

“Ali-CECO” (Embossed Writing in the Food Industry)

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Abstract: For most people, it is difficult to do something as simple as “choosing” a product from a supermarket shelf when it is full of different typefaces. This situation is even more difficult for those people who have a disability or some kind of physical limitation. In search for a solution, the inclusive packaging paradigm has arisen.

In this context, fourteen visually-impaired people (with a residual vision of 3-8%) were studied in a research work carried out in Valladolid (Spain) using a co-laboratory methodology. This research’s point of departure emerged as a concrete need: in Europe’s food industry —and in Spain’s, specifically—, there is an absolute lack of devices that enable blind people to buy commodities in a safe and autonomous manner. The results of this study are presented in this paper.

The proposal herein is to include Braille in the caps of milk cartons (or bottles of water, oil or juice, or in any container with a lid) in order to differentiate this product from others with a similar format, and to identify the properties of the food it contains. In this case, the prototype is a plastic, round, recycled “tethered cap” with embossed writing to identify the product and a notch to indicate the direction of the writing so that it is easier to read. The following acronyms are also included: LA for lactose, GL for gluten and FS for nuts.

Key words: Braille, visual impairment, food, equality, autonomy.

1. Theoretical framework: literature review and state of the art

The results presented were obtained from the state of the art of the proposed topic. Said presentation was structured in view of the following items: an analysis of the theme in 4 iconic databases, *Google Academic*, *WOS*, *Scopus* and *CORDIS*; a bibliometric analysis of the results obtained from the different searches; and an analysis of non-indexed bibliography. All of this resulted in the introduction of a summarized study of the existing proposals in the market (state of the art).

1.1. Scientific literature review

1.1.1. The databases (*Google Academic*, *WOS*, *Scopus* and *CORDIS*)

These four databases were selected with the idea of identifying high-impact indexed articles related to the proposed theme.

1.1.1.1. Google Academic

The first search criterium was set around key words in spanish: Braille, food, Braille and food, food products in Braille, visual impairment, visual impairment in Spain, accessibility and Braille, Latin America and products in Braille, Latin America and food products in Braille, Braille packaging and tflotechnology. The results obtained by this search were the following:

- Braille: 279,000 documents
- Food: 4,580,000 documents

- Braille and food: 12,900 documents
- Food products in Braille: 759 documents
- Visual impairment: 109,000 documents
- Visual impairment in Spain: 68,000 documents
- Accessibility and Braille: 16,900 documents
- Latin America and products in Braille: 3,670 documents
- Latin America and food products in Braille: 304 documents
- Braille packaging: 19,700 documents
- Tiflotechnology: 1,210 documents

From the 5.091.443 documents that were found related to “*ali-CECO*” (which refers to the embossed writing in the food industry), 5 titles were linked to the proposal.

The first one shows that, in 2016, the problem that is at stake was identified in Mexico. The premise was that everyone, irrespective of having a disability, was entitled to know the characteristics of the food products they buy. This is why the proposal was to carry out an investigation on the impact of the development of containers with Braille typeface and the need to include the information visually-impaired people require. The design and implementation of this system was not intended to overly affect the manufacturing process of laminated packaging, but to assess its acceptance in the market.

Two other theses have recently identified the same issue in Ecuador. On the one hand, the “*Veo*” program was presented, a proposal for food labels and packaging to communicate relevant product information to visually-impaired people. The idea was to add removable labels with information about the product that could be later used as labels for the food containers at home. Within the food industry, different solutions have been created for the issues that mostly affect society, such as obesity, diabetes, lack of information on what people eat, or even bad eating habits. However, none of these solutions are inclusive enough since they do not take into account the visually impaired (Naranjo Escobar, 2018).

On the other hand, Ponce Zabala (2019) analysed the influence of the reading and writing system (Braille) as a suitable communication mechanism for the visually impaired. The lack of communication adaptability of the OTC products (medications) is another emerging problem that a visually-impaired consumer nowadays faces (but not in Spain). Regarding access to information in equal terms, the author concluded that nowadays, companies do not meet, in an inclusive and sustainable manner, the specific communication needs of this group of people.

In the city of Cuenca, research was made on the buying habits of visually-impaired people in relation to the purchase of commodities in supermarkets. Based on the use of statistical techniques and tests like Chi2 and ANOVA, a descriptive study with a cross-sectional methodology was made. A single random sampling was used that aimed at testing hypothesis related to merchandising factors, such as accessibility, signage and information, and their importance when shopping at a supermarket. In a similar manner, the purchasing decision process and its reliance on the visual disability degree were analysed. This analysis showed that, in 56.52% of the cases, the sighted guide made the purchasing decision. Once again, the need to develop inclusion in the supermarket, from the perspective of the visually impaired, was highlighted. The goal was to provide these people with better conditions for their autonomous functioning and to improve their purchasing experience, thereby contributing to the social welfare (Jiménez Cuenca, 2018).

A comparative study between Spain and Peru intended to analyse the use of inclusive packaging for the visually impaired at a supermarket, with the idea of adopting the same method in Lima, Peru. The initial hypothesis was that the presence of inclusive packaging in Lima would make the purchasing experience easier for the visually impaired and would foster the development of their autonomy. The samples were selected on the basis of suitability and under the concept of “snow ball”. The first sample was limited to inclusive Spanish and Latin-American packaging, while the second sample included visually-impaired Lima residents. The connection was achieved thanks to the association “*Yo Soy Tus Ojos*” (I Am Your Eyes). Results showed that all packaging mentioned in the research presented Braille as the method for inclusion, but only one presented embossed printing at the same time. Most of the respondents claimed that embossed printing was a more

accessible option for the visually impaired. It was concluded that, indeed, the implementation of inclusive packaging solutions would make the purchasing experience easier for the visually-impaired Peruvian residents of Lima (Vargas Párraga, 2020).

1.1.1.2. *WOS and Scopus*

The following key words were used to search for documents in *WOS* and *Scopus*: Braille, visual impairment, food industry, blind people, visually impaired, blindness and autonomy, and Braille in food products. The following results were obtained:

WOS:

- Braille: 5,434 documents (33 in Spanish)
- Visual impairment: 381 documents (269 in Spanish)
- Food industry: 203 documents (86 in Spanish)
- Blind people: 313 documents (215 in Spanish)
- Visually impaired: 17 documents (12 in Spanish)
- Blindness and autonomy: 7 documents (4 in Spanish)
- Braille in food products: 0 documents

Scopus:

- Braille: 3,645 documents (22 in Spanish)
- Visual impairment: 146 documents (115 in Spanish)
- Food industry: 29 documents (9 in Spanish)
- Blind people: 144 documents (78 in Spanish)
- Visually impaired: 16 documents (13 in Spanish)
- Blindness and autonomy: 243 documents (180 in Spanish)
- Braille in food products: 0 documents

From the 10,578 documents found, only 2 articles were relevant to our proposal, but from cross-cutting perspective.

The first one referred to the social depiction healthcare providers have of the visually impaired (Llanes & Sedano, 2014). Between January and June 2012, a case study was carried out in the general hospital "Hermanos Ruiz Aboy" from the city of San Miguel del Padrón, in Mexico. Thirty-three informants were selected to participate through deliberate sampling. Research techniques, such as free word association and in-depth interview, were used. The study revealed that healthcare providers have a distressed/compassionate/reliant depiction of the visually impaired, which arises from their own experiences, emotional bonds and information regarding this group of people. It was concluded that these providers based their depiction on experiences and knowledge that were linked to the physical damage caused by the limitation and disability of the visually impaired. However, few associations were made to care requirements, what defines the lack of acknowledgement of those elements that would assure the compensation and psychosocial integration of these people.

The second article addressed the general functionality and perceived quality of life of the disabled people, who represent a growing segment of the world's population and whose physical functioning and quality of life are affected in many occasions. In general, the results of the study showed a reverse significant correlation (with a negative sign) between the physical functioning of the studied disabled people and the perception of their quality of life ($r=-0.89$). Likewise, several negative linear correlations were also found between the studied variables when specific groups were analysed in terms of gender, age, marital status, urban area of residency, paid work, school level, family background (nuclear or single-parent family), and grade of family functioning. A negative correlation between the studied variables was also found with regards to any type and degree of disability, and, specifically, to the psychosocial, multiple, physical and intellectual types of disabilities (Cedillo Armijos, Espinosa, Bayarre Vea, González Cedillo & Serrano Patten, 2022).

In conclusion, as a result of this project's state of the art, which was derived—in this first part—from the analysis of three databases, it could be inferred that the problem at stake more sensitively affects Latin American countries (such as Ecuador, Mexico and Peru). Notably, *WOS* and *Scopus* databases—which mainly contain articles related to the "first world" territories—lack any kind of research related to the food industry and the visually impaired. In this case, the scientific literature seems to be in the diagnostic and proposal stage

(in which the lack of identification of food products in an adapted system for the visually impaired is confirmed). The Academia does not appear to be developing any type of prototype, or even a validation of one. Lastly, it is worth mentioning the use of embossed writing as an alternative proposal to Braille, which could be taken into consideration for the final prototype.

1.1.1.2. CORDIS

CORDIS refers to *Community Research and Development Information Service*. It is the European Commission’s main source of information for the results of projects that are financed by programs that constitute a research and innovation framework for the EU.

With the same key words, the search for Braille system and its implementation was carried out, resulting in 137 documents. CORDIS is an intuitive database, so, when the word Braille was introduced, all the projects related to the blind and visually impaired appeared.

A clear dominance of projects and proposals to facilitate Internet access (and access to screens in general), access to books, games, etc. to the visually impaired was discovered. Some robotics projects were also found that were related to more medical issues. Other proposals found were related to developing special Braille printers and transportation matters. However, the lack of proposals that linked the food industry with blindness was clearly noted.

1.1.2. Bibliometric analysis of scientific literature

The following figures are a visual representation of the results of the bibliometric analysis of the scientific literature:

Figure 1: Braille

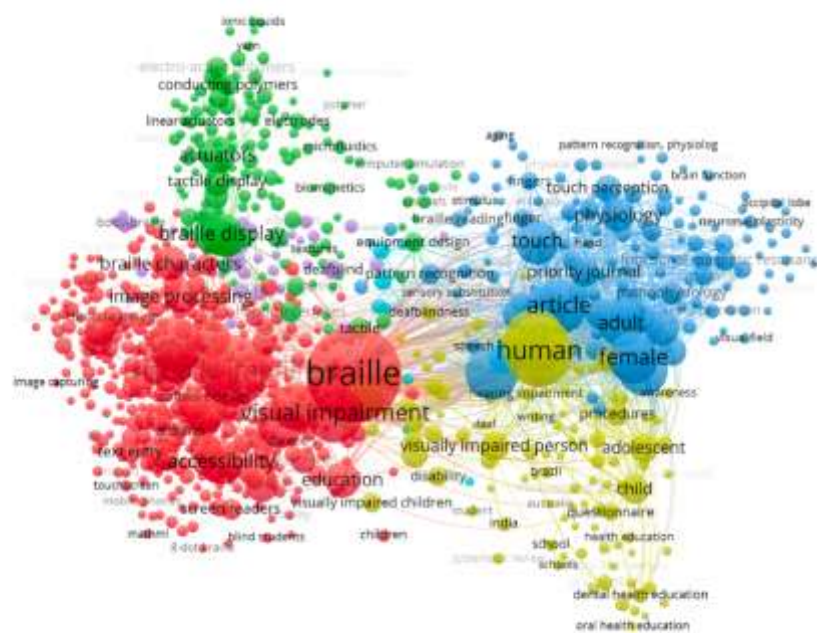


Figure 2: Visual impairment

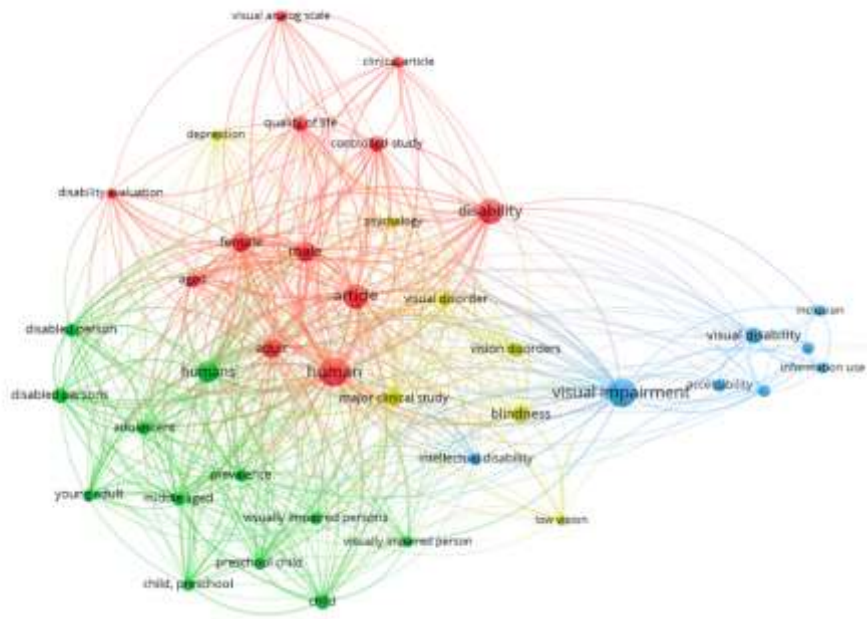


Figure 3: Food industry

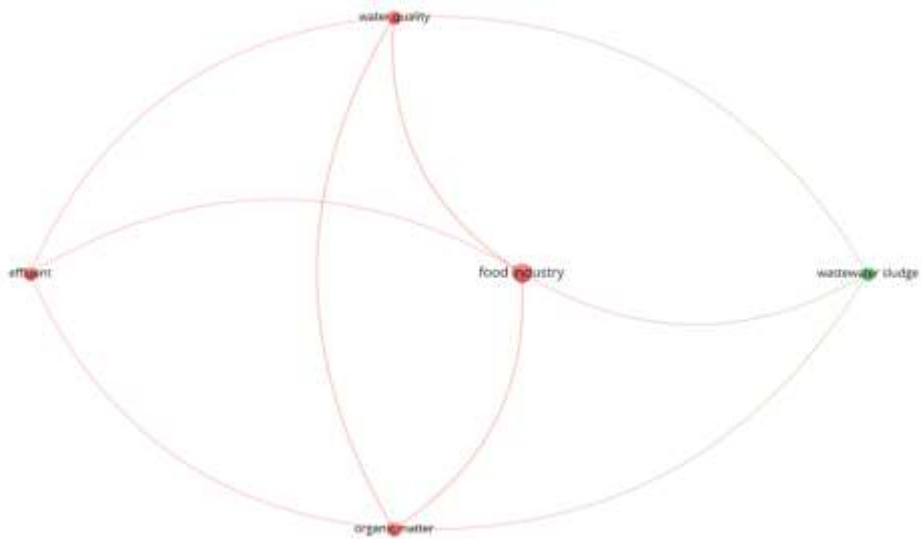


Figure 4: Blind people

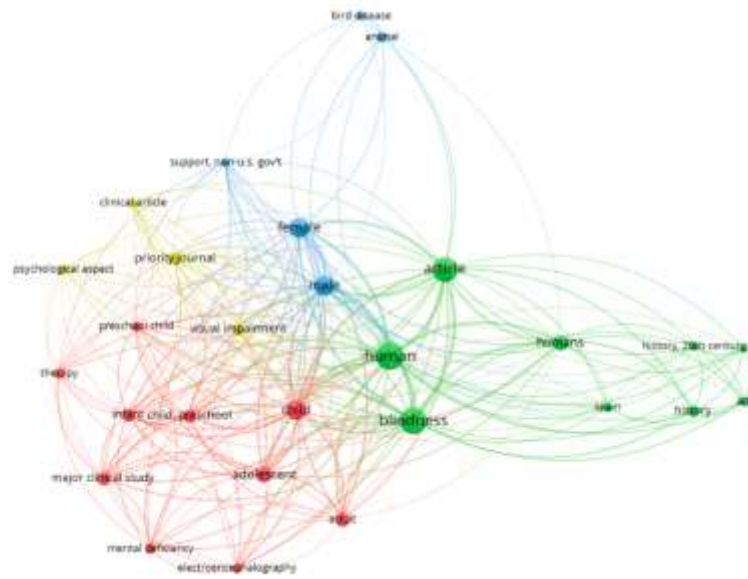


Figure 5: Visually impaired

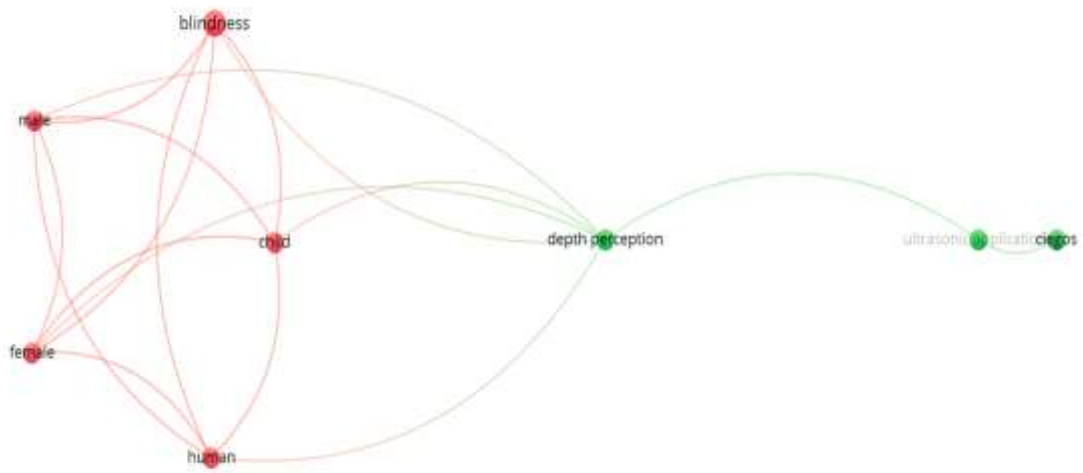
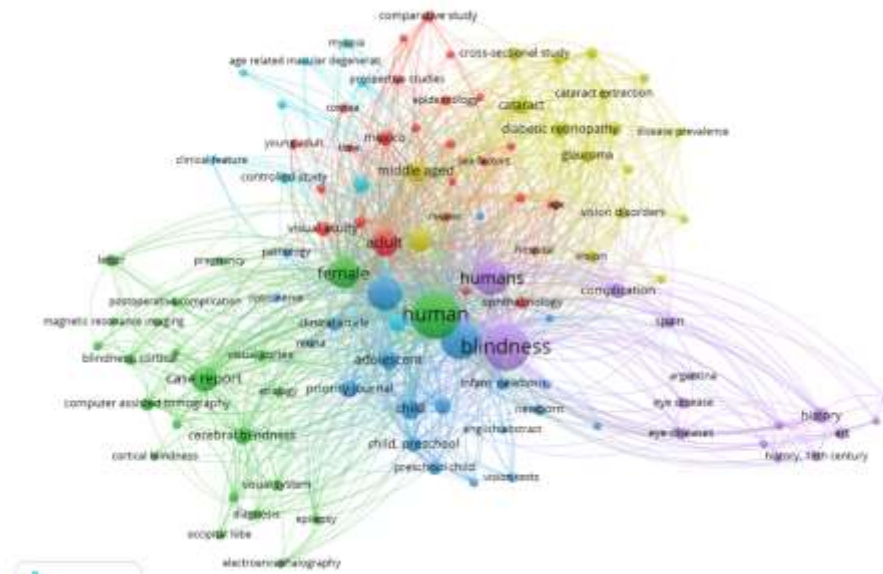


Figure 6: Blindness



Note: All these figures are based on <https://www.vosviewer.com/>

As the previous figures show, with regards to the topic being analysed, the scientific community identifies the following concepts: Braille, visual impairment, blind people and blindness. This means that the key words originally selected are not only relevant, but also include some other perspectives that the literature does not seem to consider. This is an indicator of the large amount of information that can be found on topics related to visual impairment and its most commonly used terms nowadays.

On the other hand, with regards to the second relevant concept for this project, the food industry, there is a visible lack of information in relation to the target group. This indicates that there are almost no reports that either analyse the problem at stake or suggest courses of action regarding the visually impaired and their relationship with food products.

As a conclusion, the above bibliometric analysis—which was based on the information obtained from the different databases that contain the greatest impact articles—highlights the lack of indexed references related to the inclusion of the visually impaired in the food industry.

However, there are several studies and journals which are not contained in those databases but are considered relevant for the advance of knowledge. Therefore, when doing research about inclusion, a brief summary of what is being studied “outside” indexation should be made.

1.1.3. Analysis of other types of information

This section briefly summarizes the most interesting contributions that were identified in connection to the themes that are being analysed. Two main contributions, related to the embossing (techniques and alphabet), format or surface to be used to identify food products and the place where the information should be displayed, were recognised.

One example is the work of Martínez de la Peña (2010) about a proposal to use a haptic design to expedite information for the visually impaired. It involves a transformational design, not exclusively developed for only one group, based on the theory of “Design for All”. The proposal is to design a haptic bimedia language which, as Braille does, integrates text and image. This could be translated into embossed writing through its different techniques, such as embossing, embossed varnish, granulated or microgranulated screen-printing or thermoforming.

Nuria López (2018) presented another interesting proposal—also related to embossing—in her project called “Blind words”. Nuria departed from the six dots that make up the Braille alphabet to design a typeface that represents all Latin alphabet symbols on a grid that allows the overlapping of both alphabets (thus joining Braille and Latin alphabets) in order to satisfy the reading needs of sighted and blind people.

In the Social Media section, our proposal seems to be up to date, based on the visually impaired demand for intervention in food products. Two articles were selected to be further analysed that were recently viral after the development of our prototype, such as the case of the Mexican child called Romeo (https://www.youtube.com/watch?v=KpKpmlcmf_A).

1.2. Market research and state of the art

In Europe, there are several proposals at the market and/or company level. Within the companies that were studied, “Boxed Water” stands out. It uses large, concise print in its water cartons, which are also made with 90% of recycled materials (<https://www.pixartprinting.es/blog/packaging-inclusivo-todos/>).

The company “Bodega y Viñedos Maires” has incorporated Braille in the labels of 4 of their wines (<https://www.pixartprinting.es/blog/packaging-inclusivo-todos/>). On the other hand, “Herbal Essences” has chosen a system of embossed stamps for the packaging of their bio portfolio: a row of lines for the shampoo and two rows of dots for the conditioner, both located in the lower part of the bottle. Since the brand can be recognized just by touching the packaging, it is a “design for all”, which also includes those people who have not learned Braille (<https://www.pixartprinting.es/blog/packaging-inclusivo-todos/>). The company “Kellogg’s” has announced that all its cereal packaging sold in Europe in 2022 will add the Navilens code so that labelling is accessible to visually-impaired people. This technology, developed by the Spanish company, “Navilens”, together with the University of Alicante, includes a colored square in sharp contrast over a black background. Users do not necessarily need to know where the cereal boxes are as far as they use their mobile phone to point in the direction of the cereal box at a distance of up to three meters. When they do this, they can choose to either have the information about ingredients, allergens and recycling read aloud, or read them by themselves using accessibility tools in their own device (<https://www.pixartprinting.es/blog/packaging-inclusivo-todos/>).

The goal of inclusive packaging is that one product serves all types of packaging. This is what “Unilever” has proposed through the “Degree Inclusive”, a deodorant that was designed in collaboration with an interdisciplinary team of people with different disabilities. It is the first inclusive deodorant in the world, since it is thought for blind people and people with upper limbs disabilities, but it also serves the general public. It has a hook-shaped lid that can be opened with only one hand, its label contains text in Braille and its lower part design is ergonomic (<https://www.pixartprinting.es/blog/packaging-inclusivo-todos/>).

Ultimately, the packaging industry is responsible for marketing products which are tailored to the needs of all clients. This characteristic may also be key to the sale success, since when consumers perceive a brand as inclusive, they usually increase their loyalty. On the contrary, a study carried out by DS Smith showed that 32% of consumers admit that a frustrating packaging has led them to stop buying from that brand (Herrera, 2021a, 2021b).

In his final research project for the Escola d’Art i Superior de Disseny Serra i Abella, Jaume Juan Llabrés presented “Vita”, an adaptation to Braille of kitchen containers. He used a practical design to make the invisible visible and the everyday life of visually-impaired people easier. In order to develop his project, he departed from the idea that, nowadays, there is no standardized system that allows the visually impaired to tag kitchen products and elements at home. Being able to recognize products when shopping, and then classifying them at home, is a very complex task. Some people develop their own systems in order to differentiate each product. They use, for example, plastic containers with different shapes or glass bottles with different sizes (Mañes, 2015).

The Belarusian company, “Public Group”, presented another proposal that took into account carton containers and embossed writing. This proposal borrowed the size table from the fashion world and developed three different sizes of milk containers —small, medium and large—, depending on their fat content (Ateriet, 2017).

As a result of the university-company knowledge transfer, the Spanish company “Semantic Bots”, which is comprised of teachers and researchers from the University Jaume I de Castellón, developed the first inclusive chatbot, which was tailored for visually-impaired people. Their goal is to facilitate and improve access to information and online paperwork for those people with a visual disability. The tool, which is called “SayOBO”, is within the six best proposals for the ONCE Innova Emprendedores (2021) call. It helps develop digital scenarios without barriers for the visually impaired. For that purpose, the tool adapts written text by creating a

specific interface so that it can be easily integrated in any website, application or other digital channels. Companies and organizations can use the program to communicate with their clients or users in a more accessible way. Another feature of this intelligent system is that it can be adapted to the needs of each person as they use it. It is also capable of providing answers in different languages by voice or chat (Reasonwhy, 2020).

“OLAY” is another company that also combines two of the elements our prototype features: the Braille system and the lid of one of their lotion bottles (although the embossing is not there). In the “Easy Open Lid” project, the company designed a product that aimed at helping consumers with different functional needs and differences, such as people with visual disabilities, joint pain, dexterity problems or limb inequalities. It was an ambitious, but successful, idea that addressed different problems in one packaging: it included a winged lid with additional grip, a sharp contrast label and text in Braille to inform its content — a face lotion— in the upper part (Soluciones Packaging, 2021).

2. Target and Methodology

1.2. Target

General data indicate the following:

- In the world, approximately 285 million people are visually impaired: 39 million are blind, while 246 million have low vision.
- Close to 90% of the visually-impaired world population lives in low-income settings.
- 82% of blind people are 50 or older.
- In the world, a person goes blind every five minutes, and a child goes blind every one minute.
- It is estimated that more than seven million people go blind every year.
- In Europe, the number of visually-impaired people constantly increases, and at the same time, these people do not have full access to the available visual content (BrailleJet Project, 2015).

In Spain, this group of people is comprised of 2,898,796 people with some type of visual impairment, 140,264 of which are blind.

Lenstore (2020) carried out a study about labour barriers for the visually impaired, in which it analysed the prevalence of different types of visual impairment in every European country. Thanks to this study, we can be aware of the state of the current market:

Table 1: Visually-impaired people and blind people in Spain

Classification	Country	Population	No. of visually-impaired ppl.	No. of blind ppl.
1	Luxemburg	625,978	23,161	626
2	Montenegro	628,066	23,867	1,256
3	Estonia	1,326,535	53,061	1,327
4	Latvia	1,886,198	96,196	3,772
5	Macedonia	2,083,374	79,168	4,167
6	Ireland	4,937,786	187,636	4,938
7	Norway	5,421,241	222,271	5,421
8	Lithuania	2,722,289	138,837	5,445
9	Finland	5,540,720	205,007	5,541
10	Albania	2,877,797	112,234	5,756
11	Denmark	5,792,202	208,519	5,792
12	Bosnia and Herzegovina	3,280,819	124,671	6,562
13	Croatia	4,105,267	156,000	8,211
14	Switzerland	8,654,622	311,566	8,655

15	Austria	9,006,398	342,243	9,006
16	Sweden	10,099,265	323,176	10,099
17	Portugal	10,196,709	397,672	10,197
18	Greece	10,423,054	364,807	10,423
19	Czech Republic	10,708,981	396,232	10,709
20	Slovakia	5,459,642	207,466	10,919
21	Belgium	1,589,623	440,406	11,590
22	Bulgaria	6,948,445	264,041	13,897
23	The Netherlands	17,134,872	496,911	17,135
24	Serbia	8,737,371	332,020	17,475
25	Hungary	9,660,351	444,376	19,321
26	Romania	19,237,691	731,032	38,475
27	France	65,273,511	2,415,120	65,274
28	United Kingdom	67,886,011	2,783,326	67,886
29	Poland	37,846,611	1,248,938	75,693
30	Germany	83,783,942	3,100,006	83,784
31	Ukraine	43,733,762	2,405,357	87,468
32	Spain	46,754,778	2,898,796	140,264
33	Italy	6,461,826	3,506,786	241,847
34	Russia	145,934,462	8,756,068	291,869

Note: <https://www.lenstore.es/estudio/barreras-laborales-para-personas-ciegas/>

1.3. Methodology

Two concrete methodologies were combined, which are encompassed within a larger one that acts as a wider methodological framework. So, a total of three methodologies were used.

The larger methodology used is known as co-laboratory, which was designed and proposed by the Laboratorio de Emprendimiento Social de la Universidad de Valladolid (Social Entrepreneurship Lab of the University of Valladolid). It nourishes itself from different keystones (techniques, tools, learning types, strategies, agile and active teaching methods), which incorporate collaborative networks, learning communities, Design Thinking, Lean and Leinn methodologies, person-centred intervention, and learning based on challenges, events and projects.

The overall goal of this methodology is to mainstream the sustainable aspect through a multi-level governance. This favours the development of the individual's entrepreneurship competence, which supports its own competences. It is always important to consider the individual's setting and characteristics, so that, through this synergy, social entrepreneurship projects arise, which can become their lifelong projects thanks to the implementation of individualized support.

This methodology departs from reality, studies the problem and returns with some answers. From a social perspective, it draws on technology as a tool, and not the other way around. It designs a people-centred strategy because it uses dialogue, co-creation and collaboration.

Two specific methodologies were also used: the Lean methodology, with its problem and solution interviews, and our own methodology to create a prototype. In the first part of the "Lean" methodology, a case study was developed and implemented (which included problem interviews). This study identified the severe problems visually-impaired people faced every day when shopping for groceries and/or cooking. For example, all cartons were the same, despite containing whole milk, skimmed milk, juice, water or preserves. This problem was clearly observed when comparing a medicine with a food product. While the first one was identified with Braille, the second one was not (nor with any other system that allowed visually-impaired people to know what they were buying).

With the second methodology, a low-density prototype was designed and developed in order to respond to the demands of the visually impaired.

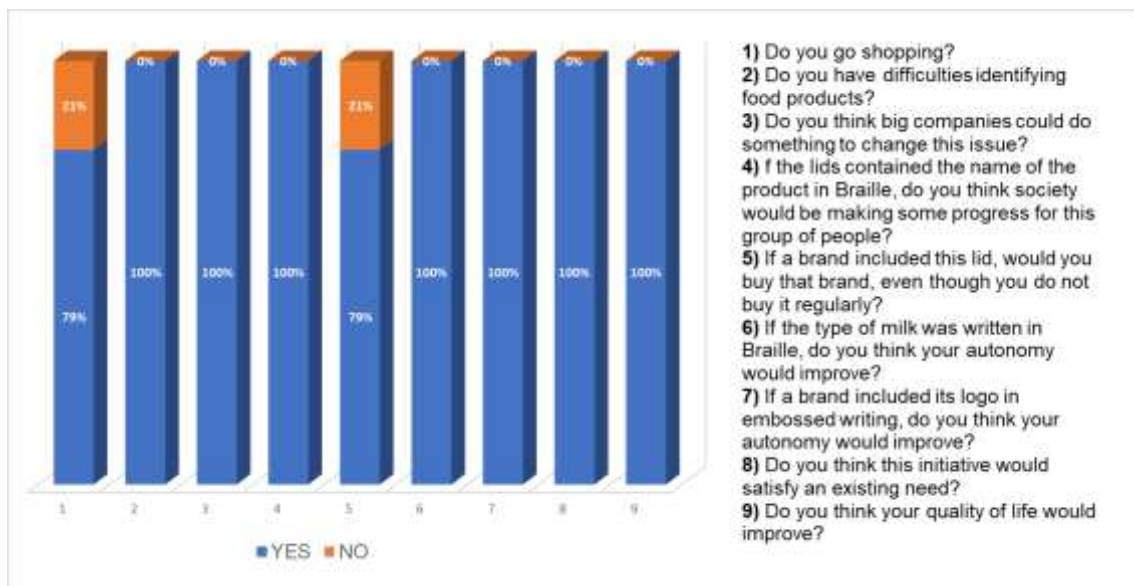
Finally, in the second part of the Lean methodology, solution interviews were carried out in order to make interviewees test and validate our proposal. The proposal was called “*ali-CECO: puntos de relieve en Braille para los alimentos*” (Embossed Braille writing for food products), where “ali” stands for “food” and “CECO” stands for “embossed writing”.

3. Results

1.4. The sample and the problem interviews

The sample was composed of fourteen visually-impaired people (with a residual vision of 3-8%). They were interviewed and gave the following answers:

Figure 7: Answers of the interviewees

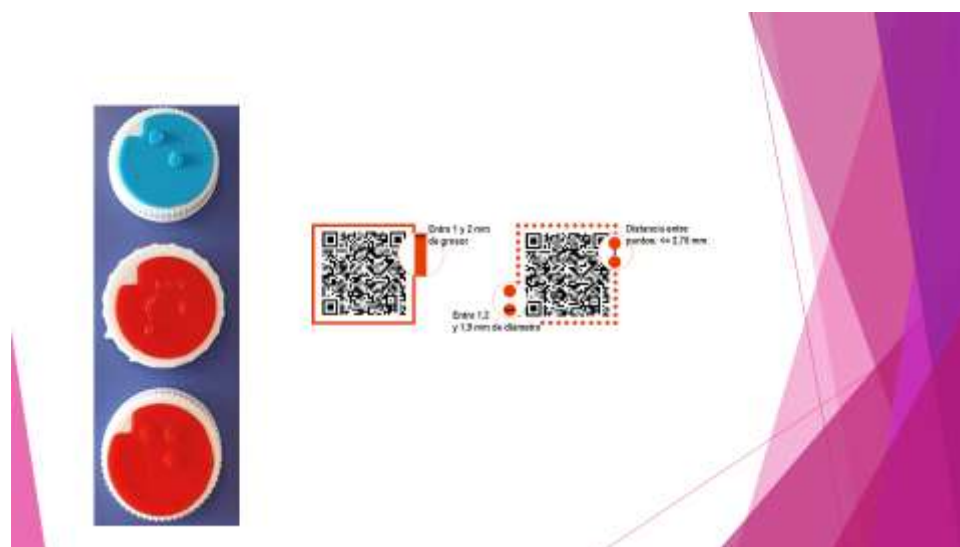


3.2. The prototype

Based on the Lean and the co-laboratory methodologies, and based on the problem interviews, the results were analysed and a first prototype design was developed. A carton was added a round recycled-plastic lid with Braille writing to identify the product and a notch to indicate the direction of the writing and facilitate its reading. The prototype for containers (specially for cartons) was developed in the FabLab of the UVa with a 3D printer and the necessary vinyl, as well as the plastic needed to create the lid. The prototype for the most common intolerances and allergies found in Spain (lactose, gluten and nuts) was also created.

Once the prototype was created and the interviews were carried out, it was agreed to optimise it and to adapt it to the next European regulation on “tethered caps” (EU Single-Use Plastics Directive). It was also agreed to raise the density of the lid and to include a combination of Braille and a QR code containing the full composition of the food product (optional).

Figure 8: ali-CECO (Embossed writing in food products)



4. Conclusions

It is interesting —and worrying— to observe how the exclusion of diversity and/or disability groups is extended up to the so-called “academic” development. As the state of the art clearly showed, the scientific literature did not seem to be interested in doing research related to the groups of people left outside the normo-sighted group. Something similar was also discovered in the state of the art: similar solutions existed in the European market, but they were not the same as the prototype developed.

To summarize, even though several studies and proposals existed, none of them was found to have been implemented (Martínez de la Peña, 2010; Naranjo Escobar, 2018; Jiménez Cuenca, 2018; López, 2018; Ponce Zabala, 2019; Vargas Párraga, 2020; Cedillo Armijos, Espinosa, Bayarre Veja, González Cedillo & Serrano Patten, 2022). Specifically for milk cartons, only one proposal was identified, which came from Byelorussia and belonged to the “Public Group” company. It developed three different sizes of milk containers —small, medium and large—, depending on their fat content. However, these containers did not include a “lid format”, but a “label format”.

In Spain, the system has been implemented for medications, but not for food products in general. No proposal offered the inclusion of embossed writing (Braille dots) in lids and milk products, which was why our proposal was an innovation in this country.

Our proposal addressed the 2,898,796 Spanish people with some type of visual impairment, 140,264 of which are blind. In the market, no products, competitors or substitutes for this prototype were found. María José Sánchez Lorenzo, Head of the Department of Cultural Promotion and Braille of the Fundación ONCE (National Organization of the Spanish Blind), has recently stated: “unfortunately, legislators are not aware of the importance of ensuring the right to information for the blind...In the medical industry, many obstacles were overcome, as it should happen in the labelling industry when the time comes. Evidence of this is that some brands include labels in Braille as a design in their product” (Camarero, 2019).

Lastly, it is worth mentioning that the “*ali-CECO*” proposal is ground-breaking. It led the way for a national debate and for an issue that became viral in the summer of 2022: the visually impaired need to be able to go shopping safely and independently, and to consume food products at home in a controlled manner.

This proposal took a step forward in relation to the last instrumental proposals derived from the organisms that work with the visually impaired. It identified a format that had not previously been considered in the food industry: the use of lids as the “place to read the information”. According to our research, “inclusive typefaces” include: Braille, embossed writing or haptic design (with their different techniques), sharp-contrast label, NaviLens code (by colour), different types and formats for containers, combinations of touch and sight, or a chatbot. Since the prototype was related to Braille, when assessing market existences, we found that certain food products were identified with labels, but none was identified with lids or recycled-plastic lids.

As regards lids, only the “OLAY” proposal was found, but the problem was that its “engineering” made their face lotion a luxury item, probably due to the technology that was implemented.

Some criticism arose against the use of the Braille system, which stated that it is difficult to learn. However, we believe that our proposal does not require people to be experts on Braille, since only some basic words need to be learned, such as milk, juice, etc. On the other hand, this system has been traditionally used by visually-impaired/visually-diverse people. At first, this system does not require the use of any technology; therefore, it avoids making an inclusive proposal exclusive.

Lastly, the addition of a Braille typeface on a plastic lid is a simple and unexpensive process, which makes our proposal feasible and sustainable. The main idea is to create a global brand that is responsible for providing access to products to all consumers, especially those who are not normo-sighted. Those products should be able to satisfy their needs and adapt to their everyday life.

Acknowledgements

We would like to thank Jaime Catena Gasco, Head of the Fundación ONCE Valladolid, the Spanish Committee of the Representatives of People with Disabilities (*Comité Español de Representantes de Personas con Discapacidad*, CERMI), the FabLab of the University of Valladolid, and Josué Cabrera Delgado.

5. Funding

This research won the PROMETEO Award as part of the 2021-2023 University-Company Knowledge Transfer Plan (*Plan de Transferencia del Conocimiento Universidad-Empresa*, TCUE), authorized by Regulation No. 134/2021. This research was also selected for an operational program co-funded by the European Regional Development Fund (ERDF) and the Regional Government of Castille and Leon, Spain.

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How to cite this article: **Claudia Möller Recondo, Fátima Arquero Gutiérrez, Marina Plaza Arranz, "Ali-CECO" (Embossed Writing in the Food Industry), Asian. Jour. Social. Scie. Mgmt. Tech.2023; 5(2): 40-53.**