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Adaptation of Packaging for the Elderly Population: Challenges and Opportunities of Inclusive Design

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Abstract

European society is facing demographic changes that require the adaptation of products and services for the elderly population. Many people, especially individuals with sensory impairments, are unable to participate equally in important social activities and aspects of society, as environments, products, and services are often not designed to meet their needs. European societies have a duty to adequately address the specific requirements of the growing number of individuals with impairments and the increasing elderly population. As part of the research conducted within the project "Improvement of Packaging Products by Application of Eco-Friendly Materials and Inclusive Design" the study analyzed how packaging design impacts the experience of users with sensory impairments, primarily visual impairments - a limitation widely present in the elderly population. The data collection method was a telephone survey, using a questionnaire as the research instrument. The questionnaire included closed-ended, open-ended, and scale-based questions, incorporating sociodemographic indicators (independent variables) and other questions (dependent variables) aligned with the research objectives and purpose. The results show that 40% of respondents believe that packaging is not sufficiently adapted for elderly individuals and people with disabilities, while 57% of respondents have never heard of products with improved packaging for individuals with visual impairments. This study identifies the most usual challenges that individuals with visual impairments face when using packaging. Based on the data analysis, guidelines have been proposed to enhance visual recognition and accessibility of information on packaging, with the goal of improving the quality of life for elderly individuals.

Keywords: accessibility of information; elderly individuals; quality of life; user experience; visual recognition of packaging

1. Introduction

A significant challenge of modern times is ensuring the inclusion of the entire population in contemporary life. European societies face the obligation to adequately address the specific needs of an increasing number of individuals with limitations and the growing elderly population (European Commission, 2020). Life expectancy is higher than ever before, with an increasing number of expected years of life. The elderly population (defined here as individuals aged 65 and over) in the EU-27 is expected to increase significantly, while the number of the very old (people aged 85 and over) is growing at a faster rate than any other age group (Eurostat, 2020). Between 2019 and 2050, the number of very old people in the EU-27 will more than double. Such demographic changes will have profound implications for individuals, social communities, and economic activities. A growing number of people will require various forms of assistance to maintain independent daily functioning. Since environments, products, and services are not designed to fully meet their needs, individuals with sensory impairments are often unable to participate equally in important activities and aspects of society. Because of that, the significance of inclusive design has been recognized within the framework of the European Disability Strategy 2010–2020. The strategy outlines eight priority areas, with the first priority being accessibility - ensuring that goods and services are available to individuals with disabilities.

Packaging serves multiple functions, from product protection to information transmission for users, and it also facilitates the use of the core product. Existing studies primarily focus on three key approaches to addressing accessibility in packaging design. The universal design approach refers to the design of products, environments, programs, and services in a way that makes them accessible and usable by the widest range of people possible, without the need for adaptation or specialized design. Its goal is inclusivity, ensuring equal access for everyone, including individuals with disabilities, older adults, and people with diverse abilities (Center for Universal Design, 1997; Lorenzini & Olsson, 2015). Inclusive design emphasizes adaptability for users with specific impairments, such as visual or motor difficulties, making adjustments tailored to individual needs (Coleman et al., 2007; Lorenzini & Olsson, 2015). The third approach is user-centered design (UCD), which highlights the importance of integrating feedback - it is an iterative design process that focuses on understanding the needs, behaviors, and experiences of users to create products, systems, or services that are effective, efficient, and satisfying (Norman, 2013).

The field of inclusive and accessible packaging design has gained significant attention due to the increasing aging population and the need for products that accommodate different sensory impairments. Previous studies have explored various aspects of packaging usability, including universal and inclusive design principles, ergonomic considerations, and user interaction methods. Research of specific product packaging indicates that pharmaceutical and food packaging often fails to meet the needs of older users, with studies highlighting difficulties related to readability, grip strength, and cognitive processing of packaging information (Lorenzini & Olsson, 2015). Interactive and intelligent food packaging has been increasingly explored as a method to improve accessibility, particularly for elderly users and individuals with visual impairments. In the domain of food packaging, Liu and Wang (2024) have explored the role of interactive and intelligent packaging in improving accessibility, particularly using digital and visual communication strategies. This approach integrates digital and visual communication strategies to enhance usability, information readability, and overall consumer experience. A systematic literature review by Hou et al. (2022) analyzed numerous studies on font size preferences among older adults. The findings indicated that larger font sizes enhance readability for this demographic, although there is a critical size beyond which readability may decline. For visually impaired users, tactile elements, such as

embossed symbols or Braille, are essential in distinguishing between products (Lorenzini & Olsson, 2015). Research by Lorenzini & Olsson (2015) also points to the fact that most studies rely on controlled laboratory conditions rather than real-world testing environments**,** meaning that elderly users' actual interactions with packaging remain underexplored.

1.1 Objectives and Aims of Research

The primary aim of this research is to analyze the impact of packaging design on the experience of users with sensory impairments, particularly visual impairments, within the context of an aging European population. As demographic changes demand greater inclusivity in product and service design, this study seeks to examine the extent to which current packaging solutions meet the needs of elderly consumers and individuals with visual impairments. The specific objectives are to investigate consumer awareness and perceptions regarding inclusive packaging design, and to determine whether there is a demand for improved packaging solutions. By addressing these objectives, this research aims to contribute to a more inclusive approach to packaging design, ensuring that products are usable, accessible, and beneficial for a diverse population, particularly in the context of an aging society.

2. Research Methods

2.1 Data Collection Method

The study employed a telephone survey as the primary data collection method, utilizing a structured questionnaire to gather insights into the accessibility and usability of packaging among elderly individuals and people with visual impairments. The use of a telephone survey as a data collection method in this study is justified for several reasons, particularly given the research focus on elderly individuals. This approach ensures higher accessibility, greater response rates, and more reliable data collection**.** Studies have shown that older adults are less likely to respond to online surveys, as they may not be comfortable with digital platforms or may lack internet access (Couper, 2017). A telephone survey increases participation rates among this demographic by using a familiar communication method that does not require technological literacy. Unlike self-administered surveys, where misunderstandings can occur, telephone interviews allow real-time clarification of questions. This is particularly important for surveys involving scale-based or open-ended questions, where respondents may need further explanation. This enhances the quality and depth of the data collected (Dillman et al., 2014). Given the research focus on inclusive packaging and accessibility, this method aligns well with the study's objectives, ensuring reliable and comprehensive data to support meaningful conclusions. The questionnaire included closed-ended, open-ended, and scale-based questions, integrating sociodemographic indicators (independent variables) and questions related to packaging accessibility (dependent variables).

2.2 Population and Sample

The target population consisted of residents aged 18 to 75. The research applied a probabilistic random sampling method. The sample was stratified by age and gender, and it was mathematically constructed based on probability calculations, ensuring that each unit of the population has a same chance of being selected**.** The final sample size was 404 respondents, meeting the statistical requirements for generalizability within a ±5% margin of error and a 95% confidence interval.

Table 1. The achieved total sample according to socio-demographic indicators **(**N=404**)**

Gender		N	(%)
	Male	202	50,0
	Female	202	50,0
Total		404	100,0
Age		N	(%)
	18 - 35	89	22,0
	36 - 50	107	26,5
	51 - 65	111	27,5
	66 and more	97	24,0
Total		404	100,0
Use of visual aid (glasses or lenses)		N	(%)
	Using glasses or lenses	210	52,0
	Not Using glasses or lenses	191	47,3
	Without reply	3	0,7
Total		404	100,0

The gender distribution was evenly balanced, with 202 male respondents, representing 50 % of the sample, and 202 female respondents, also making up 50 %. In terms of age distribution, 22 % of respondents fall within the 18 to 35 age group, 26.5% are between 36 and 50 years old, 27.5% belong to the 51 to 65 age group, while 24 % are aged 66 and above. When examining the use of visual aids, 52 % of respondents reported using glasses or contact lenses, while 47.3% do not rely on any form of vision correction. Additionally, 0.7% of the respondents did not provide an answer to this question. Overall, this sample provides a well-distributed representation across key socio-demographic characteristics, allowing for a comprehensive analysis of packaging accessibility in relation to age and vision-related needs.

2.3 Data Analysis Methods

The results were analyzed using appropriate statistical tests that demonstrate relevant relationships between the measured variables. In addition to the frequency distribution of results according to the measured indicators and the proportion of results, the chi-square (χ^2) test was used for frequency comparison. The t-test for independent samples and the ANOVA test were applied for comparing mean results, while Pearson's correlation coefficient and linear regression analysis were used to examine the relationships between variables.

3. Results

3.1 Adaptation of Packaging for Elderly People and People with Disabilities

Respondents were asked whether they believe that packaging is well adapted for elderly individuals and people with disabilities, with several response options: "it is mostly well adapted," "it is mostly not well adapted," "it is adapted on some products but not on others," and "I don't know, I cannot assess." All 404 respondents answered this question. The results showed that the majority of respondents could not assess (42%) or believe that packaging is well adapted on some products but not on others, depending on the manufacturer (40%). A total of 12% of respondents considered packaging to be adapted for elderly individuals and people with disabilities, while the smallest proportion (6%) believed that packaging is mostly not well adapted for these groups. Respondents' answers differed significantly depending on age (χ^2=48.58, df=9; p<0.001) and whether they wear prescription glasses or not (χ^2=21.36, df=3; p<0.001). The largest share of those who believe that packaging is well adapted on some products but not on others, is found in the oldest age group (56%), with the proportion decreasing in each successive younger age group. The percentage of respondents who believe that packaging is generally well adapted for elderly individuals and people with disabilities is

slightly higher in the 36 to 65 age groups (between 14% and 15%) compared to the youngest and oldest groups. Finally, the proportion of those who believe that packaging is mostly not well adapted for elderly individuals and people with disabilities is significantly higher in the oldest group (12%) compared to other age groups. The highest proportion of respondents who do not know or cannot assess (66%) is found in the 18 to 35 age group, and this percentage decreases in each older age group. In the group of respondents who wear glasses or contact lenses, there are significantly fewer undecided individuals (33%) compared to those who do not wear glasses or lenses (51%). Among respondents who wear glasses or contact lenses, there is a slightly higher percentage of those who believe that packaging is well adapted on some products but not on others (44%) compared to those who do not wear glasses or lenses (37%). The proportion of respondents who believe that packaging is generally well adapted for elderly individuals and people with disabilities is almost equal in both groups, with 13% of those who wear glasses and 11% of those who do not. The share of respondents who believe that packaging is mostly not well adapted for elderly individuals and people with disabilities is significantly higher among those who wear glasses (10%) compared to those who do not (2%). Respondents who believe that packaging is not well adapted for elderly people and people with disabilities **(**n=24**)** were additionally asked to provide examples of such packaging**.** The results are presented below in Table 2.

Table 2. Examples of Packaging Inadaptability

Packaging Type (Examples)	**Count**	**Share (%)**
Glass jars (ajvar, pickles, olives, beets, honey)	12	50%
Canned food (cans, pates, tomato sauce, corn)	11	46%
Dairy products (yogurts, margarine)	3	13%
Processed meat products (salami)	3	13%
Oil	3	13%
Mayonnaise	3	13%
No response	2	8%
Medications	1	4%
Food products in general	1	4%
Cleaning products	1	4%

The examples are presented in the table as provided by the respondents, and the shares are calculated relative to the total number of respondents who believe that packaging is mostly not well adapted for elderly people and people with disabilities **(**n=24**).** The results show that respondents most frequently cite glass jars (ajvar, pickles, olives, beets, honey) and canned food (cans, pates, tomato sauce, corn) as examples.

3.2 The Importance of Proper Packaging Adaptation for Elderly People and People with Disabilities

Next, we asked the respondents to rate on a scale from 1 to 5 (1 = completely unimportant, 5 = extremely important), how important it is to them that packaging is well-adapted for elderly people and people with disabilities. We received importance ratings from all respondents (n=404). The distribution of responses shows that an almost equal number of respondents consider this extremely important (27%), important (30%), and neither important nor unimportant (26%). Those who find it unimportant make up 7%, while 10% consider it completely unimportant. The average importance rating of proper packaging adaptation for elderly people with disabilities across the total sample is m=3.57, meaning it is just slightly above the middle value. This aligns with the distribution of responses, which indicates a relatively high proportion of respondents who find it neither important nor unimportant. We

then conducted additional statistical tests (t-test and ANOVA) to determine whether there are statistically significant differences in the assessment of the importance of proper packaging adaptation for elderly people and people with disabilities, depending on the respondents' age and whether they wear glasses.

First, using an independent samples t-test, we found a difference between those who wear glasses and those who do not ($t = 12.2460$; $df = 399$; $p<0.001$). Respondents who wear glasses (m=4.2, SD=0.87) consider proper packaging adaptation for elderly people and people with disabilities significantly more important, on average, than those who do not wear glasses (m=2.9, SD=1.23). Next, using an ANOVA test, we found that there are differences depending on age ($F = 35.29841$; $p<0.001$). Post-hoc tests revealed the following:

1 The average ratings in the 18-35 age group (m=2.96, SD=1.127) and the 36-50 age group (m=3.08; SD=1.267) are significantly different from the ratings in the 51-65 age group (m=3.84, SD=1.099) and the 66+ age group (m=4.37, SD=0.869).
2 The average rating in the 51-65 age group (m=3.84, SD=1.099) is significantly different from the rating in the 66+ age group (m=4.37, SD=0.869).

Younger age groups tend to assign a lower importance rating to proper packaging adaptation for elderly people and people with disabilities compared to older age groups. In addition, we conducted further analyses, including Pearson correlation and linear regression. Pearson correlation examines whether there is a relationship between importance ratings and age, while linear regression determines whether age can be considered a predictor of the importance rating. The Pearson correlation coefficient between age and the importance rating of packaging adaptation is 0.457, indicating a moderate positive correlation. As respondents' age increases, their importance rating also increases on average. This is consistent with the ANOVA test results, which showed that older age groups tend to give higher importance ratings. Furthermore, the p-value is less than 0.01, meaning that this correlation is statistically significant at the 1% significance level. Therefore, we can conclude that there is a statistically significant positive correlation between age and the importance rating, with older respondents tending to assign higher ratings. The linear regression results show that the coefficient of determination ($R^2 = 0.209$) indicates that age explains 20.9% of the variance in importance ratings. In other words, 20.9% of the variation in importance ratings can be attributed to changes in age. The F-value = 106.335 suggests that the model is a good fit for the data. The p-value = 0.000, confirms that this model is statistically significant, meaning the relationship between age and importance ratings is unlikely to be random. The B coefficient for age = 0.034, indicates that for each additional year of age, the importance rating increases by 0.034 units on average. The positive value confirms a positive relationship between age and importance ratings. Furthermore, the t-value for age = 10.315, and the p-value = 0.000, showing that age is a significant predictor of the importance rating. The 95% confidence interval for the B coefficient ranges from 0.028 to 0.041, which does not include zero, further confirming that age is a significant predictor. The regression model, therefore, shows a statistically significant positive relationship between age and the importance rating. As age increases, the perceived importance of proper packaging adaptation for elderly people and people with disabilities also increases on average.

3.3 Use of Products with Packaging Adapted for People with Visual Impairments

We asked respondents whether they had ever personally used products with packaging adapted for people with visual impairments. The possible responses were: "They have used such products / They have heard of such products but have not used them / They have never heard of them / They do not know or cannot remember." All respondents answered this

question (n=404). The results showed that a total of 141 respondents (n=141; 35%) had heard of such products. Among them, the majority had only heard of these products but had never used them (n=109; 27%), while a smaller portion had actually used them (n=32; 8%). On the other hand, 231 respondents (57%) had never heard of such products, and 32 respondents (8%) did not know or could not remember whether they had heard of packaging adapted for people with visual impairments. The respondents' answers significantly differed depending on age ($\chi^2 = 64.01$, df = 9; $p<0.001$) and whether they wear prescription glasses or not ($\chi^2 = 30.51$, df = 3; $p<0.001$).

The proportion of respondents who had never heard of products with packaging adapted for people with visual impairments was highest in the 18-35 age group (72%), remained relatively high in the 36-65 age groups (between 56% and 60%), and was the lowest among respondents older than 66 years (41%). In the 66+ age group, the highest proportion of respondents (27%) had actually used such products. The share of those who had heard of these products but never used them was similar across age groups 36 and older (between 27% and 32%), while the lowest proportion was found in the 18-35 age group (18%).

The proportion of respondents who had heard of products with packaging adapted for people with visual impairments but had not used them was similar among those who wear glasses (29%) and those who do not (25%). However, among respondents who wear glasses, a significantly higher percentage (14%) had actually used such products, compared to only 1% among those who do not wear glasses. Accordingly, in the group of respondents who do not wear glasses, a significantly higher proportion (63%) had never heard of such products, compared to 52% among those who wear glasses.

3.4 Benefit Assessment of Packaging Adapted for People with Visual Impairments

32 respondents who had heard of and used products with packaging adapted for people with visual impairments were additionally asked to rate on a scale from 1 to 5 how much such packaging helps them (1=does not help at all, 5 = helps significantly). The results show that the average rating of the perceived benefit of such packaging is relatively high (m=4.3), indicating that respondents who have used these products find adapted packaging useful. Notably, none of the n=32 respondents stated that such packaging does not help them at all (rating 1), only one respondent (n=1) rated it as not helpful (rating 2), and four respondents (n=4) indicated that it neither helps nor does not help (rating 3). A significant 84% of respondents (out of n=32) stated that such packaging helps them (34%) or helps them significantly (50%). Due to the small sample size within sociodemographic subgroups, we did not conduct tests for sociodemographic differences or additional statistical analyses—most respondents who had used such packaging were older and wore glasses.

4. Discussion

The study confirms that current packaging solutions fail to meet the needs of elderly individuals and visually impaired users. Despite the growing demand for inclusive packaging, accessibility remains inconsistent across different product categories. Our findings show that current packaging designs are falling short of inclusive usability. Only a small fraction of consumers (about 12%) believe that packaging is generally well adapted for elderly people or those with disabilities. In other words, the vast majority do not perceive packaging as adequately accessible, with many noting that adaptation is inconsistent across products and brands. This resonates with prior research indicating that mainstream packages often overlook the needs of older adults, who can struggle to find or read information on packages

that prioritize marketing over clarity (Gan, 2024). These results confirm what earlier studies have emphasized: everyday product packaging is not keeping pace with the requirements of an aging, vision-impaired population, leaving many users frustrated or unable to fully utilize packaged goods.

An interesting outcome of this study is the low awareness and adoption of accessible packaging solutions among consumers. This gap between the existence of inclusive design innovations and public awareness suggests that accessible packaging has yet to penetrate the mainstream market. Prior work attributes this to slow industry adoption and a lack of standards – accessible features are not widely or consistently implemented across products. Our data support this: for instance, younger adults were the least aware (over 70% of 18–35 year-olds had never heard of accessible packaging) whereas older adults were somewhat more familiar. This reflects the reality that inclusive packaging is currently a niche offering, reaching primarily those actively seeking it due to personal needs.

Another important insight is how perceptions of packaging accessibility vary by user experience. Respondents who themselves face visual limitations – for example, those who wear prescription glasses – assign much greater importance to having well-adapted packaging. We observed a clear trend that older individuals and those with visual impairments value inclusive packaging features far more than younger or unimpaired individuals. This disparity suggests a potential empathy gap: those who have not yet encountered accessibility challenges may underestimate the importance of inclusive design. From a practical standpoint, it highlights the need for proactive design – packaging should be made accessible before consumers demand it out of necessity. In an aging society, today's younger adults will eventually benefit from the foresight of designing packaging that anticipates age-related needs. Bridging this perception gap through education and inclusive design guidelines can ensure that all consumers, not just the elderly, recognize and support the value of accessible packaging.

Finally, our results highlight a crucial point: inclusive packaging works – when it’s implemented, it delivers real benefits to users. Participants who had experience with adapted packaging overwhelmingly reported positive outcomes. In our sample, not a single user said accessible packaging “did not help at all,” and 84% indicated that it helped them significantly in their daily life. This finding reinforces a core message of universal design: when products are made accessible, they empower individuals with impairments to engage more independently and confidently with everyday tasks. Practical applications of the findings could involve implementing standardized tactile elements such as embossed symbols for easy orientation and increasing the adoption of QR codes linking to audio instructions. Manufacturers can also apply inclusive design checklists during the packaging development phase to ensure accessibility criteria are met before market release.

5. Conclusion

Even well-designed accessible packages might not achieve impact if users cannot identify or obtain them. To address this, manufacturers and policymakers should consider introducing a universal certification mark for accessible packaging, like organic or eco-friendly labels, which would help consumers easily identify products designed with inclusive features. A standardized symbol could indicate that the packaging meets certain accessibility criteria, such as larger text, tactile indicators, or digital support. Brands should also highlight accessibility features prominently on packaging rather than just in product descriptions or marketing materials. Advertising and promotional campaigns should actively inform the public about the benefits of inclusive packaging, emphasizing its importance for elderly

consumers and individuals with visual impairments. Consumer education efforts should include awareness campaigns, organizing workshops or demonstrations for elderly individuals and people with disabilities could help familiarize them with inclusive packaging solutions and teach them how to recognize and use accessibility features. Future packaging solutions will require more than just an attractive design with a mechanical protection function. Packaging will need to align with the specific needs of society.

In addition to developing optimal solutions for easy opening and usage, it will be crucial to consider its communication role. Packaging must convey information quickly and easily to all users, including the elderly and visually impaired individuals. In light of these developments, the packaging industry is expected to respond adequately to these challenges. By incorporating intelligent visual communication strategies, packaging design can significantly contribute to the inclusivity and independence of users with sensory impairments, improving their interaction with everyday consumer products.

Accessible packaging can reduce the daily hassles and dependence that visually impaired or elderly consumers might otherwise face, whether it's identifying a medicine correctly or opening a food item without assistance. The practical implication here is powerful – scaling up the use of inclusive packaging features could tangibly improve the day-to-day experience of millions of consumers.

In summary, the results indicate that while today's packaging often falls short, the identified gaps also offer a strong opportunity for innovation in inclusive design—an area that remains underutilized but highly impactful. Future research should prioritize conducting field studies involving real users to validate inclusive packaging concepts in practical settings. A broader dataset involving participants from different countries or cultural backgrounds, or the inclusion of case studies with specific product types (e.g. pharmaceutical vs. food packaging), could further enhance the generalizability and richness of findings. Future research should include real-world observational studies or usability testing with elderly participants to validate how accessible packaging performs in practical daily use. This would help identify hidden usability barriers not always revealed in survey data.

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References

Center for Universal Design. (1997). *The principles of universal design* (Version 2.0). North Carolina State University. https://design.ncsu.edu/research/center-for-universal-design/

Coleman, R., Clarkson, J., Dong, H., & Cassim, J. (2007). *Design for inclusivity: A practical guide to accessible, innovative and user-centred design*. Gower Publishing.

Couper, M. P. (2017). New developments in survey data collection. *Annual Review of Sociology, 43*(1), 121–145. https://doi.org/10.1146/annurev-soc-060116-053613

Dillman, D. A., Smyth, J. D., & Christian, L. M. (2014). *Internet, phone, mail, and mixed-mode surveys: The tailored design method* (4th ed.). John Wiley & Sons. https://doi.org/10.1002/9781394260645

European Commission. (2010). *European Disability Strategy 2010–2020: A renewed commitment to a barrier-free Europe*. https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2010:0636:FIN:en:PDF

European Commission. (2020). *European Commission report on the impact of demographic change.* https://ec.europa.eu/info/sites/default/files/demography_report_2020_n.pdf

European Commission. (2025). *Osobe s invaliditetom – Zapošljavanje, socijalna pitanja i uključenost – Europska komisija*. https://employment-social-affairs.ec.europa.eu/european-comparative-data-persons-disabilities-data-2022_en?prefLang=hr

Eurostat. (2020). *Ageing Europe: Looking at the lives of older people in the EU*. https://doi.org/10.2785/628105

Gan, F. (2024). Unwrapping the struggle: Unveiling the packaging challenges faced by the elderly through interviews. *Art and Design Review, 12*, 46–62. https://doi.org/10.4236/adr.2024.121004

Hou, G., Anicetus, U., & He, J. (2022). How to design font size for older adults: A systematic literature review with a mobile device. *Frontiers in Psychology, 13*, 931646. https://doi.org/10.3389/fpsyg.2022.931646

Lamas, D., Loizides, F., Nacke, L., Petrie, H., Winckler, M., & Zaphiris, P. (Eds.). (2019). *Human-computer interaction – INTERACT 2019*. Springer. https://doi.org/10.1007/978-3-030-29381-9

Liu, Y., & Wang, Z. (2024). Intelligent food packaging design based on visual communication and multimedia technology. *Turkish Journal of Agriculture and Forestry, 48*(2), 263–277. https://doi.org/10.55730/1300-011X.3179

Lorenzini, G. C., & Olsson, A. (2015). Design towards better life experience: Closing the gap between pharmaceutical packaging design and elderly people. *Proceedings of the 20th International Conference on Engineering Design (ICED15)*, 1–10.

Norman, D. A. (2013). *The design of everyday things: Revised and expanded edition*. Basic Books.