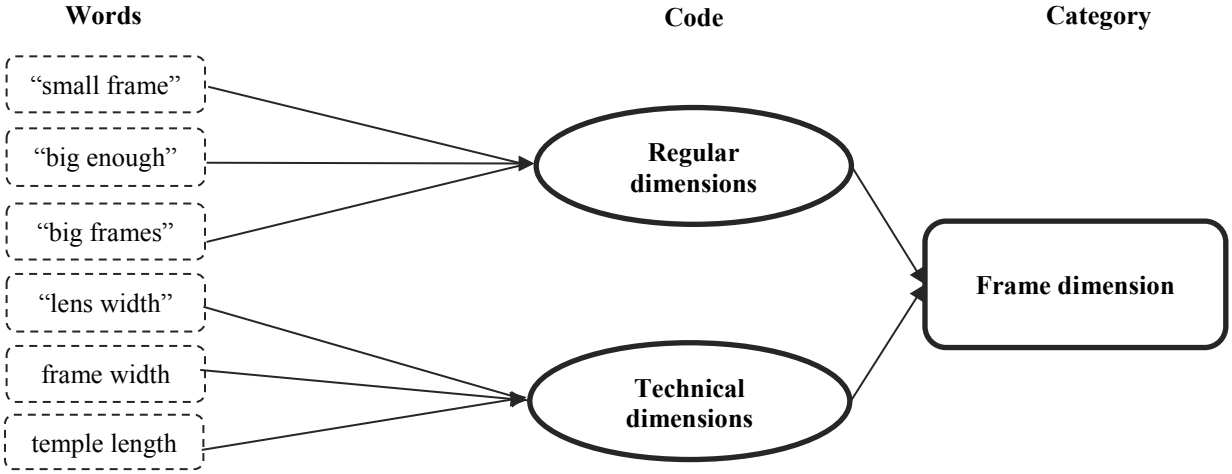

Figure 8. Codes compression to obtain frame shape category

Source: author's own research.

By compressing the outlined codes established in the open coding stage, the third core category, called frame dimension was obtained, as shown in Figure 8.

In the final stage, selective coding, the relationship between the 22 categories is outlined, highlighting their connection. To better understand the relationship between the 22 categories, a graph has been made using SocNetV, according to Figure 9.

The development of the hypotheses, to be integrated into the theory, is carried out in the third stage, called selective coding, by creating links between codes (Glasser, 2002). The

authentication of the relations between the codes then leads to categories assimilation and finally, fundamental theory is identified (Strauss and Corbin, 1990).

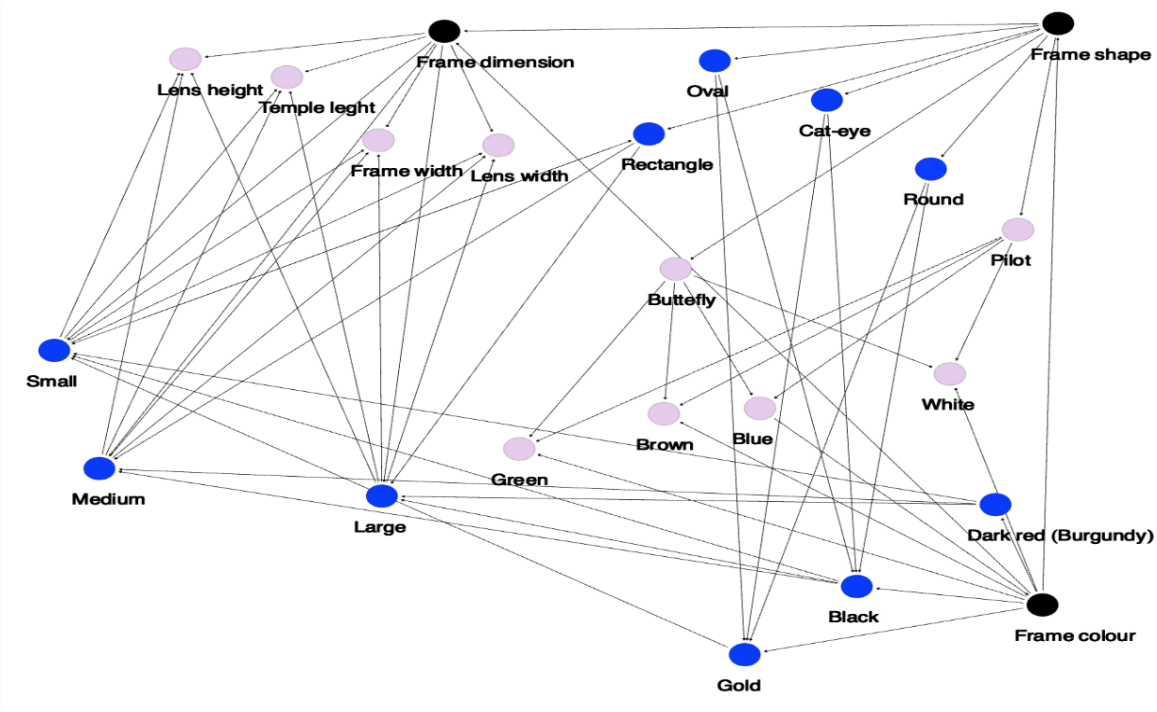

Figure 9. The relationship graph between the 22 categories

Source: author's own research.

Figure 9 shows the relation between the three main categories and subcategories. Main category is "the central idea of a thesis and is the main idea of the theory" (Hallberg, 2006). Also, according to Hallberg, the theoretical framework is delimited by the main category.

The core categories represent 3 variables of the frame: colour, shape and dimension. Each of the "core category" are divided into subcategories that in turn are interconnected.

According to Figure 9, the colour frame category holds 7 subcategories, the frame shape category holds 6 subcategories, and the frame dimension is represented by 7 subcategories. The subcategories represented by the blue nodes have a higher coefficient of preference among consumers, and the interdependence relations are established only between the same subcategories. Thus, each main category is modulated by certain variables that matter between consumer preferences such as colours: gold, black and dark red, but also certain forms of the frame.

For a better representation of the categories and influence of each node in decision making, the stress centrality algorithm was applied. "Stress is an important measure of graphs applicable to the study of social networks" (Poojari, 2023) and it shows how often node appears on the shortest paths between other nodes. According to Wasserman, the centrality of stress refers to the position of a node in a network, and the higher the centrality of stress, the more important the role of the knot is to create links with other nodes.

Thus, according to Figure 10, the size of the frame represents a decisive element in consumer choices, and the black neutral colour represents a bridge between the other elements of the frame.

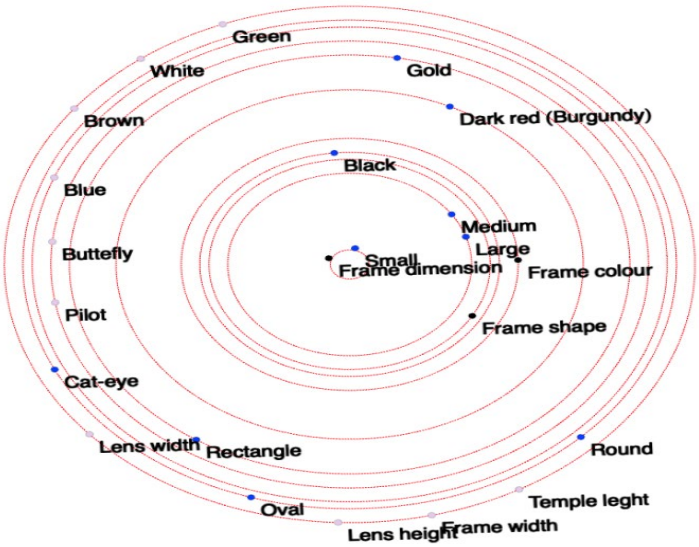

Figure 10. Stress centrality of the 22 categories

Source: author's own research.

Also, besides the small size of the frames and the black colour, the shape of the frames is an important element in deciding on the eyeglass's frames, but the decision is more of a contextual one because the nodes that represent the shape of the frames do not have a stress coefficient high enough to have a major importance in making the decision in general.

The results obtained are relevant because they provide an image of the customers' preferences towards the spectacle frames. Also, based on these results, a future study will be carried out, which will aim to test them in order to establish the concordance between the preferences of customers from all over the world and of customers from the Western part of Romania.

Conclusion

In this paper, customer comments were analysed, extracted from the social networks of large companies producing spectacle frames. During the work, theoretical aspects of the grounded theory were addressed, based on which the study results were obtained.

Following the theoretical analysis, it can be observed that grounded theory involves formation of new theories from data, both qualitative and quantitative to enrich the analysis. In the 21st century, glasses have a double function: they correct vision and also, can be used as a fashion accessory. Although studies have been carried out to evaluate the aesthetic and functional elements of a spectacle frame, changes in terms of design occur quickly, being influenced by trends, the geographical area and anthropometric dimensions.

According to the previous information, the data analysed along the way, come from the digital voice-of-customers on social networks, Facebook and Instagram. Data analysis was carried out by going through the three stages: open coding, axial and selective coding.

In the first phase, 102 codes were obtained, which underline the factors that have an impact on consumer preferences. Then, in the second phase, the codes were grouped into 19 categories. These categories, in the last phase, were included in a graph, emphasizing the relationship between them. From the relationship graph, it appears that the most important categories are the shape,

colour and size of the glasses frame. These categories can have weak or strong links between the included elements.

The limitations of the research consist in the analysis of a limited number of comments left by people on social networks, due to their manual selection.

Further research will aim to test these categories of preferences, using eye-tracking, in order to demonstrate whether the predilection of the customers from the Western part of Romania matches the choices of customers from all over the world.

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