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Wydawnictwo Uniwersytetu Wrocławskiego
50-137 Wrocław, pl. Uniwersytecki 15
tel. 71 3752474, e-mail: wydawnictwo@uwr.edu.pl

Wydawnictwo „Szermierz" sp. z o.o.
50-137 Wrocław, pl. Uniwersytecki 15
tel. 71 3752474, e-mail: sekretariat@wuwr.com.pl

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Joanna Wardzała
ORCID: 0000-0003-4475-3795
University of Wroclaw
joanna.wardzala@uwr.edu.pl

Wanda Patrzałek
ORCID: 0000-0002-1545-7367
University of Wroclaw
wanda.patrzalek@uwr.edu.pl

Contexts of changes in the habits in contemporary consumption: The pandemic and the crisis

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Abstract

This paper examines the changes in consumption habits during the pandemic period as well as the impact of the crisis on young people's consumption behavior. The study presents the considerations which are based on the authors' own research, which involved the triangulation of qualitative and quantitative data. A quantitative study was conducted in 2021 on a representative sample of Poles (total number $N = 1{,}268$). This study aims to determine how much and to what extent the pandemic experiences have changed the consumer behavior habits of Poles.

It was hypothetically assumed that the post-pandemic experiences had a significant impact on changing the consumption habits of Poles.

In order to determine the durability of the changes in consumption that appeared in 2021, a qualitative research was carried out in 2023, in which a crisis in the consumption behavior of young people was conducted as an in-depth analysis. This research was conducted by the FGI (focus group interview) intelligence method among five focus groups. It assumed that young people are particularly sensitive to changes and they undertake compensatory consumption behavior during the crisis period.

As the main result, significant changes were found in the consumption habits of Poles. They result from the complex and difficult socio-economic situation of our country. Emerging trends in sustainable consumption have become polarized due to the pandemic, which has resulted in an increase in health-promoting behavior, especially among older and better-educated people, while compulsive consumer behaviors have begun to appear in the consumption patterns of young people in a difficult situation, as well as compensation based on "consolation" with shopping.

1. Introduction

The article presents the contemporary contexts of consumption functioning within the trend of deconsumption in conditions of a crisis situation and compensatory consumption triggered by the post-pandemic experience as well as the fears caused by the uncertain economic and geopolitical situation. The slowdown in consumption does not result from deliberate consumer choices aimed at introducing their own pro-health limitations, but is rather an outcome of reduced purchasing power influenced by the growing rate of inflation. The necessity of adjusting to these changes, based on the social atmosphere of low confidence in the context of the international situation, may prompt the phenomenon of compensatory consumption.

The authors describe the extent to which the contexts of contemporary consumption are related to new trends in consumption resulting from the increase in the level of consumer awareness, in particular deconsumption, health-promoting, and ecological consumption, etc. (Patrzałek, 2022) and how they are the result of "safety" consumption determined by a decline in real income and deterioration of consumer sentiment, leading to addictions and compensatory behaviors. Compulsive consumption is also very important in contemporary consumption contexts, in the post-pandemic period, and has attracted the interest of psychologists who perceive this type of disorder as a symptom of behavioral addiction or loss of impulse control, and on the other hand, sociologists and interdisciplinary consumption researchers focused on diagnosing the social determinants of these disorders, treating them as irrational forms of consumer behavior.

A compensatory purchase may function as a buyer's escape from work-related stress or personal setbacks. Thus, a given product is not purchased for its use value (or not primarily for its use value), but for the satisfaction that the act of purchasing provides to the buyer, and at the same time in the expectation that it will relieve the frustration caused by an unresolved problem (Lange, 2012).

The reason for the research was an attempt to describe and explain the emerging changes in consumption, but as a result, they were different in relation to different generations of consumers.

2. New trends in consumption against the background of global changes

Modern consumption is conditioned by changes resulting from the post-pandemic situation and the economic instability into which the world was pushed following the Russian attack on Ukraine. This, in turn, brought about a breakdown in the supply chain of the energy fuels which provide the basis of the global economy. The falling consumption dynamics result from growing economic instability and rising inflation, which reduce the households' interest in consumption. At the same time, the influx of refugees from Ukraine stimulates consumption and slightly mitigates these factors (Ministry of Finance, 2022).

The current state of international research on consumer behavior in the present contexts is a reference to the crisis situations triggered by the financial crisis in 2007–2009. At that time it was already possible to observe the emerging tendencies which established a certain model of an internally inconsistent consumer, who on the one hand wished to indulge in the forms of assurance consumption linked to prudence, and on the other, spending money on luxury items — the so-called "lipstick effect" — occurring after the financial crisis in the USA. The emerging new trends in consumption, connected with pro-health and pro-ecology consumption, were repeatedly disrupted by the subsequent pandemic and fuel crises, which caused volatility in consumer behavior connected with buying health foods as a certain form of protection against the pandemic, accompanied by the consumption of junk food as a way of coping with anxiety and crisis-related stress. Similarly, in the case of pro-ecology behavior, the emerging trends of caring about the planet and the natural environment, were placed in the context of the energy crisis in the global economy, resulting in high inflation and recession.

Studies on consumer behavior during economic crises suggest that consumers are then more prone to unhealthy consumption, e.g., convenience snacks and fast food (Theodoridou et al., 2019), as well as consumption of lower-priced products at the expense of their quality (Bejar-Agrela, Godspower-Diejomao et al., 2012). The majority of research on consumer behavior during the pandemic crisis deals with the early stage of its global transmission (Borsellino et al., 2020), and is usually based on selected purchasing aspects or categories of products. These studies focused mainly on preferences beneficial for health, linked to the increased consumption of fruit and vegetables (Bree, 2020), as well as hoarding food (Long and Khoi, 2020). O'Guinn and Faber defined compulsive buying as "chronic, repetitive buying which occurs in response to negative events and feelings" (O'Guinn and Faber, 1989). The followers of using the term "pathological shopping" argue that it better describes the nature of this phenomenon based on an individual losing control over their impulses, leading to serious consequences — psychological, social, professional, and financial (Müller, Mitchell and de Zwaan, 2015), whereas those favoring the use of terms such as "shopping addiction" and "shopaholism" underline the resemblance of these disorders to the addiction to certain substances. The object of addiction in this case is the act of buying and thus compensating for other areas of one's life which an individual can obtain through shopping (Reisch, Neuner and Raab, 2004; Rumpf, 2012).

This study attempted a comprehensive approach to a consumer in a time of crisis, not only in the context of their purchasing habits, which establish a certain model of economic and sociological behavior by the appearance of the new behavioral paradigms, set in the categories of fear and frustration, where consumption takes on the form of compensating for existential failures and paradoxically becoming, as in the critique of consumerism, the way of solving the problems of a modern human being.

3. Research methodology

The authors used in their own survey the triangulation of research methods aiming not only at the quantitative definition of the contexts of modern consumption related to the post-pandemic experiences, but also at the identification of the motives in both the compensatory and compulsive consumption, as the forms of relieving the crisis-related stress. The quantitative research was carried out using the method of a diagnostic survey within the framework of the research project financed from the grant awarded to develop the research potential of the Institute of Sociology at the University of Wroclaw in 2021. The qualitative research was carried out using the technique of focused group surveys which were carried out among 39 young consumers, as part of the research project on the subject of the financial exclusion of young people from the perspective of compensatory consumption during the COVID-19 pandemic, financed with the IDUB funds of the University of Wroclaw.

The diagnostic survey was conducted using the CAWI (Computer-Assisted Web Interview) technique, which in 2021, in the difficult circumstances of direct contact with participants of the survey became one of the very few methods of finding out about the respondents' circumstances. The research area covered all of Poland. The respondents were selected purposefully, depending on the following independent variables: sex, age, education, marital status, and the net income per person in the respondent's household. The quantitative research involved 1,268 respondents.

The analysis of the results of the quantitative research was performed based on the SPiSS statistics, whereas the qualitative research using the FGI (focus group interview) technique was realized in April 2023. The respondents comprised residents of Wrocław, aged 18–26, 50% men and 50% women. The focus groups were divided into: full-time students in employment (2), part-time students in employment (1), employed non-students (1), and unemployed (1). The results of the qualitative research were analyzed by a research consultancy, Insight Lab from Wrocław.

4. Change in consumption habits in the post-pandemic experience

The pandemic crisis has changed human well-being in an irreversible way. The threat and anxiety connected with the COVID-19 pandemic caused a feeling of permanent fear about one's health, as well as negatively affected psychological and social well-being as a result of the phenomenon of social distancing. The experience of the last few years has prompted the necessity of finding a new model of consumption leading to an improvement in people's well-being. Hence, the authors attempted to identify the factors which have a negative impact on the state of well-being during a person's lifetime, see Table 1.

Table 1. Factors reducing the state of well-being during a person's lifetime

What impacted most negatively the well-being of the respondents during their lifetime	Replies		Percentage of observations
Specification	*N*	Percentage	
Excessive consumption	182	8.3%	17.6%
Loss of close people	345	15.7%	33.3%
Loss of pets	142	6.5%	13.7%
The pandemic	412	18.7%	39.8%
Worse housing conditions	177	8.0%	17.1%
Pollution of the natural environment	135	6.1%	13.0%
Worse financial conditions	373	16.9%	36.0%
Loss of employment	138	6.3%	13.3%
Worse family relations	285	12.9%	27.5%
Others	12	0.5%	1.2%
Total	2,201	100.0%	212.7%

Source: own research, 2021, $N = 1,268$.

Among the factors which to the greatest extent reduced the well-being of the respondents during their lifetime were: the pandemic (18.7% of replies) and the deterioration in their financial condition (16.9%), followed by the loss of family and close friends (15.7%), deterioration in close relationships (16.9%) and excessive consumption (8.3%).

An important research issue was to establish to what extent the pandemic experience impacted the change in consumption habits. According to the survey, the pandemic impacted these habits, where 17.8% of the respondents described it as very significant, 37.5% as fairly significant, whereas it was considered a neutral issue by 19.1%, and by the remaining 10.1% as not having such an impact, see Figure 1.

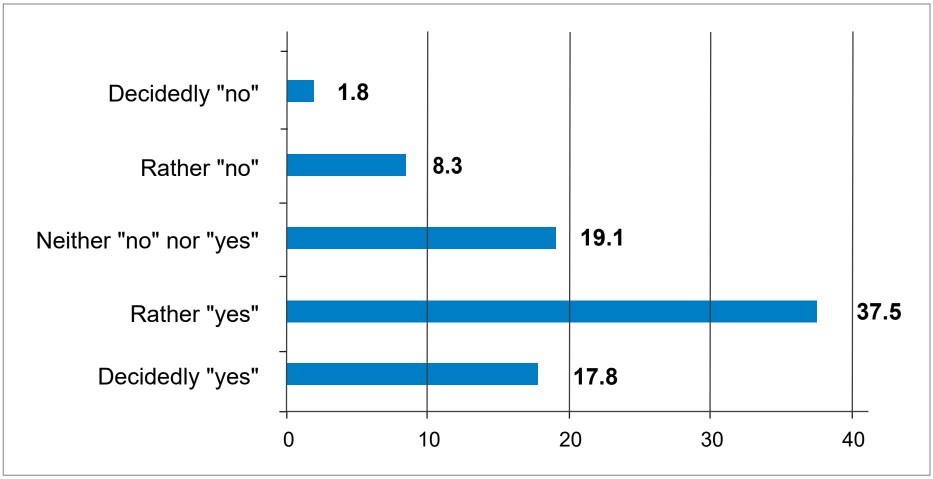

Figure 1. Impact of the pandemic on changing consumption habits

Source: own research, 2021, *N* = 1,268.

Changes in consumption habits under the influence of the pandemic were examined depending on the category of sex, see Table 2.

Table 2. Impact of the pandemic on changes in consumption habits depending on the sex of the respondent

Impact of the pandemic on the change of consumption habits	Specifications	Woman	Man	Non-binary person	Total
Decidedly "yes"	Number	162	62	1	225
	% in the sex category	24.9%	15.5%	9.1%	21.2%
Rather "yes"	Number	286	180	4	470
	% in the sex category	43.9%	45.1%	36.4%	44.3%
Neither "yes" nor "no"	Number	126	111	4	241
	% in the sex category	19.4%	27.8%	36.4%	22.7%
Rather "no"	Number	64	38	2	104
	% in the sex category	9.8%	9.5%	18.2%	9.8%
Decidedly "no"	Number	13	8	0	21
	% in the sex category	2.0%	2.0%	0.0%	2.0%
Total	Number	651	399	11	1,061
	% in the sex category	100.0%	100.0%	100.0%	10.0%

Source: own research, 2021, *N* = 1,268.

The results of the research suggest that women far more than men reported that the pandemic changed their consumption habits, as 24.9% of women replied “decidedly yes,” while for men this indicator was 15.5%. Similarly, a larger percentage of men indicated a neutral impact — 27.9%, while the analogous indicator for women was 19.4%.

Elaborating on the issue of changing consumption habits caused by the pandemic, the authors attempted to establish whether the threat to health and life resulted in the increase in healthy consumption habits through a larger intake of fruit and vegetables, and mineral water, as well as a reduction in meat consumption — or was it the opposite case of stress and fear encouraging to a greater extent bad habits in consumption? The analysis of the results suggests that the post-pandemic experience brought an increase in bad habits in consumption, because they led to a growing use of stimulants as indicated by 52.1% of the respondents, including alcohol (25.3%), tobacco (16.0%), narcotics and designer drugs (10.8%). Another symptom of deteriorating consumption habits was an increase in the consumption of unhealthy snacks, indicated by 26.5% of the respondents, while there was only a slight increase in the consumption of mineral water (8.6% of replies) and vegetables (6.6%), with a similar drop in the intake of meat (6.0% of the respondents), see Table 3.

Table 3. Change in consumption habits in the post-pandemic experience

Change of consumption habits in the post-pandemic experience	Number of replies	Percentage of replies	Percentage of observations
Increased consumption of alcohol	595	25.3%	578%
Increase in smoking	376	16.0%	36.5%
Increased use of narcotics, designer drugs, etc.	253	10.8%	24.6%
Increased consumption of unhealthy snacks	623	26.5%	60.5%
Increased consumption of vegetables	154	6.6%	15.0%
Increased consumption of mineral water	201	8.6%	19.5%
Lower meat consumption	140	6.0%	13.6%
Others	6	0.3%	0.6%
Total	2,348	100.0%	228.0%

Source: own research, 2021, $N = 1{,}268$.

Maintaining bad habits in consumption was examined in relation to the category of age. Among persons who increased their use of alcohol due to the pandemic young people aged 18–20 predominated, as indicated by 77.8% of the respondents, followed by those aged 26–30 (55% of the replies) and 21–25 (54.7%), see Table 4.

In the next part of the study, the authors attempted to establish to what degree the post-pandemic experience resulted in the growth of the self-control activities aimed at restricting bad habits in consumption. The respondents usually indicated their attention to healthy sleeping habits (17.9%), regular exercise (15.2%) and regular eating habits (14.3%), and far less the frequency of medical checkups and regular blood pressure tests, see Table 5.

Table 5. Self-control activities aimed at restricting bad consumption habits

What actions of self-control to reduce bad habits in consumption did you take during the pandemic?	Replies*		
Specifications	*N*	Percentage	Percentage of observation
Regular blood pressure tests	99	4.0%	9.9%
More frequent medical checkups	167	6.8%	16.6%
Monitoring body weight	357	14.5%	35.6%
Regular exercise	374	15.2%	37.3%
Measuring the level of blood oxygenation	96	3.9%	9.6%
Healthy sleeping habits	440	17.9%	43.8%
Cutting down on smoking	133	5.4%	13.2%
Reduced buying of unhealthy products	254	10.3%	25.3%
Regular meals	352	14.3%	35.1%
Reduced intake of alcohol	172	7.0%	17.1%
Others	14	0.6%	1.4%
Total	2,458	100.0%	244.8%

* More than one answer could be selected.

Source: own research, *N* = 1,268.

Increasing medical monitoring in the post-pandemic experience depended on the category of age, hence it was mainly indicated by older people aged 61–65 (54.5%), those over 65 (33.3%), and those aged 56–60 (21.4%), see Table 6.

In order to establish to what extent changes in consumer behavior resulting from the pandemic-related restrictions were perceived among the respondents, they were analyzed in the context of other regulations such as: the lockdown, wearing face masks, and social distancing, see Table 7. Among all the restrictions, the respondents stressed the lockdown (27.2%), followed by wearing face masks (14.8%), ban on foreign travel (14.3%), as well as the lack of access to gyms, swimming pools, tennis courts, etc. (13.3%). The inconvenience of the closure of shopping centers was indicated by 9.9% of the respondents, in addition to the lack of access to hairdressers' (6.6%) and beauticians' (5.5%) services.

Bearing in mind that the lockdown prevailed as the most perceptible form of pandemic-related restrictions, the authors attempted to establish whether this was dependent on the category of age. The results of the analysis suggest that the lockdown was felt to the largest degree by young people aged 21–25 as indicated by the majority of the respondents (79.7%), and those aged 18–20 (76.5%). The data

Table 4. Increase in alcohol consumption in the post-pandemic experience depending on age

Increased alcohol consumption	Specification	Age											
		18–20	21–25	26–30	31–35	36–40	41–45	46–50	51–55	56–60	61–65	Over 65	Total
0.0	Number	18	225	91	35	24	21	25	16	6	9	7	477
	% in the age group	22.2	45.3	45.0	41.7	52.2	48.8	54.3	57.1	42.9	81.8	46.7	44.7
100	Number	63	272	111	49	22	22	21	12	8	2	8	590
	% in the age group	77.8	54.7	55.0	58.3	47.8	51.2	45.7	42.9	57.1	18.2	53.3	55.3
Total	Number	81	497	202	84	46	43	46	28	14	11	15	1,067
	% in the age group	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: own research, 2021, $N = 1{,}268$.

Table 6. Medical checkups in the post-pandemic experience depending on the respondent's age

Increased number of medical checkups	Specifications	Age											
		18–20	21–25	26–30	31–35	36–40	41–45	46–50	51–55	56–60	61–65	Over 65	Total
0.0	Number	68	433	164	71	42	36	39	24	11	5	10	903
	% in the age group	84.0	87.1	81.2	84.5	91.3	83.7	84.8	85.7	78.6	45.5	66.7	84.6
1.00	Number	13	64	38	13	4	7	7	4	3	6	5	164
	% in the age group	16.0	12.9	18.8	15.5	8.7	16.3	15.2	14.3	21.4	54.5	33.3	15.4
Total	Number	81	497	202	84	46	43	46	28	14	11	15	1,067
	% in the age group	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: own research, $N = 1{,}268$.

Table 7. Limitations in consumer behavior compared to other pandemic-related restrictions

The most negative impact of the pandemic in the respondents' opinion	Replies		Percentage of observations
Specifications	*N*	Percentage	
Social isolation/lockdown	795	27.2%	74.6%
No access to gyms, swimming pools, tennis courts, etc.	390	13.3%	36.6%
Restrictions regarding the use of beauty services	161	5.5%	15.1%
Restrictions regarding hairdressing services	194	6.6%	18.2%
Restrictions on foreign travel	424	14.5%	39.8%
Closure of shopping centres	289	9.9%	27.1%
Wearing face masks	432	14.8%	40.5%
Maintaining social distance	232	7.9%	21.8%
Others	11	0.4%	1.0%

Source: own research, 2021, $N = 1{,}268$.

for the same social group also confirmed the highest increase in alcohol consumption, thus in the qualitative research it was assumed that young people, owing to their higher levels of perceived frustration, would undertake activities in terms of compensatory and impulsive consumption.

The qualitative research also aimed to establish to what degree the present economic and political situation (inflation, the war in Ukraine) was felt by young people. The research showed that their purchasing power was reduced, and even if they did not want to give up their favorite products, yet were forced to buy fewer cosmetics and clothes, and save up longer to acquire consumer goods. At the same time, this group demonstrated increased levels of rational shopping due to inflation:

— "I check and compare prices in different shops, and even go to three different shops in one day" (full-time students, employed);

— "I love peppers but sadly now I can only look at them. I give it a miss" (the unemployed);

— "I started to pay more attention to prices of products, I plan more, I can live without some things for two or three days; before I never thought about this" (young non-students, employed).

Some young people buy products in advance, not because they are worried about their availability in the shops or the shortage of money, but because of their sense of entitlement (Wardzała, 2019). Generation Z demands to have "here and now" all they want, without the need to go out.

Young people are also prone to impulse buying, when an unplanned purchase is made in order to improve one's mood, following sales promotion, as well as out of fear that a given product will be sold out, its price will rise, or merely due to a sudden wish to try something new. Impulse buying occurs at moments of excitement caused by a visit to a shop (e.g., IKEA or a clothes shop), or when a long-awaited product is launched in the market (such as a book, game, or a new line of clothes of a well-known brand). Emotions such as melancholy and homesickness can also be a motivation to buy, in particular products familiar from childhood (this mainly applies to food).

— "I did most impulse buying at launches of some game. I was capable of spending all my money on such a new game. Phew, done. A relief after buying, the excitement goes down, I can play it now" (full-time students, employed);

— "I bought it because it reminded me of my childhood" (part-time students, employed).

The analysis of the replies provided by the respondents showed that young people aged 18–26, regardless of their financial status, form of employment and education, do not spend much on compulsive buying, and it is not big shopping — rather small items such as cosmetics, food, books, things for their home, and visits to pubs/restaurants.

— "I buy gadgets because of emotions, joy and excitement; I bought something and after a month it turned out to be a flop" (part-time students, employed);

— "I got confused with impulse buying — but it was ok later" (employed non-students).

Compensation shopping is not very significant in that age group; far more important is shopping treated as a reward after the achievement of a certain goal. They feel that they have to earn this by, e.g., passing an exam or after going through a difficult time at work. Shopping to compensate for something such as failure or shortcomings takes place very occasionally in a small group of the respondents and mainly concerns people who had become independent and started their adult life (took up regular employment, completed their studies or study part-time and pay for themselves, as well as the unemployed). The recompense in the form of shopping usually takes place after a hard day at work or during a bad time, and mainly in the form of food (chocolate, crisps, a good takeaway meal) and/or alcohol (drunk at home or in a pub with friends), and very rarely takes the form of more expensive purchases, e.g., clothes.

On the declarative level, compensatory spending is viewed by young people in a negative way; they admit that this is not a good way of coping with sadness and loneliness, and it may open the way to becoming a shopaholic, even though they admit to occasional episodes in such situations. Nevertheless, they make certain allowances in assessing their own behavior (despite the fact that after such shopping they may feel sad about wasting money). The respondents also very quickly recognize in the stories of others their shopaholism, treating it as pathology which should be professionally cured.

5. Conclusions

The conducted research confirms that significant changes have occurred in the consumption habits of Poles, which frequently result from the very complex and difficult socio-economic condition of this country.

The hypothesis that the changes were mainly influenced by the pandemic was confirmed. In the conditions of high inflation and Russia's aggression against Ukraine, consumers are changing their consumption behavior. The post-pandemic effect is an increase in health-promoting behavior, especially among older and better-educated people. Quantitative research shows that harmful consumption habits have also emerged due to excessive consumption of alcohol and unhealthy snacks. To the extent that this has a lasting effect, detailed research on the motives for consuming these products should be conducted. However, it should be stated that the consumption patterns of young people were dominated by bad habits, consisting of the increased use of harmful substances, often resulting from social isolation, which is felt most strongly in this group.

In crisis situations, new survival strategies began to emerge, pointing to diverse and often inconsistent consumption patterns, including: hoarding, online shopping, reward shopping and impulse shopping, creating new contexts in consumption. As a result, consumers are able to save time, experience pleasure and a feeling of security, which as indicated by research, is not achieved through saving — due to inflation. These models of behavior may provide, both for young and older people, at least to a certain extent, the feeling of having control over their own lives, and the sensation that certain decisions, also in terms of shopping, still depend on their will and not merely on the volatile, unstable reality.

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Anita Szuszkiewicz
ORCID: 0000-0002-3984-6236
SGH Warsaw School of Economics
aszusz@sgh.waw.pl

Food deconsumption as part of a sustainable lifestyle: A study of Polish deconsumers

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Abstract

Deconsumption, defined as a wide spectrum of voluntary activities aimed at reducing consumption levels, is a multidimensional and multidisciplinary phenomenon, which concerns the reduction of goods and resources purchased, consumed, and used by consumers. The phenomenon could be manifested in a partial resignation from the purchase of products or possession of goods, reducing the consumption of resources or changing the current way of meeting needs. Deconsumption has numerous links with the concept of sustainable development, a trend that has gained importance in recent years as a response to excessive and unsustainable consumption and production. The purpose of this article is to examine and characterize the importance and interactions between food deconsumption — its forms (such as limiting consumption levels, eliminating food categories, etc.) and subjects (different food categories) — and the sustainable lifestyles of consumers. Empirical research was conducted in order to recognize consumer opinions and behaviors in the context of selected manifestations of deconsumption. The quantitative study was conducted in November 2021 on a sample of $N = 516$ Polish respondents using the CAWI technique and the authors' own questionnaire. The respondents were asked about, among other things, the reduction of food consumption. The main hypothesis of the study was that deconsumption practices among Polish respondents are manifestations of their aspirations to live a sustainable lifestyle — for this purpose, a statistical hypothesis of no correlation between belonging to one of the groups of respondents (incidental, fragmentary, or lifestyle deconsumers) and food deconsumption practices was formulated and tested in a quantitative study. One in two respondents declared a reduction of food consumption in the twelve months preceding the survey. Health concerns were the second most common reason for food deconsumption, preceded by rising food prices, which highlighted the importance of motives of an economic and health nature over the others covered in the survey, and could therefore be attributed to sustainable practices relating to consumers' lifestyles. The respondents gave up or limited the consumption of salty snacks, sweets, and ready meals to the highest degree. A relatively high percentage of respondents declared limiting the consumption of meat and cold cuts as well. The reduction of fish and seafood and dairy products consumption was observed to a slightly lesser extent. The results of the study revealed a relatively high consumer awareness of healthy eating, as well as care for health and a slim figure. This observation coincides with current consumer trends (care for health, conscious consumer, well-being, "health again"). Deconsumption in the researched study sample took also the form of dietary trends such as flexitarianism, vegetarianism, and veganism, which are gaining popularity nowadays.

1. Introduction

Deconsumption as an economic phenomenon and a consumer trend is gaining considerable scientific interest, especially in recent years amid a lively public debate on sustainability (Lee, Ortega Egea and García de Frutos, 2020, 174). Despite interdisciplinary efforts, a clear conceptualization and definition of the phenomenon are still lacking (Makri, Schlegelmilch, Mai and Dinhof, 2020, 178). The prevailing approach in the Polish-language literature is a holistic view of deconsumption in the context of life categories. Duliniec (1986, 303) characterizes lifestyle as patterns of consumption that depend on the preferred forms of leisure activities and spendings by a social class or group of consumers and emphasizes that in economic approach it refers to ways of spending money and the type of goods and services purchased. Solomon (2006) defines lifestyle as "patterns of consumption reflecting what a person likes to do and what he or she spends money on. The term refers to the way consumers dispose of their income, both in terms of general allocation of money to various products and services and more specific decisions to spend it on specific products within a specific category."

Deconsumption as a lifestyle refers to the entire range of voluntary activities aimed at reducing consumption — reducing the goods (food, industrial goods) and resources (water, energy) purchased, consumed, and used by consumers. This phenomenon manifests itself, among other things, in the partial abandonment of the purchase of products (limiting the volume of purchases, eliminating certain categories of products) or possession of goods (their redistribution — giving them to people in need or selling items that are no longer used by them), the reduction of the resource consumption (saving water, energy) or a change in the current way of satisfying needs (use of services, such as lending). In the definition of Patrzałek (2019, 111), deconsumption is "a lifestyle based on the purchase of necessities, associated with the reduction of excess storage. It represents an orientation that reevaluates the previous approach to the way of satisfying needs by striving for balance in consumption, respect for the well-being of all living beings and harmony with nature." In view of the definitions cited, this phenomenon should be considered multidimensional, multifaceted, and multidisciplinary in nature.

Deconsumption is consistent with new lifestyles observed in recent years, such as LOHAS (Zalega, 2013, 66), minimalism (Zalewska and Cober-Tokarska, 2014, 495) or the voluntary simplicity movement (Ross, 2015, 20), aimed at reducing the volume of consumption in favor of the quality of the products consumed and a reorientation to non-material values in life. Moreover, this phenomenon in itself is recognized by some authors as a lifestyle based on the purchase of necessities, linked to the reduction of excess inventory (e.g., Patrzałek, 2019). Deconsumption also has numerous similarities with the concept of sustainable development, a trend that has been gaining popularity, especially in recent years, being a response to excessive and unsustainable consumption and production not justified by real demand (Zalega, 2013, 4–5). Excessive consumption undoubtedly promotes the waste of produced resources, especially food. Moreover, its effect — primarily in the context of highly processed food — is the observed epidemic of obesity and other civilization diseases, associated with an abnormal lifestyle. Therefore, the restriction of food consumption is a desirable phenomenon and aims at increasing the quality of life.

2. The importance of deconsumption for sustainable diet patterns in the view of literature

The literature review provides evidence of the fact, that diets and eating habits constitute an integral part of consumers' lifestyles also with regard to sustainable lifestyles. Food consumption, in addition to its utilitarian function, serves the function of expression of consumers' self-concept, beliefs, and values, e.g., support for the concept of sustainable development and is a manifestation of a responsible, environmentally sensitive, social, and ethical approach to consumption (Lubowiecki-Vikuk, Dąbrowska and Machnik, 2021, 93). Consuming certain food groups and rejecting others is a form of articulation of consumers' identity, according to the concept proposed by Hall (Iwański, 2015, 163). Thus, through the meals consumed, the consumer satisfies not only basic needs, but also those on the higher levels in Maslow's pyramid — self-actualization, living in harmony with oneself and the world (so-called surrounding needs).

The interest in diet as a component of a sustainable lifestyle is justified by the current state of knowledge and science indicating the undeniable impact of dietary choices not only on health, but also on the natural environment — including soil degradation, climate change, biodiversity loss, water and energy consumption (Macdiarmid, 2013, 13–15), and the social environment (Nestorowicz, 2015, 488).

A sustainable diet is a well-established concept in the literature and is defined as a diet that protects and respects biodiversity and ecosystems, is culturally acceptable, accessible, economically fair and affordable, nutritionally adequate, safe and healthy, and allows for the simultaneous optimization of natural and human resources" (Jones, Hoey, Blesh, Miller, Green and Shapiro, 2016, 641). In this context, the so-called Planetary Health Diet is also being referred to in the literature (Prescott and Logan, 2019, 98).

Deconsumption in the area of food is an important element of a sustainable diet oriented towards increasing the quality of life while respecting the natural environment, workers' rights and animal welfare, and can materialize, among other things, in limiting, giving up or boycotting products with harmful effects on human health (highly processed, high-calorie, high-sugar, salt or artificial preservatives and so-called "flavor enhancers," e.g., MSG), food products with a so-called high "ecological backpack" — with a particular burden on the natural environment and particular resource intensity, or goods produced in countries with low wages and/or using child labor (Patrzałek, 2019, 65–67). It is necessary to point out a distinguishing feature of deconsumption in the area of food, which is the very frequent simultaneous occurrence of the phenomenon of substitution — for example, high-calorie products with low-calorie (reduced-calorie) products, cereal products with gluten-free baked goods, or the recent fashionable trend occurring on a mass scale, which is the substitution of meat and dairy products with their plant-based alternatives (Patrzałek, 2015, 52).

A thriving dietary trend is the deconsumption of animal products, which manifests itself in the adoption of vegetarian, vegan or flexitarian diets (Salehi, Díaz and Redondo, 2023, 1). Vegetarianism and its stricter form — veganism — is a lifestyle that rejects the consumption of meat and animal products (e.g., such as whey, lard, gelatine) (Badora, Kud, Celińska, Drążek, Klimkiewicz, Majewska, Pasek and Snopek, 2020, 31) or dairy, eggs and honey in the case of veganism. In addition to dietary modifications, it also includes the rejection of product categories such as furniture, clothing, leather goods or those using other animal-derived materials, as well as any other form of commercially profiting from animals, whether in the form of testing products on animals, using them as a form of attraction in circuses or as traction power in carriages, wagons (Miguel, 2021, 5). These initiatives, in addition to the obvious connection to ethical and moral issues (Patrzałek, 2015, 51), are also linked to ecological consumption — a close link between the abandonment of meat and animal products and environmental protection is being pointed out in the literature, which has to do with the high ecological footprint of animal husbandry (Salehi et. al., 2023, 2). Researchers agree in their views that due to the huge impact of animal farming on GHG emissions (Rippin, Cade, Berrang-Ford, Benton, Hancock and Greenwood, 2021, 7), the spread of a sustainable plant-based diet is necessary to achieve the Sustainable Development Goals (SDGs) and meet the Paris Agreement (Pradhan, Sapkota and Kropp, 2021, 11).

Deconsumption is also aimed at not wasting food by rationalizing the size of grocery purchases and sharing them with people in need, or so-called food-sharing, sometimes taking the form of freeganism. Zalega (2013, 66) defines freeganism as an anti-consumption lifestyle that boils down to limiting participation in the economy, including both searching for food in trash containers and asking for excess and unnecessary products before they are discarded by vendors at neighborhood markets, restaurants or large retail chains. Food waste, which is a consequence of imprudent consumer decisions and excessive food purchases in relation to real demand, is both an ethical and social problem, as well as one with economic and environmental characteristics (Czernyszewicz, Komor, Białoskurski, Wróblewska, Pawlak and Goliszek, 2022, 58).

The food products most often thrown away by Polish consumers are bread, fresh fruit, and so-called non-perishable vegetables, such as lettuce, radishes, tomatoes, cucumbers, meat, and dairy drinks. Polish households also waste unconsumed meal components, mainly cooked potatoes, rice, pasta, vegetables. Among the main reasons for wastage are: a lack of ideas about the use of products for preparing meals (10.3%), purchasing low-quality products (10.8%), improper storage (14.2%), too much packaging (17.0%), impulsive purchases (19.7%), buying too much food (22.5%), preparing too much food (26.5%), overlooking the expiration date (42.0%), and food spoilage (65.2%) (Czernyszewicz et. al., 2022, 58).

Czernyszewicz et al. (2022, 59) consider the deconsumption of food through the prism of the "6Rs" principle — "Rethink, Refuse, Reduce, Reuse, Recycle, Recover," which materializes in several activities in the context of nutrition and meeting nutritional needs undertaken by consumers:

— making conscious purchases;

— planning consumption and purchasing goods with a short shelf life to reduce the discarding of spoiled and unconsumed goods;

— purchasing food directly from local producers, for example as part of food co-op activities;

— reusing items, e.g., glass preserving jars for storing durable, loose products;

— sharing excess products (food-sharing).

3. Research methodology

Empirical research was carried out to recognize consumer opinions and behaviors in the context of selected manifestations of deconsumption including food deconsumption as well as its motives and determinants. The aim of the research was also to examine whether food deconsumption plays a significant role in the sustainable lifestyle of respondents. The study was conducted using the CAWI technique from November 17, 2021, to November 20, 2021, on a sample of $N = 516$ respondents, who were classified as deconsumers based on qualifying questions with an accepted definition of deconsumption, which referred to the application of deconsumption practices in the last twelve month preceding the study:

Q1. Has your level of consumption changed (significantly, noticeably) in the last 12 months compared to previous years? Think of all categories of products and services (by consumption we mean not only eating, consuming, but also using, utilizing the goods of various types of goods, services and resources including water, electricity, gas, etc.).

A) It has decreased
B) It has increased
C) Has not changed

Q2. What was the nature of the reduction in the level of consumption in the last 12 months?

A) Involuntary/forced
B) Voluntary

The survey was continued only by the respondents who declared that the level of their consumption has decreased in the last twelve months (Q1) and those whose consumption decline was of a voluntary nature (Q2).

The survey considered the following socio-demographic characteristics of respondents: gender, age, place of residence, and household size. The research sample included 272 women (53%), 243 men (47%,) which is broadly in line with the entire Polish population (women — 52%; men — 48%). Regarding the variable "age," the largest percentages were respondents in the age groups 25–34 and 35–44 (26% and 27%, respectively). This is almost double that of the general population. In contrast, the least represented groups were those in the 18–24 and 65–80 age groups (10% and 2%). The distribution of responses shows that deconsumers reside almost equally in large and small towns but are primarily residents of the Mazowieckie (16%) and Silesian (13%) provinces, living in two- to four-person households, with no offspring or 1–2 children. The sample was by far dominated by interviewees with a high school (43%) or higher education (46%), working full time (68%), assessing their financial situation as average (53%) or as good (32%). For the relative majority of deconsumers, the economic situation over the past two years has either not changed (37%) or "rather worsened" (35%). In addition to that, three groups (types) of respondents were distinguished and characterized in primary research: incidental deconsumers (interviewees who declared 1 or 2 deconsumption practices in twelve months preceding the study); fragmentary deconsumers (3–5 practices) and respondents with deconsumption lifestyles (respectively 5–8 practices).

The survey, using an interview questionnaire developed by the article's author, was conducted by an external research institute, using the CAWI technique. The collected responses were subjected to scrutiny in accordance with ESOMAR and PTBRIO standards. The timing of the interview and the consistency and logicality of the answers were verified, among other things. Interviews conducted too fast and those filled out carelessly were rejected. The interview questionnaire also used control questions, i.e., respondents were asked about the device on which they were filling out the survey. The questionnaires of respondents who gave contradictory answers were deleted. In addition, a qualitative assessment of the responses was made based on the answers to open and semi-open questions, among others.

The null hypothesis about no association between belonging to one of the respondents groups (incidental, fragmentary, lifestyle deconsumers) and food deconsumption practices was tested in statistical testing procedure — non-parametric statistical tests were used to assess the significance of the effects: Chi-square (χ^2) statistic (on the significance level $\alpha = 0.05$) and Cramér's V, justified in the case of variables treated as a metric scale.

4. Deconsumption in the area of food: Empirical research results

In the sample of 516 respondents taking part in the survey, 184 (35.66%) declared that they had reduced their consumption of food products in the last 12 months preceding the survey. Most often, respondents gave up or reduced consumption of salty snacks — chips, sticks, nuts (74.46%), sweets — chocolates, candies, wafers, bars, cookies, etc. (73.37%) and ready-made meals (66.34%). A relatively high percentage of respondents also reported limiting their consumption of meat and cured meat (52.72%). To a slightly lesser extent, respondents limited their consumption of fish and seafood (30.98%) and dairy products (23.91%). On the other hand, respondents on a low scale limited their consumption of oil, vinegar, sauces and dressings (30.43%), bread (28.81%), breakfast products (26.63%), as well as bulk products (16.85%). Baby food and fruit and vegetables were the food categories where consumers were least likely to declare limiting consumption — 11.96% and 7.71%, respectively.

Respondents who declared a reduction in food consumption were simultaneously those who manifested numerous deconsumption practices in general, applied in daily behaviors (such as consumer boycotts, use of sharing economy services, donation of unused goods, restrictions on resource use, etc.) and their lifestyles compared to respondents whose deconsumption practices were incidental or fragmented, indi-

Table 1. Deconsumption in the food area — distribution of responses (in %)

Food category	%	Food category	%
Salty snacks	74.46	Bread	28.81
Sweets	73.37	Breakfast products	26.63
Ready-made meals	66.34	Dairy	23.91
Meat and cured meat	52.72	Bulk products	16.85
Frozen food and ice cream	51.09	Baby food	11.96
Fish and seafood	30.98	Fruit and vegetables	7.61
Oil, vinegar, sauces and dressings	30.43	Others	0.54

Note: responses do not summarize to 100% — respondents could choose multiple answers.

Source: authors' own study, 2021.

cating the complementary nature of deconsumption in the food area to deconsumptive lifestyles (χ^2_{cal} = 60.73959; *df* = 2; $\chi^2_{df,\alpha}$ = 5.9915; *p* = 0.0000, null hypothesis about no correlation was rejected), nevertheless the strength of the influence was relatively weak (V-Cramer's = 0.343). Respondents assigned to the lifestyle deconsumers group were the ones who relatively most often declared a reduction of food consumption in comparison to incidental deconsumers and fragmentary deconsumers who didn't declare food deconsumption as often (see Table 2). The socio-demographic characteristics of respondents considered in the study did not determine the application of deconsumption practices in the area of food products (for each socio-demographic factor the calculated value of χ^2 was lower than $\chi^2_{df,\alpha}$ value).

Table 2. Application of food deconsumption practices considering the types of respondents in the survey (*N* = 516)

Respondents' group (type)	"Yes"		"No"		Sum in a row
	q_{yi}	% of q_{yi}	q_{ni}	% of q_{ni}	
Incidental deconsumers	14	10.45	120	89.55	134
Fragmentary deconsumers	119	40.20	177	59.80	296
Lifestyle deconsumers	51	57.95	35	40.25	88
Sum in column	184	100.00	332	100.00	516

Source: authors' own study, 2021.

The group of lifestyle deconsumers was distinguished by the following characteristics:

— mainly aged 24–35 and male;

— respondents had higher (university) education;

— self-assessment of the financial situation in the group was good or average;

— respondents followed a circular consumption model and exhibited consumer activism;

— they were definitely planning further deconsumption;

— deconsumption was accompanied by a definite reorientation toward intangible values in the sphere of attitudes;

— deconsumption was conditioned decidedly by a pro-environmental and dematerialization motive and to a significant extent social motive.

On the other hand, the largest group in terms of food deconsumption practices was fragmentary deconsumers, who could be characterized as follows:

— mainly aged 24–44 and female;

— self-assessment of financial situation: average, but has worsened over the past 2 years;

— apparent tendencies to decrease and reduce consumption overall;

— they rather plan further deconsumption;

— deconsumption is accompanied by a clear reorientation toward intangible values in the sphere of attitudes;

— deconsumption is conditioned to a definite extent by the dematerialization motive, as well as to a large extent by an environmental motive.

Among the motives for deconsumption of food, a kind of dualism could be observed. It can be considered that the indicated motives were mainly either of an assurance or pro-quality nature. The first one is related to the economic rationalization of consumption (also lowering the expenses in the household budget). Also, a common ground is deconsumption resulting from physiological needs (health improvement through a better diet, etc.), which can be considered deconsumption of a pro-quality nature that can be afforded by consumers with a better material and financial situation. Overall, the most common reasons for deconsumption of food were those of an economic nature: rising food prices (69.57%), the desire to save money on purchases (65.22%), as well as health-related: taking care of health (66.85%) and the desire to eat healthier (61.96%). To a lesser extent, respondents cited such deconsumption motives as: greater awareness and knowledge of ingredients, product characteristics and their impact on health (34.78%), cooking more often (29.35%) and environmental issues (27.72%). Although the environmental and social motive was declared by a relatively low percentage of respondents, it should be pointed out that some manifestations of such deconsumption among Polish respondents are discernible (see Table 3). Nevertheless, active consumer education is needed in the context of the impact of their dietary choices not only on health, but also on other areas of society's functioning, in order to support responsible attitudes and market behavior.

Table 3. Motives for food deconsumption in the study — distribution of responses (in %)

Motive	%
Rising food prices	69.57
Taking care of health	66.85
Desire to save money on purchases	65.22
Willingness to eat healthier	61.96
Food waste reduction	53.80
Increased awareness and knowledge of ingredients, product features and their impact on health	34.78
Cooking more often	29,35
Environmental concerns	27.72
Deterioration of the material situation	23.37
Going on diet	18.48
Ethical and social concerns	17.93
Allergies and food intolerance	9.24
Others	1.00

Note: responses do not summarize to 100% — respondents could choose multiple answers.

Source: authors' own study, 2021.

The motives of deconsumption varied among different food categories (see Table 4), especially reduction of meat and cured meat consumption was more often connected to environmental issues (76.47%) and higher awareness of prod-

Table 4. Top three deconsumption motives per food category in the study

Food category	Motives (% of responses)
Meat and cured meat	1. Environmental concerns (76.47%) 2. Increased awareness and knowledge of ingredients, product features and their impact on health (69.70%) 3. Ethical and social concerns (61.76%)
Fish and seafood	1. Cooking more often (42.59%) 2. Deterioration of the material situation (41.86%) 3. Desire to save money on purchases (33.33%)
Dairy products	1. Allergies and food intolerance (58.82%) 2. Willingness to eat healthier (36.36%) 3. Ethical and social concerns (35.29%)
Bulk products	1. Ethical and social concerns (27.91%) 2. Increased awareness and knowledge of ingredients, product features and their impact on health (26.47%) 3. Environmental concerns (25.93%)
Sweets	1. Allergies and food intolerance (94.12%) 2. Increased awareness and knowledge of ingredients, product features and their impact on health (86.36%) 3. Ethical and social concerns (85.29%)
Salty snacks	1. Deterioration of the material situation (88.37%) 2. Ethical and social concerns (85.29%) 3. Cooking more often (83.33%)
Ready-made meals	1. Cooking more often (87.04%) 2. Ethical and social concerns (79.41%) 3. Environmental concerns (78.43%)
Oil, vinegar, sauces, and dressings	1. Deterioration of the material situation (44.19%) 2. Desire to save money on purchases (36.67%) 3. Increased awareness and knowledge of ingredients, product features and their impact on health (36.36%)
Breakfast products	1. Allergies and food intolerance (47.06%) 2. Deterioration of the material situation (41.86%) 3. Ethical and social concerns (41.18%)
Frozen food and ice cream	1. Allergies and food intolerance (76.47%) 2. Food waste reduction (63.64%) 3. Cooking more often (62.96%)
Baby food	1. Allergies and food intolerance (29.41%) 2. Ethical and social concerns (23.53%) 3. Going on a diet

Note: responses do not summarize to 100% — respondents could choose multiple answers.

Source: authors' own study, 2021.

uct ingredients (69.70%) in comparison to other motivations covered in the study, as well as reduction of dairy products was connected to allergies and/or food intolerance (58.82%).

Respondents were also asked about sharing surpluses of food products, with 69% of them declaring participation in food-sharing, which should be viewed positively, as it indicates a high degree of sensitivity to social and environmental issues. According to the cyclical survey of the Consumer Social Responsibility Barometer, carried out by the Institute of Management at the Warsaw School of Economics in cooperation with the ABR Sesta Research Institute, Polish consumers in particular became active in this regard in connection with the outbreak of war in Ukraine and the influx of a large Ukrainian population into Poland. To an almost equally high degree (66%), respondents also declared themselves to be guided by the zero or less waste principle.

5. Conclusions

Eating choices, including decisions on reduction, minimization, or resignation of consumption of certain food categories (food deconsumption) play a significant and complementary role in consumer efforts towards living sustainable lifestyles. In contrast to the prevailing approach to date, in which food intake decline was assessed in terms of an undesirable phenomenon in society, there is quite a new, but yet well-established stream in the literature indicating positive aspects of food deconsumption. Those could be assigned to the economical optimization of the decision process (for example in order to eliminate food waste in households), health concerns (giving up certain products that are considered not healthy), awareness of environmental issues (avoiding consumption of products which cultivation is unsustainable) or societal/moral issues (for example avoiding meat consumption).

Results of the authorial study seem to corroborate this thesis — deconsumption of food primarily concerned respondents who are highly involved in sustainable lifestyles, and this involvement manifests itself in the simultaneous undertaking of multiple activities in this area and the cultivation of a deconsumptive (minimalistic, non-materialistic) lifestyle. Respondents assigned to the group “Lifestyle deconsumers” were more likely to declare deconsumption of food in comparison to respondents for whom deconsumption was of a fragmentary or incidental nature.

Among four components of sustainable lifestyles (economic, social, environmental, and health-related), those of economic and health nature were the major motivations for the respondents — health concern was the second most common reason for deconsumption of food, right after rising food prices. Respondents were most likely to give up or reduce consumption of salty snacks — chips, sticks, nuts, sweets, and convenience food, which may indicate a high level of consumer awareness of healthy eating and their health competences, as well as their concern for health and slim figure. This observation coincides with current consumer trends (caring for health, conscious consumer, well-being, “health from scratch”).

It was also relatively common for respondents to declare deconsumption of animal products, which were driven by environmental concerns (in the case of meat) and health-related trends (in the case of dairy products). It is noteworthy that the health benefits of plant-based diets are increasingly being pointed out, both in terms of physical and mental health. Converging observations also result from studies by Adamczyk et al. (2022, 6). At the same time, the authors indicate that the environmental and social motives of vegetarian and vegan diets become more apparent, especially for consumers in Germany (Adamczyk et. al., 2022, 7). Nowadays, a close link is pointed out between giving up meat and animal products and environmental protection, which has to do with the high ecological footprint of animal farming. Also, consumers are increasingly aware of the negative effects of animal production. In view of such, it can be assumed that reducing or abandoning the consumption of animal products in some cases will be environmentally friendly.

In the sample, deconsumption of food could be assessed positively as it was related to caring for health, as well as the society and the environment. The significant participation of respondents in food-sharing activities and post-consumer waste prevention, related to the zero-waste concept, and can be evaluated favorably as well.

It is worth noting that the surveyed population were consumers with a high level of competences including environmental, health and societal awareness, who can serve as role models, or so-called trendsetters, however for the spread of sustainable consumption patterns in the area of food, it is necessary to undertake educational activities aimed at raising awareness and sensitizing the entire society. An overview of a representative sample would be beneficial for the proper formation of communication and educational campaigns on sustainable food choices and deconsumption addressed to different consumer groups. Future research should also focus on practices aimed at food waste reduction and food sharing and its motives, so that the society would be able to meet the commitments expressed in Goal 12 of the SDGs.

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Beata Kolny
ORCID: 0000-0002-9162-1704
University of Economics in Katowice
beata.kolny@ue.katowice.pl

Post-pandemic echoes in the forms of spending and organizing leisure time by the Polish people

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Abstract

This article explores the extent to which various leisure activities adopted during the pandemic, due to the closure of service facilities and other restrictions, are still popular among individuals. It draws on both secondary research and primary data collected through a website survey technique among 1,100 adult Poles in November 2022. The findings indicate that Poles continue to enjoy streaming movies and music, and maintain social connections online even after the pandemic. Those who used physical activity tracking apps during the pandemic still rely on them. Due to travel restrictions and uncertainty of the pandemic period, respondents now plan and book trips within Poland on short notice.

1. Introduction

The COVID-19 pandemic has brought significant changes that consumers have had to adapt to when it comes to spending leisure time. Restrictions on leisure time services have forced people to find alternative ways to enjoy their free time. During lockdowns, cultural institutions like cinemas, theaters, and museums were closed, concerts and events were canceled, and fitness clubs and restaurants were shut down, limiting the opportunities for socializing outside of the phone or internet communication. Travel plans had to be made on short notice and were restricted to domestic destinations due to canceled flights and vaccination requirements

(Pawlas, 2021). As a result, people turned to virtual spaces and activities in their homes to satisfy their leisure needs. Virtual communication allowed for interaction with friends and family members regardless of location, while virtual libraries, museums, and streaming platforms provided access to books, art, music, and movies. Some of the changes described that were forced by the pandemic situation will probably be short-lived, while others will remain for a longer time (Reeves et al., 2020). In this context, the question is whether the leisure time habits developed during the pandemic are still used or have been abandoned. This article aims to answer this question by examining to what extent people continue to rely on the leisure activities and forms developed during the pandemic. It is assumed that the leisure lifestyle did not change during the pandemic, only the place where people spend them. Based on the increased use of the Internet for leisure activities during the pandemic, it is assumed that people are still utilizing virtual options for entertainment. The article draws on both secondary and primary research, including a survey of 1,100 adult Poles conducted in November 2022, to present theoretical aspects, research methodology, sample characteristics, results, conclusions, and recommendations for further research.

2. Theoretical framework of the research

The COVID-19 pandemic has drastically altered the course of human life in Poland and around the world (Casselman and Koeze, 2021). Consumers have been gripped by fear and concerns for their health and that of their relatives, as well as a general fear of contracting the virus. In response, various national solutions have been implemented to curb the spread of SARS-CoV-2, including lockdowns, which involved restrictions on social contact, limitations on leaving home, and curfews or quarantine measures (Ludvigsen et al., 2023). The slogan "stay at home" became a widespread measure to limit social contact, impacting the daily lives of people worldwide in terms of maintaining social relationships, work, travel, and leisure activities. The early days of the pandemic saw widespread travel bans, school and university closures, and restrictions on entering public spaces like forests. Companies were forced to implement remote work and some even suspended their operations. While the closure of retail, service, and entertainment facilities was done with consumer safety in mind, it caused widespread dissatisfaction. The COVID-19 crisis led to unprecedented social unrest and significant changes in our lifestyle, work, and social interactions (Hosseinzadeh et al., 2022). The implementation of social distancing and the closure of meeting places such as parks, cafes, churches, and schools has also had an impact on consumers' leisure activities.

The pandemic has had a significant impact on the leisure industry both in Poland and globally. One of the branches of the economy that suffered the negative consequences of the pandemic was tourism. Many researchers have analyzed the effects of the pandemic in this sector, including Utkarsh and Sigala (2021), who reviewed 177 articles on the subject, such as the impact of COVID-19 on tourist decision-making and marketing efforts undertaken by travel service providers and travel destinations, as well as the future of tourism after COVID-19. Another related publication by Yang, Zhang and Rickly (2021) reviewed 249 articles on the pandemic and tourism. The pandemic also affected the scale of Poles' leisure travel. Taking into account holiday trips, after a decrease in 2020 (37%), almost half of the respondents declared a holiday trip (49%) in 2021, and 53% in 2022. Similarly, foreign trips suffering a decline in 2020–2021 (20% of declared trips each year), were on the rise in 2022 when 30% of the respondents took such a trip, as reported by Feliksiak (2023). Despite the pandemic's severe impact on the tourism sector, the situation is slowly improving, with the global number of arrivals from abroad almost doubling from 2021 to 2022, according to Statista (2023a; 2023b). Tourism research is now focused on rethinking, revitalizing, and resetting the industry to maintain sustainability during and after the pandemic (Bhatia, Roy and Kumar 2022; Homer and Kanagasapapathy, 2023).

The pandemic has accelerated the digitization of people's lives. Difficult access to service facilities providing quality leisure time meant that during the pandemic, internet-based leisure activities substituted the traditional ones. Stationary leisure-time activities have been replaced with those available online. Virtual tourism has become more popular, providing a means for people to travel virtually and experience new places through technology, as noted by Lu et al. (2022). Virtual sightseeing can even influence consumers' destination choices in the future, as they may want to visit the place they saw virtually. The research conducted by Kolny (2021) showed that this form of spending leisure time during the pandemic was chosen by 28.7% of individuals who satisfied their need to travel in this way. Streaming platforms have also become a popular alternative to cinemas, as reported by Mroziński (2021). Fitness activities were also affected by the pandemic, with many people practicing sports at home or outdoors due to the unavailability of gyms, fitness clubs, or sports fields (Lesser, Nienhuis 2020; Hammami et al. 2022). Internet resources can be used to develop individualized plans for physical activity adapted to the person's overall health status, to record training details such as route, distance, time, and calories burned, and to connect with friends in real-time for mutual motivation, as reported by Zach and Lissitsa (2016) and Kolny (2021). According to Kolny's research (2021), 52.7% of consumers used such apps to monitor their physical activity during the pandemic. Finally, many people took up various sports and artistic challenges in their leisure time, becoming prosumers and creating networks of people who can move smoothly from being consumers to being co-creators or creators of various information (Bond, Widdop, Cockayne and Parnel, 2021).

Although digital technologies have helped to overcome some barriers in accessing market infrastructure and social connections, it is important to note that the virtual world cannot entirely replace the need for face-to-face service outlets and interpersonal interactions. Nevertheless, during the pandemic, the internet successfully allowed people to stay connected while physically distant, and service providers to expand their reach to those who may have been digitally excluded (Local…, 2020). The impact of digital technology on people's lives was significant, with virtual interactions becoming more prevalent in both professional and personal spheres. However, the JOMO (joy of missing out) philosophy is gaining popularity, encouraging people to take conscious breaks from social media and focus on offline experiences (Aurel, Paramita, 2021). The pandemic has disrupted the work-life-balance, with remote work often blurring the boundaries between work and leisure time (Orzeł, 2021). Despite this, it is crucial to prioritize leisure time for activities that promote emotional well-being and social connections and stave off isolation and depression which was particularly important during the pandemic.

As a result of the pandemic, the ways of spending leisure time have changed. In particular, the pandemic affected relationships with friends and mental well-being. Research revealed that people value their leisure time more now than before the pandemic (Lazcano, Doistua and Madariaga 2022). The pandemic period made consumers long for a more active and interesting life, and they are eagerly looking for new forms of physical activity and entertainment (Buczyńska 2023). Active forms of spending leisure time dominate after the pandemic, and individuals feel encouraged to try very different forms of entertainment. Escape rooms are often visited. Extreme sports, e.g., off-road driving and flying light aircraft, are gaining in popularity (Dębska, 2022).

3. Research methodology

This article draws on both primary and secondary sources of information to examine leisure time, particularly during the pandemic, as well as the findings of CBOS and GUS research in this area. The primary information was gathered through a website survey technique, due to the ongoing pandemic at that time, and conducted among registered participants of the Ariadna National Research Panel between November 16, 2022 and November 23, 2022. It is worth noting that the panel is continuously recruiting participants whose socio-demographic profile matches that of Poles who use the internet (Ariadna…, 2023). The panel's research services are of high quality, as confirmed by an independent annual audit conducted by the Organization of Opinion and Market Research Firms. The study was conducted in accordance with ethical standards, taking into account the International ICC/ESOMAR Code (ESOMAR, 2016). The research also received a positive opinion from the Ethics Committee for Human Subjects Research at the University of Economics in Katowice (no. 001/11/2022). The research was anonymous.

A link with an invitation to participate in the research was sent to 8,046 adult panel members. 1,439 people responded to the invitation and 1,208 completed the survey. One of the criteria for classifying the completed questionnaires for further research was the amount of time the respondent devoted to completing the questionnaire. While testing the tool, it was found that it was not possible to read and reliably complete the entire questionnaire in less than 10 minutes. Therefore, all questionnaires that were completed in a shorter time were removed from the database. As a result of the research, 1,100 fully and correctly completed questionnaires were obtained and qualified for further analyses. The obtained data were analyzed using the IBM SPSS Statistics statistical package. The sample size was set in such a way that the maximum measurement error at a confidence level of 95% and a fraction size of 0.5 was no more than 3% (acceptable error in social research).

In the sample, females accounted for 51.7% and males for 48.3%. The respondents were selected to represent 4 equal intervals (generations) comprising 25% of people in each: 18–24 years of age (Generation Z), 25–39 years of age (Generation Y), 40–59 years of age (Generation X), and 60–80 years of age (Baby Boomer generation). The majority of respondents had secondary education (46%), while 39.4% had higher education, 10.5% had basic vocational education, and only 4.1% had primary education. In terms of place of residence, around 25% of respondents lived in cities, towns with up to 50,000 inhabitants, and towns with 51 to 200 thousand inhabitants. When it comes to household size, 33.4% of respondents lived in two-person households, 21.7% in three-person households, and 20.3% in four-person households. Only 2.4% of respondents reported not having enough financial means to meet their basic needs, while 57% described their financial situation as average and 26.3% as good enough to afford some luxury goods. 11% of respondents reported having a bad financial situation that only covered basic products, while 3.3% of those surveyed were able to afford everything they wanted.

4. Analysis of the research results

To present the range of post-pandemic forms of spending leisure time, the scale of behavior developed by consumers during the COVID-19 pandemic was used. It was a 13-item ordinal scale with no middle value. Respondents could choose from four answers: “I use them to the full extent”; “I use them to a limited extent”; “I used them during the pandemic, but I do not use them anymore”; “I never used them.” Before starting the analysis, the scale’s reliability was confirmed using Cronbach’s α coefficient. The obtained value of Cronbach’s α of 0.772 indicates that the scale used is characterized by a high level of reliability (Tavakol and Dennick, 2011).

Upon analyzing the responses, we found that 72.3% of respondents still prefer to spend their holidays in Poland, with 26.5% utilizing this form fully and 45.8%

occasionally, as presented in Table 1. Additionally, 68.2% of respondents still watch movies and series on streaming services, with 38.2% utilizing this form fully. Although it is now possible to freely meet with other people anywhere, people-to-people contacts are still maintained online, with over 60% of respondents still using this possibility, including 19.1% fully and 41.4% occasionally. These findings align with the research conducted by the Central Statistical Office, which shows that 66.1% of people made voice or video calls over the Internet in 2020–2021, and this number decreased only slightly to 63.0% in 2022 (GUS, 2022). It is worth noting that 20.9% of our respondents used this form of contact during the pandemic but no longer use it.

The pandemic made it difficult to plan tourist trips well in advance due to changing restrictions on vaccination requirements, SARS-CoV-2 testing, quarantine, and flight cancellations, as well as closures of hotels and cultural and gastronomic establishments. Consequently, many people chose to plan their trips "at the last minute." According to the research, the majority of respondents (58.1%) still prefer planning their holidays not too far in advance, while 18.5% continue to plan extensively ahead. Meal delivery services also remain popular, with 51.8% of respondents availing of the option, including 11.5% who use it extensively and 40.3% who use it occasionally. Streaming music enjoyed wide popularity, with 23.8% of respondents listening to it extensively and 27% listening to it occasionally. However, only 10% of respondents preferred taking longer but less frequent trips during the pandemic, while 43.4% never did so. Listening to podcasts was less common. Nearly half of the respondents have never listened to them, with less than 15% of respondents still listening to them and every fourth respondent listening occasionally. Furthermore, over half of the respondents have never used apps to monitor physical activity. Therefore, it is unsurprising that only about 13% still use them regularly, and every fourth respondent declares using them occasionally. Similarly, over half of the respondents (51.7%) never used the opportunity for virtual travel, while 8.8% used it extensively which is confirmed by Lu et al. (2022). The research indicates that people still want to travel this way even after the pandemic. Online learning had mixed results, with just over 50% of respondents using it for leisure during the pandemic and 48.7% never using it. Currently, only 9.2% continue to learn online regularly, and 29% take advantage of it occasionally. Similar results were obtained in the GUS survey. Participation in an online course was declared by 8.4% in 2020, 13.5% in 2021, and 9.7% in 2022 (GUS, 2022). Our research also revealed that only 6.8% of respondents still take advantage of watching concerts, shows, and plays online to the full extent, and 27.0% use this form occasionally. Half of the respondents never used these possibilities. The services of travel agencies remain underutilized with 58.7% of respondents having never used them, while only 6.5% using them extensively and 27% using them occasionally as presented in Table 1.

Table 1. Respondents' engagement in specific leisure activities developed during the COVID-19 pandemic, categorized by gender (in %, N = 1,100)

Activity	I use it to the full extent			I use it to a limited extent			I used it during the pandemic, but I don't use it anymore			I never used it		
	T	F	M	T	F	M	T	F	M	T	F	M
Spending holidays/annual leave in Poland	26.5	25.8	27.3	45.8	47.6	43.9	10.5	9.8	11.3	17.1	16.7	17.5
Watching movies, series on streaming platforms, VOD	38.2	40.4	35.8	30.0	28.1	32.0	7.7	5.8	9.8	24.1	25.7	22.4
Maintaining interpersonal relationships online	19.1	21.1	16.9	41.4	40.6	42.2	20.9	20.9	20.9	18.6	17.4	20.0
Planning tourist trips on short notice	18.5	18.1	19.0	39.6	40.1	39.2	9.8	9.1	10.5	32.0	32.7	31.3
Ordering meals for home delivery	11.5	11.4	11.5	40.3	40.2	40.3	12.4	10.9	13.9	35.9	37.4	34.3
Listening to music via streaming services	23.8	25.3	22.2	27.0	23.2	31.1	7.5	6.7	8.5	41.6	44.8	38.2
Deciding on less frequent but longer tourist trips	10.5	10.0	10.9	36.0	35.3	36.7	10.2	8.6	11.9	43.4	46.0	40.5
Listening to podcasts	14.2	14.1	14.3	25.9	24.6	27.3	10.2	7.9	12.6	49.7	53.4	45.8
Using apps tracking physical activity	12.7	14.4	10.9	25.5	23.7	27.5	10.2	9.1	11.3	51.5	52.7	50.3
Sightseeing interesting destinations around the world online (virtual travel)	8.8	9.5	8.1	29.2	26.7	31.8	10.3	9.1	11.5	51.7	54.7	48.6
Leisure online learning (e.g., foreign language, cooking)	9.2	11.6	6.6	28.5	27.9	29.0	13.6	11.6	15.8	48.7	48.9	48.6
Watching concerts, shows, and plays online	6.8	7.4	6.2	27.0	24.1	30.1	16.2	16.5	15.8	50.0	52.0	47.8
Using travel agency offers and services	6.5	5.6	7.3	27.1	26.0	28.2	7.7	6.3	9.2	58.7	62.0	55.2

Key: T — total sample (N = 1,100); F — females (N = 569), M — males (N = 531).

Source: own study.

The data collected on the post-pandemic leisure activities were analyzed in light of the gender and generation of the respondents (Baby Boomers, X, Y, Z). The results showed that women tend to continue their pandemic leisure activities more consistently than men (Table 1). Women reported a preference for activities such as watching movies (40.4% of women's responses compared to 35.8% of men's), maintaining online relationships (21.1% vs. 16.9%), streaming music (25.3% vs. 22.2%), using physical activity tracking apps (14.4% vs. 10.9%), and engaging in online learning for fun (11.0% vs. 6.6%). In contrast, men were more likely to enjoy holidays in Poland (27.3% of men's responses compared to 25.8% of women's), plan trips in advance (19.0% vs. 18.1%), and use travel agency services (7.3% vs. 5.6%), indicating a stronger inclination towards tourism-related leisure activities. Furthermore, men were more likely than women to deviate from their pandemic leisure habits across all activities analyzed (Table 2).

When studying consumer behavior across different age groups, it was observed that the youngest generation showed the highest degree of engagement in leisure activities during the pandemic and continues to do so. They particularly enjoy streaming movies and TV shows (52.4%), listening to music on streaming platforms (47.6%), maintaining social connections online (28.0%), listening to podcasts (23.3%), and engaging in online learning for fun (14.5%). Baby Boomers, on the other hand, tend to prefer domestic vacations and take less frequent but longer trips (12.7%), while also watching concerts online (8.7%). Meanwhile, Generation X still shows a keen interest in virtual travel (11.3%), and occasionally indulges in streaming movies and TV shows (36.0%), listening to music on streaming platforms (31.3%), and utilizing travel agency services (30.2%). Finally, respondents from Generation Y indicated a higher tendency to avoid less frequent but longer trips (46.2%), not plan their trips in advance (35.6%), and not maintain social connections online (22.2%) — as presented in Table 2.

5. Conclusions, limitations, and recommendations for further research

Since the COVID-19 pandemic forced the closure of facilities offering leisure time services, increased the need to organize tourist trips well in advance and within one's own country, introduced restrictions on social contacts and the ban on leaving home, and pushed the transfer of many leisure activities to virtual space, people have begun to value their leisure time more highly and want to make the most of it. The conclusions drawn in this article provide a comprehensive overview of the impact of the COVID-19 pandemic on leisure habits and the subsequent integration of virtual activities into consumer behavior. The findings reflect a nuanced understanding of how the constraints of the pandemic have reshaped how people value and engage in leisure time. The pandemic period necessitated changes in how the leisure time is spent and organized. Leisure activities have moved to virtual spaces where people can watch movies, listen to music, play games, read newspapers and books, visit a museum, admire exciting places around the world, and make and maintain social contacts. The leisure lifestyle has not changed during the pandemic, only the place where people spend it. The research indicated that

Table 2. Respondents' engagement in specific leisure activities developed during the COVID-19 pandemic, categorized by generation (in %, $N = 1{,}100$)

Activity	I use it to the full extent				I use it to a limited extent				I used it during the pandemic, but I don't use it anymore				I never used it			
	Z	Y	X	BB	Z	Y	X	BB	Z	Y	X	BB	Z	Y	X	BB
Spending holidays/annual leave in Poland	52.4	45.5	32.4	22.5	25.8	31.3	36.0	26.9	12.7	7.3	5.5	5.5	9.1	16.0	26.2	45.1
Watching movies, series on streaming platforms, VOD	22.9	25.5	28.4	29.5	49.5	44.7	42.5	46.5	14.2	10.2	10.5	7.3	13.5	19.6	18.5	16.7
Maintaining interpersonal relationships online	47.6	25.1	14.2	8.4	26.9	26.9	31.3	22.9	9.8	7.6	6.9	5.8	15.6	40.4	47.6	62.9
Planning tourist trips on short notice	28.0	19.3	14.2	14.9	37.1	39.6	41.5	47.3	19.6	18.9	24.4	20.7	15.3	22.2	20.0	17.1
Ordering meals for home delivery	23.3	17.5	9.5	6.5	29.5	26.2	24.4	23.6	11.3	13.1	10.5	5.8	36.0	43.3	55.6	64.0
Listening to music via streaming services	18.5	13.1	11.3	8.0	31.6	24.7	26.2	19.6	14.9	12.4	8.4	5.1	34.9	49.8	54.2	67.3
Deciding on less frequent but longer tourist trips	19.6	19.3	18.9	16.4	40.0	36.0	40.0	42.5	13.1	9.1	10.2	6.9	27.3	35.6	30.9	34.2
Listening to podcasts	19.3	15.6	6.9	4.0	46.2	46.9	42.5	25.5	12.4	13.1	13.8	10.2	22.2	24.4	36.7	60.4
Using apps tracking physical activity	9.5	10.5	9.1	12.7	36.4	32.0	37.5	38.2	15.3	11.3	8.7	5.5	38.9	46.2	44.7	43.6
Sightseeing interesting destinations around the world online (virtual travel)	14.5	7.6	8.0	6.5	35.3	34.9	25.1	18.5	21.1	14.2	12.0	7.3	29.1	43.3	54.9	67.6
Leisure online learning (e.g., foreign language, cooking)	6.5	7.6	11.3	9.8	23.3	26.2	29.5	37.8	17.5	9.1	7.6	6.9	52.7	57.1	51.6	45.5
Watching concerts, shows, and plays online	7.6	4.7	6.2	8.7	26.9	20.7	30.2	30.2	18.9	16.7	15.3	13.8	46.5	57.8	48.4	47.3
Using travel agency offers and services	6.2	7.6	5.8	6.2	19.6	28.7	30.2	29.8	10.9	6.2	7.6	6.2	63.3	57.5	56.4	57.8

Key: Z — Generation Z (18–24 years of age) ($N = 275$), Y — Generation Y (25–39 years of age) ($N = 275$), X — Generation X (40–59 years of age) ($N = 275$), and BB — Baby Boomer generation (60–80 years of age) ($N = 275$).

Source: own study.

online forms of spending leisure time have become ingrained in consumer behavior, which confirms the adopted research assumption. Watching movies on streaming services, which has become an alternative to going to the cinema, was still declared by 68.2% of respondents. Additionally, maintaining social connections online has become a common way of spending leisure time for many people, with 60.5% of the respondents stating that their relationships with family and friends have moved to a virtual level as a result of the pandemic. Despite the freedom to choose a destination and the possibility to plan a trip in advance, the respondents' declarations show that more than half of them still plan their holidays on short notice, and 72.3% still spend their holidays domestically, in Poland. More than half of the respondents also appreciated the convenience of home delivery. However, from the consumer's point of view, the same meal eaten in a restaurant satisfies other needs than just basic hunger. In conclusion, it should be noted that the findings presented by the author are limited, due to the fact that the survey covered only selected forms of spending leisure time when the state of epidemic threat had not yet been lifted. Moreover, the research was conducted through an online survey among Internet users, which could have influenced the high tendency of the respondents to spend their leisure time on the Internet. Therefore, it would be important to repeat the research in the future, using in particular in-depth research techniques and diagnosing whether the actual forms of spending and organizing free time described in this article have been rooted in consumer behavior after pandemic. It is important to note that the presented conclusions have been formulated solely based on descriptive statistics from the surveyed sample, therefore these findings cannot be generalized to the whole population.

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Paweł Waniowski
ORCID: 0000-0002-8054-984X
Wroclaw University of Economics and Business
pawel.waniowski@ue.wroc.pl

Changes in the lifestyle of Polish students as a result of the COVID-19 pandemic in the light of direct research

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Abstract

The COVID-19 pandemic has caused significant changes in the lifestyles of all social groups. As a result of the subsequent restrictions resulting from the epidemic threat, all areas of both professional and private life had to be modified. Students were a social group whose lifestyle changes were particularly visible. For most of this period, universities conducted classes remotely, using Internet platforms. Therefore, it was necessary to make changes in the current way of life, often associated with a change of place of residence, modification of the way of spending free time and current habits. A significant part of these changes may be permanent and remain after the end of the pandemic state or threat.

The aim of the paper is to analyze the changes in the lifestyle of Polish students in the light of our own surveys addressed to them. The students' opinions on the changes in the way of acquiring and testing knowledge, in relations with the university and peers, and in the process of communicating with them will be presented and critically assessed. Changes in the process of nutrition, healthcare, including the length of sleep and physical activity, and the pursuit of one's own interests will also be taken into account. The conclusions of the research will be confronted with the results of other studies and analyses devoted to various problems of lifestyle changes under the influence of COVID-19.

1. Introduction

The rapid spread of the COVID-19 pandemic, followed by attempts to minimize its effects, resulted in significant changes in people's behavior worldwide, including their lifestyle. Restrictions on the possibility of movement and interpersonal contacts, the introduction of a sanitary regime in places of work and study, as well as in shops and service points, and the dissemination of remote forms of business and private contacts must have had a significant impact on our everyday behavior. This concerned all social and professional groups, but especially young people, including students. During the COVID-19 pandemic, universities conducted classes remotely using online platforms. Therefore, students had to make changes in their current lifestyle, often associated with a change of place of residence, modification of the way of spending leisure time and current habits. Looking from the current perspective, it can be seen that some of these changes are permanent and have remained until today, after the state of the pandemic or pandemic threat has been canceled.

The COVID-19 pandemic should be treated as a serious crisis situation that significantly affected almost all areas of socio-economic life. On the one hand, it increased the importance of regulations adopted centrally by state authorities, and on the other, the need to adapt to them and modify daily life in such a way that it was possible to achieve one's own life goals in significantly changed conditions. Decisions made by the state authorities were often criticized for inconsistency and, above all, unpredictability, which directly influenced the shaping of activities in the field of everyday behavior, activities, and habits.

The aim of the paper is to analyze changes in the lifestyle of Polish students in the light of our own survey research. The students' opinions on changes in the way of acquiring and testing knowledge, in relations with the university and peers and in the process of communicating with them will be presented and critically assessed. Changes in the process of nutrition, healthcare, including the length of sleep and physical activity, and the pursuit of one's own interests will also be taken into account. The conclusions of the research will be confronted with the results of other studies and analyses devoted to various problems of lifestyle changes under the influence of COVID-19.

2. Theoretical framework of the research

Lifestyle, a term used since the mid-eighteenth century, was initially associated with a manner of expression (Ansbacher, 1967). Nowadays, lifestyle is treated as a set of habits aimed at some desired goals (Jensen, 2009), as a set of daily behaviors specific to a given individual or community, i.e., a characteristic way of being that distinguishes a given community or individual from others (Siciński, 2002), or as a culturally conditioned way of meeting the needs, habits and norms that are regulated by the values adopted by individuals and social groups (Fatyga, 2012). The modern understanding of lifestyle comes from two types of sources: economic-sociological and psychological-medical. In the first approach, it is a specific feature of a given group and includes behaviors that distinguish it from other groups, primarily in the area of individual and social consumption. In the second approach, this concept is located in the psychological disciplines in the context of health and, in particular, patterns of behavior, activities, and habits related to maintaining, restoring, and improving health (Brivio et al., 2023). It can even be argued that lifestyle is the main factor determining the health of individuals and social groups.

Lifestyle, as a set of everyday behaviors, activities, and habits, is primarily concerned with:

- a way of nutrition,
- undertaken physical activity,
- shaping social relations,
- stress management skills,
- the use of stimulants,
- avoidance of risk factors.

Lifestyle, culturally conditioned, although changing over time, is a reflection of the quality of life and a reflection of patterns of behavior, hierarchy of needs, and motives for action. Therefore, it facilitates or hinders the creation of social bonds. It should also be emphasized that it is, on the one hand, the result of preferences and choices and, on the other, real opportunities for their implementation.

3. Research methodology

In the direct research, the survey method was applied, and the research sample consisted of second-cycle students from Wrocław universities, one university from Legnica, and one from Zielona Góra. The study was conducted in the first quarter of 2023 and the sample consisted of 422 people. It was a homogeneous group in terms of demographics — the age of over 90% of the respondents was between 22 and 25 years, and the rest between 26 and 29 years. There were 226 women and 196 men among the respondents, but the analysis of the results did not show any significant differences depending on gender.

Students seem to be a social group that has suffered a lot from the need to change their lifestyle. Studies on the impact of previous pandemics (although not global, such as SARS in 2002–2003 and Ebola in 2014) showed that accepting restrictions did not only apply to the fear of contracting the virus, but also to many other areas of life (Barbisch, Koenig and Shih, 2015). Among these, young people were particularly affected by restrictions on freedom of movement, use of sports and recreational facilities, participation in gatherings, and uncertainty about the future.

Respondents were asked to express their attitudes towards changes in lifestyle, to determine the impact of the COVID-19 pandemic on changes in eating and substance-related habits, and finally to share their opinions on whether the pandemic had a significant impact on changes in their life values.

4. Results of the direct research

In the first part of the face-to-face survey, a 5-point Likert scale was used and respondents were asked to express their attitudes towards lifestyle changes that resulted from the COVID-19 pandemic (Table 1). First, they were asked to express their views on the attitudes towards lifestyle changes. Most respondents agreed with the general statement that the introduction of restrictions resulted in a significant change in behavior, although at the same time more than ⅓ had no definite opinion. The impact of the pandemic on lifestyle was particularly visible among young people, who often experienced emotional problems, mainly due to the need to isolate and limit contact with peers (Zemrani, Gehri, Masserey, Knob and Pellaton, 2021). In studies conducted among adults, 30% declared a change in their lifestyle to a healthier one or started to consider introducing such changes (Olearczyk and Walewska-Zielecka, 2021).

The pandemic affected behavior in different areas in various ways. While less than half of the respondents changed their diet and a significant proportion (38%) disagreed with the statement about changing their diet, only 20% did not change their attitude to physical activity and half of the respondents admitted that the pandemic positively influenced their activity. Previous studies showed that even when sports facilities were unavailable or the possibilities of using them were limited, almost ¾ of the Poles did not give up their current physical activity and continued it if possible (Benefit Systems, 2020).

Table 1. Attitudes towards lifestyle changes

	1	2	3	4	5
The restrictions related to the pandemic caused a significant change in my behavior	1	11	35	38	15
I changed my way of eating because of the pandemic	9	29	19	28	15
The pandemic had a significant impact on my attitude towards physical activity	8	12	30	42	8
The management of the pandemic and the mistakes made increased my interest in socio-political issues	16	18	24	27	15
The pandemic had a positive impact on my environmental awareness	11	18	44	15	12
Negative events related to the pandemic made me think about my life in the long term, not just in the short term	4	32	15	39	10
Due to the pandemic, I had a desire to reduce excessive consumption	12	42	28	11	7
I shop more online these days	20	7	7	25	41
I prepare meals at home more often than before the pandemic	27	33	20	10	10
As a result of the uncertainty related to the development of the situation during the pandemic, the importance of a good education has increased in my hierarchy of values	22	33	26	16	3

Monitoring my health and preventive examinations are higher in the hierarchy of my needs than before	4	11	25	34	26
Since the pandemic, I rarely reach for stimulants	26	29	16	8	21
Problems related to communication and the development of remote forms caused a permanent change in the way I communicate with friends, acquaintances, and family	9	21	18	43	9
Remote work and/or learning implemented out of necessity during the pandemic should remain at least partly permanent	3	1	2	33	61
Since the end of the pandemic, I try to rest more	9	19	23	41	8
I care more about the length and quality of my sleep	13	20	27	31	9
The pandemic increased my resistance to stressful situations	30	34	9	18	9
So much time has passed since the end of the pandemic that my level of concern for health and physical activity has returned to the state before 2020	15	26	34	17	8

Note: 1 — strongly disagree; 2 — rather disagree; 3 — hard to say; 4 — rather agree; 5 — totally agree.

Source: own surveys.

The responses regarding the increased interest in socio-political problems and environmental awareness were also varied, which may mean that these spheres of life were perceived by the respondents in very different ways, probably depending on their previous interests.

In the period of the pandemic restrictions and reports of a severe course of the disease, often resulting in death, it seems reasonable to ask about the tendency to think about life in the long term. In this case, almost 50% of the respondents agreed with the statement that this was how they started to think about their lives. However, a definite minority declared their willingness to reduce excessive consumption. For more than half of the respondents, the pandemic and the related negative impact it had on their everyday lives did not constitute an impulse to rationalize this sphere of life, which was encouraged at that time by numerous initiatives undertaken by various environments.

Due to the restrictions on trade and services, which remained in force for a long time, with varying degrees of intensity, it is not surprising that as many as ⅔ of respondents agreed that they now shop more online than before. This is a steady trend, albeit quite slow. However, it is pointed out that some of the habits from the period of the pandemic bans will remain permanent (Tyagi and Pabalkar, 2021, 570), not because of the need to comply with safety rules, but because of the habit and convenience of shoppers. In line with current market trends, the majority of respondents did not agree with the statement that meals are now more often prepared at home than before.

It is also interesting to note that only less than 20% of the respondents indicated that the importance of good education increased. In conditions of uncertainty, this usually constitutes an important value in the hierarchy of needs, especially that in 2020–2021, during the greatest intensification of restrictions, it was emphasized that this might not be the last pandemic that could be eradicated only by significantly limiting direct interpersonal contacts, and having a good education was more likely to allow one to perform one's professional duties remotely or with limited face-to-face contact. In this context, it should be emphasized that the absolute majority of Polish students want remote work and/or learning, implemented out of necessity in 2020, to remain, at least partially, permanent. To this day, in many universities, some classes are still conducted online, and various types of office work are also carried out remotely.

The next issue is also related to the way of shaping interpersonal relations. Half of the respondents (although only 9% definitely) agreed with the opinion that the pandemic had changed the way they communicate with family, friends, and acquaintances.

A positive change in lifestyle is the increased importance of the need to monitor one's health and undergo preventive examinations, indicated as significant by 60% of respondents. On the other hand, a similar majority of respondents (57%) disagreed with the statement that they had been using drugs less frequently since the pandemic.

Opinions of the respondents regarding the length and quality of sleep were mixed, and more unambiguous regarding the need for longer rest. In this case, almost half of the students agreed with the opinion that they had been trying to rest more since the pandemic. However, the vast majority, almost ⅔, did not notice that the pandemic increased their resistance to stressful situations.

At the end of this part of the research, attention was drawn to the importance of the impact of the time that has passed since the end of the pandemic, or at least since its worst period. Therefore, the respondents were to express their attitude to the statement that the level of concern for health and physical activity returned to the state before 2020 and only ¼ of the respondents agreed with it. Many more respondents disagreed or were unable to express an unambiguous opinion. This may mean that in this case these changes will be permanent, so that the behaviors shaped during the relatively short period of the pandemic restrictions will become a permanent habit.

Due to the fact that lifestyle-related behaviors are expressed primarily in eating habits, the respondents were asked about the change in the amount of food consumed. Five basic categories were distinguished: fruit, vegetables, fish and seafood, meat and sausages, and dairy products (Table 2). In each of these groups, the majority of respondents assessed that the pandemic had no impact on the amount of products consumed. This is probably due to the fact that for many years we have been dealing with various campaigns promoting healthy eating in Poland and some habits have already been developed, and during the pandemic this was not the most important problem. Among the remaining people, however, efforts to rationalize their consumption can be noticed, as the answers about the current higher level of consumption of vegetables and fruit, and lower consumption of meat and sausages, were much more frequent.

Table 2. Changes in dietary habits as a result of the pandemic

Food category	Change compared to the pre-pandemic period		
	I eat more now	I eat less now	No change
Fruit	32	9	59
Vegetables	34	8	58
Fish and seafood	19	14	67
Meat and sausages	8	27	65
Dairy products	17	11	72

Source: own surveys.

An important determinant of lifestyle is the use of stimulants. The survey asked the respondents about changes in alcohol and cigarette consumption compared with the period before the pandemic. 13% increased their alcohol consumption during the pandemic and 9% decreased it. The rest declared that they did not drink at all (16%) or stated that the pandemic had not affected their consumption of alcoholic beverages at all (50%). An even smaller percentage of the respondents considered that the intensity of tobacco use changed during the pandemic (6% took up and 4% gave up smoking during the pandemic). Considering that the study involved young people, characterized by high variability over time in the use of stimulants, it can be concluded that the problems related to the pandemic were not a significant impulse for changing habits in this area. In the studies conducted in the Netherlands after the first wave of the pandemic, attention was also drawn to a large diversity of attitudes, from people who under the influence of the pandemic made positive changes in their lifestyle to a smaller group whose pro-health behavior deteriorated (van der Werf, Busch, Jong and Hoenders, 2021). Therefore, it can be concluded that crisis situations, such as a pandemic, may be an impulse for some to change their lifestyle in a health-promoting direction, while for others, e.g., the additional stress, may increase the consumption of goods and stimulants that have a negative impact on health. It is also noted that health problems may worsen in the long term and, in general, the pandemic has made it difficult for many people to strive to improve their health and general well-being (Hansel, Saltzman, Melton, Clark, and Bordnick, 2022).

Lifestyle, as mentioned, is a collection of different behaviors, activities, and habits. For many people, crisis situations lead to changes in the perception of various values that are taken for granted in everyday life. Table 3 presents changes in the perception of various life values as a result of the pandemic. For more than half of the respondents, the role of health and physical activity increased the most. These values were appreciated, especially when the media reported on the severe course of the disease and the high risk of death, and when sports facilities were closed and the possibility of exercising was limited to prevent the spread of the virus. For almost half of the respondents, the importance of family ties has increased, which is usually the case in serious crisis situations. Over ⅓ of the respondents pointed to the increased importance of money, and over ¼ indicated work, probably due to uncertainty about the future. Changes regarding the importance of friends, the role of one's own interests or travel were more diverse. In addition to the increase in the importance of these values, there were also opinions about a decrease in their role due to the pandemic.

In the case of faith and recognition in the eyes of others, apart from the majority for whom the importance of these values had not changed, there were a lot of opinions about a decrease in their importance due to the pandemic.

Table 3. Change in life values due to the pandemic

As a result of the pandemic, the role of:	increased	decreased	didn't change
Work	27	1	72
Money	35	0	65
Family	49	0	51
Friends	31	11	58
Own interests	28	12	60
Travels	26	23	51
Faith	4	24	72
Recognition in the eyes of others	5	21	74
Taking care of health	62	4	34
Physical activity	55	1	44

Source: own surveys.

However, it should be emphasized that apart from concern for health and physical activity, the majority of responses stated that their attitude to life values had not changed. This may mean that for many young people the pandemic was not a permanent threat which could significantly affect their life values in the long term.

5. Conclusions

Lifestyle is an interdisciplinary category. Therefore, it can be understood in different ways and manifested in various behaviors. On the basis of the presented research, it is not always possible to clearly identify the factors that had the greatest impact on changes compared to the pre-pandemic period. One can only indicate the areas related to students' lifestyles on which the COVID-19 pandemic had a positive, negative or neutral impact. However, the fact is that many students are trying to make changes in their lives, especially in terms of healthcare, better nutrition, physical activity or free time. Similar results were obtained in studies conducted among students of medical universities, which additionally stated that a better financial situation, more physical activity, and better reported health were the key factors improving the students' quality of life (Szemik, Gajda, Gładyś and Kowalska, 2022). One can also notice some attitudes going in the opposite direction, e.g., an increase in the consumption of stimulants due to the intensification of stressful situations.

However, the biggest changes occurred in the perception of online contacts. The vast majority of students would like remote learning and working to remain permanently, and a significant proportion of them declared an increase in the frequency of online shopping. The pandemic also initiated changes in the ways of communicating with family, friends, and acquaintances, as the role of instant messaging increased significantly.

The pandemic was a surprise for the whole world since never before had such extensive actions been undertaken on a global scale, requiring the cooperation of so many countries. Decisions were made in haste, often without prior preparation. It seems that people's actions may also have been spontaneous, and from the current perspective, it is difficult to assess the durability of lifestyle changes. Therefore, the results of subsequent, more in-depth studies will be able to determine whether the changes in behavior will persist in the long term, or whether they return to the original state after some time. The results of these studies should also become an impulse to think about the use of various potential epidemic threats, but also those related to the natural environment, to encourage action in the field of improving healthy behavior.

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Aleksandra Perchla-Włosik
ORCID: 0000-0002-2049-1009
University of Wroclaw
aleksandra.perchla-wlosik@uwr.edu.pl

Pleasure, impulse, compulsion, and rationality in the behavior of young consumers in the context of contemporary challenges and current events

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Abstract

In modern societies, significant changes are taking place in the sphere of consumption. Consumption is no longer just a way of satisfying needs. Sometimes it can also be about experiencing pleasure (also on impulse) or relieving tension. A characteristic behavior of pleasure consumers is the spontaneous (impulsive) purchase of goods that are attractive to them. At the same time, impulsive purchases differ from rationalized purchases in that the decision to purchase a given product is made quickly and usually without deeper reflection. The purpose of this article is to try to answer the question, what is the essence of purchasing decisions in the face of the challenges of the modern world, such as the COVID-19 pandemic, the war in Ukraine and inflation? What are the shopping habits of young consumers, especially in relation to their emotional, psychological, social, and economic spheres? In light of these challenges, can one notice any adaptation strategies, "survival" strategies, rationalization of behavior, or, on the contrary, will the orientation towards pleasure, compulsive shopping, or impulse purchases dominate? The subject of this article is the consumer behavior of young people, perceived as a series of reactions to various stimuli — instincts, emotions — that inspire and mobilize them to satisfy their needs. The answers to the questions posed above were obtained by analyzing the data obtained through qualitative research using the technique of focus group interviews.

1. Introduction

The definition of consumption indicates that its most essential element is the realization of the needs and desires of individuals through certain behaviors. However, there is no doubt that in the sphere of consumption, purchasing processes are still very important (Perchla-Włosik, 2019, 98).

Purchasing and consumption behaviors do not always have clear reasons that encourage people to undertake them. Some people become attached to a brand, others more or less consciously choose products that appeal to their beliefs, and still others are ready to overpay for no particular reason (Zych, 2008, 46). At the same time, it should be noted that changes in consumer attitudes and behavior, both in the market and in other spheres of social life, are significantly influenced by the dynamics of structural changes that are constantly taking place in the market (Mazurek-Łopacińska, 2003, 15). Thus, explaining all the motives that guide consumer behavior as well as shape it is very difficult. Consumer behavior is derived from various factors that influence a person in the process of shopping. Modern theories and analyses of consumer behavior are interdisciplinary in nature. They are based primarily on psychology, microeconomics, sociology — referring to the influence of cultural and social determinants on human behavior sensu largo. In this case, sociologists also try to understand and structure market-based human behavior (Jachnis, 2007). Many researchers point to the multidimensionality and interpenetration of consumer purchase motives and the multidimensionality of motives for purchasing specific products — referring to the theory of self-determination (Ryan and Deci, 2000; Gagné and Deci, 2005), which points to the mechanisms of involvement of an individual's internal resources for the development of their personality and self-regulation of behavior, as well as to the multidimensional conceptualization of motivation, based on hierarchically ordered different levels of regulatory processes. The determinants of consumer behavior have been the subject of many studies, varying in approach and scope. These considerations focus largely on the role of psychological factors. The emphasis on these determinants is found primarily in the Anglo-American literature where factors such as motivations, needs, emotions or perceptions are assigned a special role. Other factors (e.g., income, prices, supply) are treated as purchase determinants, that constitute general constraints on consumer behavior (Evans, Jamal and Foxall, 2009; Wright, 2006 in Korneta and Lotko, 2021, 4).

2. Theoretical framework of the research

It should be noted that new trends in the consumption behavior of society are the result of changing economic, social, and cultural consumption conditions. They are understood as a specific direction of changes in consumer preferences, which is a consequence of changes taking place permanently in the market environment (Zalega, 2013, 26). These trends create the environment in which the consumer functions and, together with psychological, cultural, economic or socio-demographic determinants, determine the consumer's purchasing decisions.

The new trends observed in the consumption of Polish households include (Sobczyk, 2018, 174):

— growth and the changing structure of consumption,
— greening of consumption,
— virtualization,
— socially responsible and sustainable consumption,
— co-consumption,
— smart shopping ("smart," "clever" shopping),
— others (e.g., ethnocentrism).

A review of the literature shows that there are many more trends and new phenomena in consumption in various countries, but not all of them have occurred or are likely to occur in Polish society in the near future. These include, for example (Sobczyk, 2018, 174):

— hyperconsumption,
— democratization of luxury,
— digital abstinence,
— consumer seeker (trysumer),
— LOHAS (Lifestyles of Health and Sustainability) trend.

We can look at contemporary consumers from at least two points of view. Firstly, as seekers and creators of personal identity, who, through the market as a significant source of mythical and symbolic resources, construct identity narratives, fabricate a coherent or differentiated and often fragmented sense of self, often acting out assigned scenarios while adapting their identities to the imperatives of global consumerism (individualistic approach). Secondly, consumers are treated as producers of culture (rather than just bearers), creating feelings of social solidarity and establishing separate, voluntary, and sometimes temporary cultural worlds by dedicating themselves to common consumer interests (the issue of subcultures, novelties as contemporary, free-choice, lifestyle communities) (Arnould and Thompson 2005; Cova 1996; Kacprzak-Choińska 2011; Cebula and Perchla-Włosik, 2014). Consumption, which is more than just the act of exchanging money for goods and services, is necessary for consumers to be able to fulfill themselves in both of these spheres. When consuming products, people engage in many behaviors that are not only related to the act of purchasing. Additionally, it may occur without the act of purchase itself. Individuals can consume both material things such as clothing, but also immaterial things such as political thoughts or impressions, entertainment, etc. In this sense, fashion consumption will take place when consumers look at store displays, when they read fashion magazines and when they watch fashion TV shows. The definition of consumption indicates that its most essential element is the fulfillment of the needs and desires of individuals through certain behaviors. However, there is no doubt that in the sphere of consumption, purchasing processes are still important, and in the case of fashion, they do not only confirm recognized strategies, but often go beyond them, or take place in a different way. Modern theories and analyses of consumer behavior are interdisciplinary in nature. They are based primarily on psychology, microeconomics, sociology — referring to the influence of cultural and social determinants on human behavior sensu largo. Sociologists, in this case, also try to understand and structure market-based human behavior (Jachnis, 2007).

Many researchers point to the multidimensionality and interpenetration of consumers' purchasing motives and the multidimensionality of motives for acquiring specific brands — referring to self-determination theory (Ryan and Deci, 2000; Gagné and Deci, 2005, after Chrupała-Pniak and Grabowski, 2014), which refers to the mechanisms of involvement of an individual's internal resources for the development of their personality and self-regulation of behavior, and the multidimensional conceptualization of motivation, based on hierarchically ordered different levels of regulatory processes.

From a sociological perspective, consumption is determined by postmodern models that focus on desires, hedonism, entertainment — i.e., the relationship linking desires with identification processes. The world of diverse consumption has become a daily life for young people full of difficult choices. On the one hand, they are active consumers, and on the other, their actions are strongly determined by the influence of mobile platforms through top-down created patterns of opinion leaders (Wardzała, 2019, 79). Perhaps today's consumption culture is primarily the culture of young people, either because it is "their" culture (the one they grew up in) or because it contains elements that openly promote youth (constituting a factor of social exclusion). A certain peculiarity is that the youngest people are the most "tired" of consumption, while the oldest are the least tired. Perhaps the degree of reserve towards consumer culture is a function of the degree of "exposure" to this culture. Younger people experience the "excess" of consumer goods relatively faster (Cebula and Perchla-Włosik, 2014, 51).

We can observe several trends in current consumer behavior: attention to health, juvenilization, convenience, slowing down the pace of life, sensuality, and individualism.

An interesting aspect is juvenilization, a trend that characterizes the behavior of younger consumer groups. Among other things, it is about emphasizing their distinctiveness, individuality with the products they choose. It should also be noted that the young consumer actively seeks market information about the offers, and at the same time emphasizes their individuality in all manifestations of market or consumption activity (Wardzała, 2019, 69). In recent years, there has been a growing interest in comfort, minimizing any inconvenience, and an increase in demand for ready-made products. These behaviors are associated with an appreciation of the value of time and attention to personal and professional balance, a trend that results in a lack of consumer reflection and strongly influences the lack of moderation and time for product analysis. However, a slower pace of life is also increasingly evident among today's consumers, characterized by an aversion to mass consumption and a conscious reduction in favor of leisure time. This strongly supports the development of conscious consumption. Various categories of consumers also include those who seek pleasure. For them, shopping becomes entertainment, they pursue luxury and wealth, they pay attention to the symbolism of objects. On the one hand, they lead a healthy lifestyle, and on the other hand, they are guided by quality and usefulness, and they value branded items (Matel, 2015, 17–19).

Contemporary challenges and events such as the war in Ukraine, inflation, COVID-19, affect the behavior of young consumers. Are their decisions made rationally, or are they influenced by impulse, pleasure or compulsion? What are the factors influencing their purchasing decisions, and how can this behavior be influenced?

From the point of view of the considerations undertaken in this article, the factors that may affect consumer behavior are, in particular: impulse, compulsion, and pleasure-dictated behavior, they will be contrasted with rational behavior, which operates in a specific external and internal market environment.

Compulsive buying is defined especially in Anglo-American literature as: uncontrolled shopping, compulsive shopping, shopping addiction, excessive shopping, buying disorders, as well as shopaholism, shopomania, oniomania, etc.

It is also worth mentioning the symptoms that accompany buying addiction. The main one is bad mood and causing depressive states in the addict. It sometimes interferes with social contacts, consumes a lot of time and, above all, creates financial problems. The compulsive buyer is also aware of the lack of rationality of his or her behavior, is ashamed of it, and feels increasingly guilty due to the difficulty in controlling their impulses and behavior. The literature on the subject also provides specific symptoms that can be used to diagnose an addict more easily (Ertmańska, 2012, 189; Woronowicz, 2021, 265–267).

At the same time, it is worth noting that the COVID-19 pandemic and the associated isolation ("pandemic lockdowns") of young people may have had a significant impact on the increase in mental health problems and related compulsive behavior and addiction to buying (Dojwa-Turczyńska and Wolska-Zogata, 2020). This is also the thesis claimed in this study.

Compulsive buying is often incorrectly identified with impulsive buying. The following summary highlights important differences between compulsive and impulsive buying.

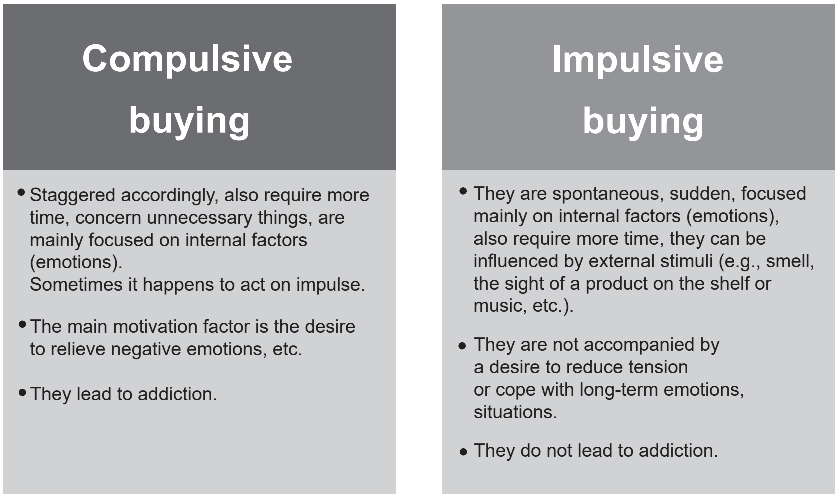

Figure 1. Compulsive shopping versus impulsive shopping

Source: own compilation based on: Rook and Hoch, 1985; Gąsiorowska, 2001.

However, several similarities can be noted between impulsive and compulsive buying, i.e., post-purchase dissonance, emotional involvement, a sense of loss of control, and they may be related in some way, but in the respects indicated above they differ significantly.

3. Research methodology

The research is carried out within the framework of IDUB "Initiative of Excellence — Research University" under the direction of Dr. Joanna Wardzała — *Financial Exclusion of Young People in the Perspective of Compensatory Consumption During the COVID-19 Pandemic*. Throughout the project, the mixed methods approach research procedure is used — i.e., the combined use of quantitative and qualitative methodologies in a single study.

Empirical analysis, methodologically based on heterogeneous research (plural approach), in which the same research objective will be used: FGI and survey research and, in the second phase, an in-depth ethnographic study with a free-form interview (IDI).

This article uses the results of the FGI (focus group interviewing) research. The surveys were conducted from April 3, 2023 to April 5, 2023 and were the first planned in a series of surveys carried out as part of the project.

The research group consisted of people aged 18–26 who were residents of Wrocław, with 50% women and 50% men. Focus groups were held as follows:

— 2 × group of full-time working students,
— 1 × group of part-time working students,
— 1 × group of working non-students,
— 1 × group of unemployed.
A total of 39 people took part in the survey.

4. Results and discussion

The current situation (inflation, the war in Ukraine) is being felt by young people, who notice that their purchasing capacity has decreased ("that's why I also make lists for myself, because when I go shopping once a week, I can see the difference that the whole shopping used to be 100 PLN, and now it's one dinner" — full-time working students).

Some respondents try to change their shopping habits to eliminate or mitigate the effects of the current situation using the following strategies:
— shopping lists,
— less frequent visits to stores "so as not to give in to cravings,"
— comparing prices in different stores, often using promotional leaflets,
— looking for promotions on a needed product and "waiting" to purchase it at the right moment — especially when buying cosmetics,
— giving up some products, e.g., sweets, "cravings," they often think for a long time whether to buy them and giving up "there is no room for it, I give up extra things" (part-time working students),
— buying cheaper substitutes.

Other respondents do not change their habits, they do not give up what they like — they buy less.

Due to the difficult socio-economic situation, the youth have a very negative attitude towards borrowing. The fear of financial obligations stems, among other things, from the fear of "falling into debt" due to the inability to repay or the lack of knowledge of the mechanisms applicable to taking out credit, loans or installment payments: "You can fall into a spiral of debt, and get into problems."

Some of the respondents have family or friends who have taken out mortgages, very rarely people whose relatives have taken payday loans (when this happened, it was assessed very negatively — "she took 10,000 PLN to buy herself an iPhone and an Apple Watch and I told her she was stupid" (full-time working students).

The institution of deferred payments is also not very popular among respondents. Only a small number of them use this option. Rarely and only in case of unforeseen expenses or the desire to buy more clothes online, try them on and return the ones that do not fit (they would not be able to afford to buy all these things, instead they want to have a choice):

“I pay with a virtual wallet because I can buy something for myself at the beginning of the month, I buy it for zero and after 1.5 months I just pay, and I have already used it for 1.5 months. Few people use it because they think they are some scammers. And it has helped me many times. If it is not enough for this month and you extend it for another month, you only pay a maximum of 10 PLN more” (full-time working students).

“I had no money in my account and I was able to buy prescriptions, food for the animals…” (non-student working people).

These preliminary findings suggest that young people are more likely to have a more rational approach to shopping. The aversion to use credit or deferred payments suggests a prudent approach to consumption choices. This thesis is supported by the results of research relating to the issue of impulsive and compulsive shopping.

Impulse buying is not an unfamiliar topic for young people. They openly admit that there are times when they make unplanned purchases of products under the influence of a good mood, cravings, special offers, the fear that the dream item will be sold out or its price will increase, or a sudden desire to try something new.

Reaching for something extra that was not planned in the budget also occurs in moments of excitement about a visit to a store (such as IKEA or a clothing store) or the arrival of a long-awaited product (a game, a new collection of clothes from a well-known brand).

The reason for an unplanned purchase may also be the emotions that the respondents feel at a given moment, mainly the excitement connected with visiting a store, or caused by the appearance on the market of a long-awaited product (a game, a new clothing collection of a well-known brand). It can also be motivated by the fear that the price of a service or product will increase or that it will no longer be sold. Emotions such as nostalgia or homesickness can also motivate people, especially to buy products that respondents remember from their childhood (mainly food products). Below there are the respondents’ statements:

“I compulsively buy books when the prices drop. I was already afraid that there would be no places, that the price would go up [of workshops]. When I see that something I’ve been lurking for some time, when the price is lower I have to buy it. Excitement that the price has gone down, fear that the price will go up, joy that you took advantage of the opportunity” (full-time working students).

“The most impulsive purchases are made at game premieres or releases. I could spend all my money on it. Uff, after the purchase. After the purchase, relief, the excitement already goes down, I can play it already” (full-time working students).

It should be noted that this type of shopping involves the possibility to buy the mentioned attractions at promotional prices.

Young people aged 18–26, regardless of their financial status, type of employment or form of education, spend little on this type of shopping, they are not large purchases, but rather small items such as cosmetics, food, books, home accessories or visits to pubs/restaurants. Although these types of purchases occur among the respondents, they do not have the characteristics of a behavioral addiction — declaratively.

Shopping is an activity that can be divided according to the type of emotions it evokes:

— necessity and "unpleasant duty" (cosmetics and clothing for some respondents, mainly for men, but not only),

— pleasure, shopping mostly related to things that support hobbies, buying clothes (some women) and electronics (some men).

Negative emotions and attitudes are generated by:

— the need to wait in lines;

— a sense of tension in the store due to crowds and the rush of other people;

— constantly rising product prices;

— "clashing" with a bill at the end of a purchasing activity can reduce the enjoyment of the product itself.

Attitudes towards compulsive shopping, on the other hand, were determined by respondents' reference to the story about "Kasia" presented by the moderator:

Kasia goes shopping several times a week. She often buys under the influence of emotions and in situations when she wants to improve her mood. Shopping gives her fulfillment, she feels slightly excited and euphoric while shopping. Sometimes she buys unnecessary things. Unfortunately, when she returns home, the euphoria wears off and she feels embarrassed and often guilty. She usually hides her purchases.

Young people quickly notice Kasia's shopping addiction. At the same time, they are very quick to judge her. This is a very sad story for the respondents, and they react to it in two ways:

— compassionately, by advising Kasia to see a therapist,

— bluntly judging her, describing her as "crazy," "stupid," "pathological."

The respondents do not have contact with people who experience the problem of shopaholism, or as several people correctly pointed out, due to hiding such a condition, they may not know about it. Two people admitted that similar behavior had happened to them in the past.

5. Conclusions

The respondents have a fairly rational approach to both the purchases themselves and the money spent on them. A reduction in consumption can be noticed "holding back" — the respondents themselves point out that this is the influence of the current socio-economic situation. They have a negative attitude towards taking out loans or credit, and rarely use deferred payments. Impulsive behavior appears among the respondents, although it does not dominate the purchase process and is rather episodic in nature. The respondents use adaptive behavior related to high inflation and the war in Ukraine. The implementation of FGI research, which was carried out in the area of consumption of young people (and which constitutes the basis of the above considerations), brings with it several important methodological conclusions related to the limitations of the use of qualitative methods and techniques in social study. It should be noted that qualitative research does not make it possible to generalize the results to the entire population because they are often based on small samples of respondents. Its main goal is a deeper understanding of the phenomena studied rather than general representativeness. Moreover, the results of qualitative research are difficult to verify because they are based on the subjective interpretations of researchers and respondents. Due to the fact that the research conducted was exploratory in nature, and being aware of the resulting limitations, quantitative research (questionnaire survey) is currently being conducted, which will allow for supplementing and extending the analysis related to the nature of the consumer behavior represented by young people and related to phenomena occurring in the field of economy, international politics, and other contemporary challenges.

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Magdalena Daszkiewicz
ORCID: 0000-0003-1466-2454
Wroclaw University of Economics and Business
magdalena.daszkiewicz@ue.wroc.pl

Nostalgic consumer trends and nostalgia marketing

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Abstract

Over the last few years, we have observed an intensification of nostalgic consumer trends manifested through choices and behaviors that reflect sentimental attachments to the past. In parallel, we increasingly note a growing presence of marketing activities that tap into the emotions and experiences tied to consumers' memories. These efforts link brands and their campaigns to positive concepts or ideas from the past. Nostalgia marketing relies on evoking positive feelings about the past and applies to products, marketing communications, and brand experiences.

The article seeks to identify trends based on nostalgia, both in terms of consumer behavior and marketing practice. The author presents the essence of nostalgia marketing and the research domains on nostalgic consumer behavior. The article describes nostalgic consumer trends in the context of their determinants. It identifies nostalgic strategies and trends in contemporary marketing practice. The objectives are realized based on a literature review supported by bibliographic analysis, desk research based on available quantitative and qualitative research results, and content analysis of campaigns promoting nostalgic products and using themes and content related to nostalgia marketing. Insights on nostalgic trends and marketing approaches provide the basis for identifying practical and research recommendations.

1. Introduction

In recent years, we have observed an intensification of nostalgic consumer trends manifested through choices and behaviors that reflect sentimental attachments to the past. In parallel, we increasingly note a growing presence of marketing activities that tap into the emotions and experiences tied to consumers' memories. These efforts link brands and their campaigns to positive concepts or ideas from the past. Nostalgia marketing relies on evoking positive feelings about the past and applies to products, marketing communications, and brand experiences.

In busy, hectic, and challenging times, nostalgia through revisiting memories can provide a way to slow down, a means of escape and relaxation (Wigmore and Tuxill, 1995). This creates conditions for the development of nostalgia marketing based on recalling memories, familiar events, symbols, and products. It also ties in with the growing value of narratives based on past associations. Returning to memories and references from the past in marketing efforts is becoming a way to attract consumers seeking comfort and stability in times of uncertainty and change. For researchers and practitioners, it is important to answer the question of what drives nostalgia and how brands can utilize its power in their marketing strategy and turn it into concrete actions.

The author aims to identify trends based on nostalgia, both in terms of consumer behavior and marketing practice. The article describes nostalgia as a concept and an area of scientific research. The author identifies the essence of nostalgia marketing and determines the domains of research on nostalgic consumer behavior. The article describes nostalgic consumer trends in the context of their determinants. It identifies nostalgic strategies and trends in contemporary marketing practice. The study offers insights regarding nostalgic marketing approaches and trends, which provide a basis for identifying practical and research recommendations.

The objectives are realized based on a literature review supported by bibliographic analysis, desk research based on available quantitative and qualitative research results, and content analysis of campaigns promoting nostalgic product, and using themes and content related to nostalgia marketing. The research procedure involved three stages. The first was based on a literature review and allowed us to present the concept of nostalgia and its relevance in scientific research. The second stage incorporated the analysis of available research results published over the past three years and focused on nostalgic trends and consumer behavior. The third stage incorporated the analysis of verbal and visual content of nostalgic campaigns and online materials on nostalgia marketing practices. The selection of reports on nostalgic consumer trends and behaviors and the identification of contemporary nostalgic marketing practices was based on Google search results using keywords such as nostalgic consumer trends, nostalgic trends, nostalgic consumers, nostalgic marketing trends, nostalgia marketing, and nostalgic campaigns.

2. Theoretical background

2.1. The concept of nostalgia

As defined by the Cambridge Dictionary, nostalgia is "a feeling of pleasure and also slight sadness when you think about things that happened in the past" (Cambridge Dictionary, n.d.). Mills and Coleman (1994) defined nostalgia as the bittersweet recall of emotional past events. While nostalgic memories can be associated with pleasant or good times in the past, the fact that a person is far from that ideal situation can also cause a feeling of sadness and loss (Davis, 1979). Nostalgia combines bitterness and sweetness, but positive feelings about the past and linking them to the present can make present experiences more pleasant, lovely, and even magic (Harper, 1966; Wigmore and Tuxill, 1995).

Nostalgia, understood as a sentimental longing for the past, is as Sedikides and Wildschut (2018) maintain, an emotion with more positive than negative meaning. According to psychological research (Sedikides et al., 2015; Sedikides and Wildschut, 2018), nostalgia helps strengthen one's identity and self-continuity (a sense of connection between the past and the present) and by increasing social ties (a sense of belonging and acceptance).

Nostalgia is the consumer's emotional response to an external or internal stimulus referring to an idealized past. With that said, it does not always have to refer to personal memories and past experiences (Grębosz, 2016). The phenomenon of nostalgia also applies to those who, even if they did not experience a particular decade, return with their thoughts to those times (Wigmore and Tuxill, 1995). The past is attached to powerful symbols that consumers often use to express and even construct their identities.

The nostalgia concept refers to personal and public domains, thus the distinction between private and collective nostalgia is derived. Private nostalgia refers to those symbolic images and references to the past that, because of their source in the biography of a particular person, tend to be more specific and individualized in their references. Collective nostalgia relates to a condition in which symbolic objects and images from the past are highly public, widely shared and familiar. Under certain conditions, these symbolic resources from the past can evoke nostalgic feelings in many people simultaneously (Davis, 1979; Wigmore and Tuxill, 1995).

Considering the source of nostalgia, Baker and Kennedy (1994) distinguished real, simulated, and collective nostalgia. Nostalgia can be triggered by direct and indirect, personal and group experiences therefore Holak et al. (2006) classify nostalgia into personal, interpersonal, cultural, and virtual. The types of nostalgia referring to its reference point are presented in Table 1.

Table 1. Classifications of nostalgia related to the source of consumer experience

Author	Nostalgia types	Source (reference point)
Baker and Kennedy, 1994	real	— consumer's own direct and personal memories
	simulated	— individual experiences or memories of others, such as parents, grandparents, ancestors
	collective	— collective experiences or memories (e.g., national, historical)
Holak et al., 2006	personal	— direct personal experience and memory
	interpersonal	— non-direct experience and memory, which can come from parents, common experience and memory et al.
	cultural	— memory of groups
	virtual	— books, movies, video materials and other non-direct experiences

Source: own elaboration based on Baker and Kennedy (1994) and Holak et al. (2006).

The phenomenon of nostalgia is the subject of numerous research and scientific publications in various fields, such as psychology, sociology, history, philosophy, ethics, anthropology, tourism and hospitality management, literature and art, etc. It is also an area of interest in business research, including marketing and consumer behavior studies.

There is a noticeable increase in the presence of the topic of nostalgia in scientific research. According to bibliometric analysis using SciVal, 405 publications classified in the "nostalgia; reverie; emotion" topic cluster were published in the Scopus database in recent years (2018–2022), and from the beginning of 2023 to mid–2023 there were already 85 publications (data status as of June 30, 2023). In comparison, 244 publications were published in the period 2013–2017. This indicates that there has been an increase in interest in nostalgia issues in recent years.

2.2. Nostalgia marketing: The concept and research areas

Nostalgia has sparked curiosity and generated interest among marketing researchers and practitioners for years. The study by Rana et al. (2022) tracking the evolution of the nostalgia concept in marketing, reveals that despite the growing attention paid to nostalgia in marketing practices and research, the domain has so far lacked a solid theoretical structure. Scholars on nostalgia in marketing tend to adopt a mixed approach and relate nostalgia to various psychological, social and managerial aspects in order to construct marketing practices (Rana et al., 2022).

Many publications describe the concept and its applications, but do not explicitly define nostalgia marketing or limit its meaning to tactics. Often quoted in online sources is the definition proposed by Tran (2022), which states that "nostalgia marketing is a strategy of using positive, familiar concepts from previous decades to build confidence in new ideas and revitalize modern campaigns."

Considering the complexity of the concept of nostalgia marketing, its essence can be described as follows:

— uses associations with the past to evoke feelings of nostalgia in consumers, triggering good memories or evocations associated with a particular period;

— applies to both products, communication strategies and tactics, and the creation of brand experiences;

— relies on the strategic use of nostalgia related to branding and/or uses nostalgia in a tactical manner in selected marketing activities;

— involves using elements and aesthetics of the past to evoke positive consumers' emotions and feelings related to a particular brand, product, service or experience.

As a practice, nostalgia has been around in marketing for quite a long time, but as a separate field of research in the marketing discipline, it gained more attention in the 1990s. Rana et al. (2022) identified four research streams that have influenced the focus of inquiry in the field:

1. Various emotions evoked by nostalgic promotion, including advertising (Muehling et al., 2014).

2. Nostalgic triggers that can influence consumer attitudes, brand loyalty and purchase intentions (Muehling, 2013; Muehling et al., 2014).

3. Psychological functions of nostalgia, as the influence on the way consumers remember their past or the level of self-reflection (Muehling and Pascal, 2012).

4. Influence of consumer characteristics or affective states on responses to nostalgic advertisement (Zhao et al., 2014).

Essential to nostalgia marketing are references to consumer behavior and research conducted in this field. Scholars are trying to understand the emergence of nostalgia among consumers, conducting studies and offering implications for marketing practice. Nostalgic consumer behavior is related to needs, attitudes, preferences, purchase intentions, choices and consumption of products and services that evoke memories or references to the past.

The issue of the impact of nostalgia on consumer behavior is addressed in many scientific publications. Research studies related to nostalgia in consumer behavior address the following key areas:

— impact of nostalgia on purchasing decisions and behavior (Diamantopoulos et al., 2013; Rutherford and Shaw, 2011);

— influence of consumer characteristics on nostalgic attitudes (Grębosz-Krawczyk, 2019; Lambert-Pandraud and Laurent, 2010);

— assessment of the nostalgic attitudes of consumers towards brands (Ford et al., 2018; Grębosz-Krawczyk, 2019; Grębosz, 2016);

— impact of nostalgia on consumer loyalty (Chen et al., 2020; Toledo and Lopes, 2016);

— impact of nostalgia on consumer behavior for different product categories (Fan et al., 2020; Xia et al., 2021).

The nostalgic behavior of consumers depends on their personal, sociocultural and economic characteristics and situational context (Rana et al., 2020). The results of several studies support that the proneness to nostalgic consumer behavior varies by age (Madoglou et al., 2017; Yüce et al., 2019), gender (Akagün Ergin and Şahin, 2019; Madoglou et al., 2017), social class and identity (Hepper et al., 2014), and economic and cultural aspects (Hepper et al., 2014; Sedikides and Wildschut, 2022), among other factors. However, the relationship between different characteristics and nostalgia proneness is a topic of debate among nostalgia researchers (Rana et al., 2022).

The nostalgia marketing strategy is based on precise targeting. The literature to date indicates a strong interest in targeting primarily two groups: seniors citizens and Baby Boomers. The third group with great potential noted by the researchers in the context of nostalgia marketing is Generation Y, popularly known as Millennials. To reach these customers, the current wave of nostalgia marketing refers to time periods considered consistent with the early adulthood of members of these generations, namely the 1970s, 1980s, 1990s, and early 2000s (Rana et al., 2022). According to Ryynänen and Heinonen (2018), memories of consumer experiences can be classified into four temporal frames: light nostalgia from one's youth, strong nostalgia from childhood, recent past events, and consumption practices to be promoted in the future. Of course, consumer drivers can refer to the various sources of nostalgia identified earlier.

For strategic reasons it is crucial to pinpoint the periods that evoke nostalgia among consumers but also to comprehend the motivations and consumer preferences linked to the longing for the past. Consumers' nostalgia can serve a reflexive function linked to idealizing of desirable past and a restorative function to strengthen or improve their social ties (Keskin and Memis, 2011; Rana et al., 2020). Consumers may also engage in nostalgic behavior to bring a sense of security, identity, self-worth, and belongingness (Sedikides et al., 2015).

Nostalgia marketing efforts should bring beneficial outcomes to consumers expressed in a sense of identity and congruence with themselves. From the brands' point of view, produce positive effects related to cognitive, affective and conative responses (Rana et al., 2022). Linking marketing to positive references from past times humanizes brands, creating meaningful connections between the past and present. The use of symbolism, images and sounds from the past often evokes the positive feelings that often accompany these memories. It is also a way to build social ties through nostalgia (Friedman, 2016).

3. Nostalgic consumer trends

Nostalgia is becoming a key trend as consumers increasingly lean toward fashion, objects and culture from the past. It is a way to tap into familiar memories or appreciate the aesthetics of "things" they could not appreciate or experience before. The desire to feel nostalgia is increasingly driven by the need to feel comfortable and stable in times of uncertainty and change. Times have been and continue to be uncertain due to various factors, such as the pandemic, the war in Ukraine, the economic crisis, climate change, etc.

All generations feel nostalgia to some degree, but the newest research taken by GWI Zeitgeist indicates that it is the younger generations that are driving today's nostalgic trends (Harlow, 2023). Generation Z and Millennials are the most nostalgic. Respectively 15% and 14% of the surveyed members of these groups feel that they'd prefer to think about the past rather than the future. The results of the GWI survey indicate the periods towards which each generation feels nostalgic (Table 2). While the different generations tend to miss the years associated with their youth, it seems interesting that 37% of Generation Z say they feel nostalgic for the 1990s. That is, for the period when some of the representatives were very young, and others weren't even born yet. Nostalgia for the 1990s is also felt by 61% of surveyed Millennials and 55% of surveyed Generation X representatives. Given the stressful reality we've been experiencing over the past few years, it's not surprising that many respondents feel nostalgic for periods representing more carefree and simpler times (Harlow, 2023). The research results indicate periods to which consumers representing each generation want to return sentimentally. At the same time, they allow the identification of periods towards which different ages feel nostalgia.

Table 2. Time periods for which representatives of different generations feel nostalgic

Time period	Generation Z	Millennials	Generation X	Baby Boomers
2010s	42%	18%	n.d.	n.d.
2000s	**56%**	42%	21%	n.d.
1990s	37%	**61%**	55%	28%
1980s	21%	36%	**65%**	66%
1970s	12%	11%	28%	**67%**
1960s	n.d.	n.d.	10%	31%
1950s	n.d.	n.d.	n.d.	9%

Note: online survey conducted by GWI Zeitgeist on a sample of 6,390 in 12 markets (January 2023). Generation Z: born 1997–2006, Millennials: born 1983–1996, Generation X: born 1964–1982, Baby Boomers: born 1958–1963.

n.d. — no data available

Source: own elaboration based on Harlow (2023).

Over the past few years, many trends from the 1990s and early 2000s have experienced a revival. Nostalgic trends appeal to a wide range of consumers, either Generation Z who view the 1990s and early 2000s trends as aesthetic inspiration, or Millennials and Generation X who remember these trends from their youth (Harlow, 2023; Trend Hunter, 2023). Therefore the current 1990s revival in pop culture extends to more and more products which evoke nostalgia while still appealing to consumers.

Nostalgia has been reflected especially in fashion trends and a return to vintage clothing styles. The trend forecast for 2023 by fashion magazine *Vogue* says that nostalgia for the 1990s and 2000s will remain (Cary, 2023). It should be noted that consumers, in particular representing Generation Z, are bringing back fashion with a more body-positive attitude and are increasingly rejecting the beauty standards of the past (Harlow, 2023). Nostalgic trends with vibrant and bold colors and makeup applications are also becoming more expressive (Trend Hunter, 2023).

Nostalgic consumer trends stem not only from past experiences. A key driver of nostalgia for all generations is the media, regardless of generation, region or gender. The influence of media on nostalgic feelings is indicated by 46% of consumers surveyed. To the greatest extent, consumers' feelings of nostalgia are triggered by movies, TV shows, music and photographs. Nostalgic media messages influence consumers' feelings and moods. According to the GWI survey, 53% of respondents say they feel happy, and 40% say they feel comforted when they engage with media from the past (Harlow, 2023). This is important about the influence of the media in shaping consumer trends and the marketing use of film, music and image motifs.

Trends related to preferred music are pretty interesting. Regarding favorite music styles, each generation prefers music from the decade they grew up. Except for Generation Z, whose most favorite genre is hip-hop/rap and music from the 1990s, for many of them which were released before they were born (Harlow, 2023). Consumers are also increasingly reverting to old media carriers, using CDs or vinyl records.

It should be noted that nostalgic trends are associated with other trends. One of them is escapism The results from recent studies showed that people consume nostalgic media (including music, movies, television, books, and video games) to escape the turbulence of COVID-19 (Wulf et al., 2022). Consumers may be particularly motivated to use nostalgia-inducing media in times of crisis because nostalgia allows them to take their minds off the present (EU Business News, 2022). Therefore, not only do nostalgic themes evoke good memories, but they are also a form of escape from reality for many consumers. Nostalgia carrying the value of sentimentality thus increasingly provides tired, restless consumers with emotional escapism (Trend Hunter, 2023).

Consumer nostalgia affects more than just fashion and media. In recent years, many foods and drinks familiar from the past have returned. Consumers are therefore looking for flavors and food products from the past. Many consumers remember the joy of drinking sodas in their youth. Customers desire to recapture the flavorful, youthful experience, but not to the detriment of their own health, so they are putting pressure on brands to create better products to satisfy the nostalgia. In addition, nostalgic escapism is influencing the popularity of retro retailers, as consumers are increasingly interested in recalling the past in the places and ways they shop (EU Business News, 2022).

There is also a nostalgic return to traditional food and home cooking. It brings people together, and consumers are enjoying cooking with family, friends and even strangers. Users on various social media sites share simple and home-made recipes. These recipes are so accessible that any user can join this trend. In addition, the emotional aspect of cooking and eating has become more important in recent years. Nostalgia and the corresponding simultaneous desire for escapism and comfort are satisfied by participating in online cooking and culinary communities (Trend Hunter, 2023).

4. Nostalgia in contemporary marketing practice

Over the past few years, we can observe a noticeable increase in nostalgic marketing practices. They respond to consumer trends and concurrently stimulate, influence, and develop nostalgic consumer behaviors. Marketers use mainly product-focused and marketing communications-focused approaches in their activities.

A strategy based on nostalgic products is implemented by:

— offering consumers products from the past, their modifications or versions resembling those from the past;

— using the design, graphic motifs or period-specific styling.

A growing number of brands base their product portfolio on nostalgic connotations. A good example is the Polish brand Śląskie Oblaty, which has among its flagship products the traditional Silesian wafers — *oblaty*, as well as *kopanioki* candies, known since the late 19th century (Śląskie Oblaty, n.d.). Marketers are also introducing limited-edition replicas or products styled to resemble products of the past, as exemplified by the limited edition vintage Coca-Cola.

Brands like Nintendo are revisiting old products, including games based on new technological capabilities. Nintendo's efforts are based on giving new life to games from the 1990s. With many gamers who encountered them in their youth being parents, Nintendo is introducing the games to a new generation of future consumers, ensuring the longevity of their product and a whole new cycle of nostalgia. Nintendo is a good example of using the multi-generational strategy in marketing nostalgia (Fahey, 2022). Toys and board games from the past are also experiencing a renaissance.

Nostalgic references are also increasingly visible in the design and style of products and packaging. These apply strongly to the food and beverage market. Manufacturers of innovative products also offer models with designs evoking the past, such as smartwatches styled after classic watches.

The product-focused strategies aim at recalling positive past experiences and evoking feelings of pleasure and satisfaction associated with the purchase and use of a nostalgic product. It can also allow to strengthen the relationship with the brand by referring to shared past experiences or sentiments. It can evoke in consumers a sense of stability, associated with the brand's long history and continuity.

Brands use nostalgic approaches based on marketing communications, linking their positioning strategies and marketing campaigns to positive references from past times. Nostalgia in marketing communications is based on the following:

— storytelling, using flashbacks or references to past events, characters and lifestyles;

— appealing to popular culture and using icons, images, movies and music from the past;

— use of motifs, slogans, jingles, and graphic elements from the past;

— reuse of advertisements (remasters, remakes, re-releases).

Many brands use nostalgia in their campaigns, referring most often to the 1990s and 1980s. Campaigns styled on those of the 1990s and late 1980s are used by Nintendo, which often reuses themes, motifs, and stylistics of ads from the past. It also appeals to personal nostalgia by showing stories that may remind viewers of their own experiences in their youth, as in the well-known *Two Brothers* campaign. In the communication (Helm, 2019), Nintendo skillfully connects the past with the present through its flagship products, showing how playing together can connect people and generations.

Another example is the Ceneo's campaign referencing the vibe of the 1990s with the key message "All stores in the computer, thousands of bazaars" (Ceneo.pl, 2023). This campaign refers to the collective nostalgia associated with lifestyles of the past by relating them to the present. Similarly, past and present are merged in Ikea's campaigns inspired by the features of the late 1980s TV series, set in a scenography entirely using contemporary products (Marketing przy kawie, 2022).

Nostalgia marketing is also often a way to create content around the campaign itself. An example of this is the illustrated Mary Katrantzou's campaign launched on social media which takes inspiration from vintage holiday stamps (Williams, 2020). The Internet existence of the campaign means that it can exist in the virtual space for many years, being shared and commented on by the audience.

Media and technological development have accelerated the use of sensory-based triggers in nostalgia marketing, which can draw a stronger commitment from consumers (Chae et al., 2021). The combination of marketing and real-world experience is an important trend that is being reinforced by the development of virtual and augmented reality technology allowing brands to make greater use of nostalgia for marketing applications (Hinsch et al., 2020; Tsao and Shu, 2020).

5. Conclusions and recommendations

According to previous research, in turbulent times people feel more nostalgic than ever before. They are looking for peace, comfort, and an escape to the past, where life seemed simpler and more stable. Considering the challenging reality we have encountered in recent years, it comes as no surprise that consumers express nostalgia for eras symbolizing carefree and simpler times. Nostalgia has become a key trend in recent years, as consumers increasingly turn to culture, fashion, and objects associated with the past. People representing different generations tend to sentimentally return to the years associated with their youth. Recent studies indicate that young consumers are increasingly driven by today's nostalgic trends (Harlow, 2023).

In response to nostalgic trends, it has become increasingly common for companies to use nostalgia in their marketing practices. They seek to build emotional attachment and influence consumer preferences by linking their brands and offerings to consumers' past experiences, memories or references. Marketers evoke memories of past times and inspire nostalgic reflection through nostalgic products and marketing communication, in which storytelling and references to the stylistics and symbolism of the past play an important role.

Conducting nostalgia marketing requires a strategic approach and adequate knowledge of nostalgic consumer behavior. The development of nostalgia marketing creates challenges for research concerning the following avenues:

— impact of various factors on the effectiveness of nostalgia marketing (demographic, psychological, social, cultural);

— research in the context of different target groups and their susceptibility to nostalgia marketing activities, including various marketing strategies, tactics and elements;

— evaluation of the effectiveness of nostalgia marketing in the context of brand building, purchase decisions, consumer satisfaction, commitment and loyalty;

— application and feasibility of nostalgia marketing strategies and tactics in different contexts, such as industries, products or services.

The research findings can serve as a valuable guide for brands aiming to leverage nostalgia in their marketing endeavors. Thus, for instance, they indicate periods to which consumers representing each generation want to sentimentally return. At the same time, they allow the identification of periods towards which nostalgia is felt simultaneously by different generations. It is worth remembering that nostalgic consumer trends are not only driven by past experiences. A key driver of nostalgia for all generations is the messages reaching them through various media. Nostalgic marketing strategies, therefore, result from both consumer research and media monitoring.

Nostalgia marketing efforts should bring beneficial outcomes to consumers expressed in a sense of identity and congruence with themselves. Marketers should also comprehend the underlying motivations linked to the longing for the past. From the brand's point of view, nostalgia produces positive effects related to cognitive, affective and conative responses (Rana et al., 2022). Nostalgia marketing requires integrative thinking, which refers to combining different aspects of the past and present. A strategic approach is key, which should address brand positioning and the long-term significance of activities and their effects.

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Robert Jadach
ORCID: 0000-0001-8697-716X
Wroclaw University of Economics and Business
robert.jadach@ue.wroc.pl

Paweł Łopatka
ORCID: 0000-0002-3997-0077
Poznań University of Economics and Business
pawel.lopatka@ue.poznan.pl

The consumer behavior in the context of counterfeit products: A bibliometric analysis

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Abstract

This article aims to identify the main areas of works devoted to the topic of counterfeit goods/brands consumption and to present the dynamics of changes in researchers' interest in this subject. The research method used in the article was bibliometric analysis, complemented by content analysis of literature selected from the Scopus database. Research results: The main areas of research on the issue of counterfeit product consumption focused on 1) online consumer behavior and ethical aspects, 2) consumption of counterfeit products and brands, and 3) social aspects of consumption of counterfeit products. The earliest publications focus on purchasing behavior in the context of buying counterfeit products, followed by researchers who have focused on the ethical aspects of consuming counterfeit goods. More recent studies focus on the consumption and trade of counterfeit goods on the Internet. Conclusions: The ever-expanding global trade in counterfeit products poses a major challenge — it erodes business revenue, undermines innovation, and hampers economic growth. To effectively mitigate these phenomena, it is essential to have up-to-date knowledge of the latest scientific advances in the field. Research into the buyer behavior in the context of counterfeit goods can provide useful information for manufacturers about the scale of the problem and the possible need for remedial action.

1. Introduction

Companies with well-known brands and recognizable products are exposed to the threat of counterfeiting their goods. A company's or brand's reputation, as one of its most valuable assets, is built up over the years and needs to be actively protected against unfair competitive practices. In the face of globalization and trade liberalization, infringement of intellectual property rights is becoming increasingly common. Unauthorized trade in branded products reduces business revenues, undermines innovation, hampers economic growth and can even pose a danger to consumers themselves (EUIPO, 2020). Counterfeit goods often do not meet quality standards and may contain harmful substances or defective components. In addition, purchasers are often unaware that they are in possession of counterfeit products and this ultimately damages the reputation of the manufacturer of the original goods.

According to a report by the European Union Intellectual Property Office (EUIPO), losses caused by the presence of counterfeit goods in the European Union amount to as much as PLN 63.8 billion annually (EUIPO, 2020). They are the result of reduced revenue from direct and indirect taxes and social security contributions, which are unpaid by dishonest producers. The range of goods affected by counterfeiting is wide and includes common consumer goods (food, toys, cosmetics), business products (electronic machinery, optical and medical equipment) and luxury products (watches, perfumes, jewelry) (OECD-EUIPO, 2019, 47).

Although the range of counterfeit goods covers virtually all product categories, the fraudsters' targets are most often products from well-known (widely recognized) global brands. It should be noted that the online environment is characterized by the ease of coping the work of others and the generally high anonymity of users, therefore buyers face difficulties in assessing the authenticity of products. In order to effectively counter the above mentioned phenomena, it is necessary to have up-to-date knowledge of why consumers decide to purchase counterfeit goods (learning about purchase motivations). In addition, identifying and fully understanding key developments and being aware of the latest trends in this issue can help researchers design better future research. For the companies, on the other hand, learning about the motives for buying counterfeit goods allows them to better monitor the market and competition, and identify and better respond to potential threats. It should be added that knowing why some people consciously (or not) choose counterfeit products enables companies to better protect their brand reputation and good corporate image, and take initiatives to educate consumers about the socioeconomic harms of such practices.

The aim of this article is to identify the main areas of works devoted to the topic of counterfeit goods/brands consumption and to present the dynamics of changes in researchers' interest in this subject. This article is structured as follows. First, we discuss the methodology and procedure for conducting the study using the VOSviewer software. Secondly, we present the results of the study, describing and discussing the focus of the research areas dedicated to counterfeit purchasing. Finally, in the conclusions section, we present the main findings and limitations of the study.

2. Research methodology

To achieve the objectives outlined above, we used a research method of bibliometric analysis, complemented by a content analysis of the literature. These methods are commonly used in works dedicated to examining the current state of research in a wide variety of research areas, including but not limited to the issues of prosumption (Shah et al., 2020), corporate social responsibility (Ejdys, 2016), or marketing communication (Rocha et al., 2020). The bibliometric analysis process adapted the different steps previously proposed by Ejdys (2016) and Karakose et al. (2021). To carry out the bibliometric analysis, we followed the three-step procedure outlined in Table 1.

Table 1. The research process used in this article

Stage 1 Search and identification	Selection of the core literature from the Scopus database. Records identified through Scopus database (*N* = 79).
Stage 2 Data export	From the 79 records obtained, full Scopus database data were exported, including: citation information, bibliographical information, abstracts, and keywords.
Stage 3 Bibliometric analysis	A bibliometric analysis supplemented by a content analysis of the literature was carried out.

Source: own study.

2.1. Stage 1: Search and identification

This stage involved selecting a core list of academic articles that address the consumption of counterfeit goods included in the Scopus database. We chose the Scopus database because it is considered the largest abstract and citation database of peer-reviewed literature (Dias et al., 2019). This database contains more than 60 million records and includes more than 21,500 peer-reviewed journals and more than 5,000 publishers in various scientific fields (Dias et al., 2019). Moreover, as Mongeon and Paul-Hus (2016) point out, the coverage of journals included in the Web of Science (WoS) in the social sciences, arts and humanities is relatively low. Noteworthy, the research concerns articles investigating buyers' conscious and unconscious behavior towards counterfeit products. In addition, the research applies to all types of counterfeit goods and is not limited to a specific mode of purchase (online/off-line). We used keywords related to the consumption of counterfeit products and brands, taking care also to include word variations in English (British and American). The query and keywords used are presented in Box 1.

Box 1. Search string

TITLE-ABS-KEY (“counterfeit products” OR “counterfeit brands” OR “counterfeit goods” OR “fake goods” OR “fake brands” OR “fake products” OR “imitation merchandise” OR “knockoff items” OR “pirated goods” OR “counterfeit merchandise” OR “unauthentic items” OR “counterfeit consumer goods” AND (“customer behavior” OR “consumer behaviour” OR “buyer behavior” OR “buyer behaviour” OR “purchasing patterns” OR “shopping habits” OR “customer decision-making” OR “consumer choices” OR “purchase motives” OR “buying factors” OR “purchase drivers” OR “shopping motivations” OR “consumer attitudes” OR “consumer attitude” OR “customer perceptions”)) AND (LIMIT-TO (DOCTYPE , “ar”) OR LIMIT-TO (DOCTYPE , “cp”) OR LIMIT-TO (DOCTYPE , “re”)) AND (LIMIT-TO (LANGUAGE , “English”))

Source: own study.

The above keywords were used to search for titles, abstracts, and keywords (searches were conducted in June 2023). Only records covering documents published in scientific journals, conference proceedings or reviews were analyzed (we excluded book chapters). In addition, we limited the search to documents written in English only, did not specify a time frame for publication and did not apply limits to the subject areas that the Scopus database classifies articles. The search process conducted in this way led to finding 79 papers on the issue of the consumption of counterfeit goods.

2.2. Stage 2: Data export

From the 79 records found in the Scopus database, we exported the full bibliometric data including: citation information, bibliographical information, abstract and keywords, funding details, and other information to a summary file in CSV format.

2.3. Stage 3: Bibliometric analysis

We subjected the exported data from the Scopus database to bibliometric and content analysis. As part of this step, we conducted a time series analysis to present the number of publications in the Scopus database over different time periods. In addition, we identified the scientific journals that published the most papers on the consumption of counterfeit products. In the next step, we conducted a co-occurrence analysis of keywords — for this purpose, keyword association intensity maps were produced using VOSviewer version 1.6.19 for all 79 publications extracted from the Scopus database. VOSviewer is a software for constructing and visualizing bibliometric networks based on data from databases such as Scopus, Web of Science or PubMed (VOSviewer, 2023). It is widely used by researchers for mapping research areas (Ejdys, 2016; Jun et al., 2018; Zema and Sulich, 2022).

The process of generating the maps using the VOSviewer software involved three steps: 1) extracting keywords that occurred at least 3 times in bibliometric descriptions. Of the initial 447 keywords, 36 were identified that met this requirement; 2) removal of keywords that only referred to the research methodology used, e.g. 'questionnaire', or generic words such as "article" or "marketing." This resulted in a final total number of 32 keywords; 3) generating a map showing the intensity of the links between the identified 32 keywords (see Table 3) among all 79 publications extracted from the Scopus database. A content analysis of the literature was also conducted to identify and discuss consumer motivations for purchasing counterfeit goods.

3. Results and discussion

The first stage of the bibliometric analysis was a time series analysis, which shows the number of published papers on the consumption of counterfeit products by year deposited in the Scopus database (see Figure 1).

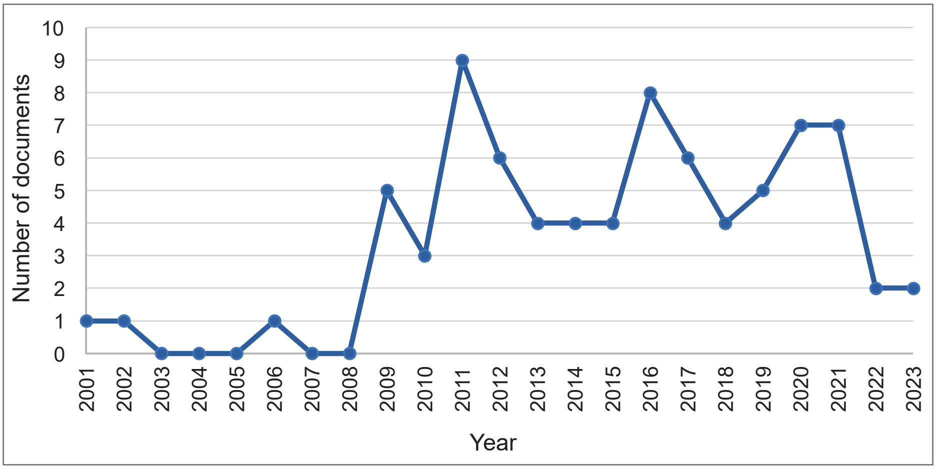

Figure 1. Number of publications on the issue of counterfeit product consumption in the Scopus database

Source: own study based on the Scopus database.

As presented in Figure 1, the greatest interest in the topic of consumer buying behavior towards counterfeit products was between 2010 and 2021. Although we did not specify a publication timeframe in the Scopus database literature review criteria, the first paper on this topic was published in 2001 under the title "Spot the difference: consumer responses towards counterfeits" (Ang et al., 2001). In the aforementioned paper, the authors conducted a study of consumers' motivations for buying counterfeit and pirated works. The main finding was that consumers who bought counterfeit music CDs perceived such practices as less risky, trusted the shops offering such products more and did not perceive them as a bad practice. We also conducted an analysis taking into account the possibility of categorizing articles according to keywords using the filters available in the Scopus database. Most articles related to consumer motives for buying counterfeit products analyze attitudes or purchase intentions (Bupalan et al., 2019; Kim et al., 2016; Souiden et al., 2018).

After completing the time series analysis, we carried out an identification of the journals in which the largest number of papers on consumer aspects of buying counterfeit products were published. Table 2 shows the list of the top ten journals in which the largest number of papers on the analyzed topic are located.

Table 2. Number of publications on the issue of counterfeit consumption in the Scopus database

No.	Journal	Publications	SJR*
1	*Asia Pacific Journal of Marketing and Logistics*	3	0.994
2	*Journal of Business Ethics*	3	2.590
3	*Journal of Global Fashion Marketing*	3	0.858
4	*European Journal of Marketing*	2	1.630
5	*Industria Textila*	2	0.254
6	*International Journal of Supply Chain Management*	2	0.190
7	*Journal of Brand Management*	2	1.090
8	*Journal of Consumer Marketing*	2	0.845
9	*Journal of Fashion Marketing and Management*	2	1.271
10	*Journal of Pharmaceutical Health Services Research*	2	0.234

* SJR — SCImago Journal Rank

Source: own study.

By examining Table 2, several noteworthy observations can be made. Firstly, no specific journal stands out as a predominant publisher of papers on the subject of counterfeit product consumption. In simpler terms, there isn't a single leading journal that clearly takes the lead in publishing scientific papers on this topic. Secondly, there is a significant dispersion of publications across various journals, some of which may even cover unrelated themes. This phenomenon could be attributed to the complexity of the issue surrounding counterfeit product consumption, as it encompasses diverse aspects ranging from consumer psychology to ethics and brand management.

With the above in mind, researchers focus on different aspects of this topic and publish their work in journals with a variety of topics (including specialized journals). Hence, on the top 10 list, there are trade journals — focused on the sectors most affected by aspects of IPR infringement through counterfeiting, e.g., *Journal of Global Fashion Marketing* and *Industria Textila* (clothing) or *International Journal of Supply Chain Management* (supply chain).

The next step was to identify the focus areas of the work dedicated to the topic of counterfeit goods/brands consumption. To this end, we developed a map of the intensity of the links between the 32 keywords identified (see Figure 2). The allocation of a keyword to a cluster is done by analyzing the co-occurrences of words in the text and their importance. VOSviewer constructs maps based on a co-occurrence matrix — these techniques have been described in more detail in earlier studies (e.g., Van Eck and Waltman, 2010).

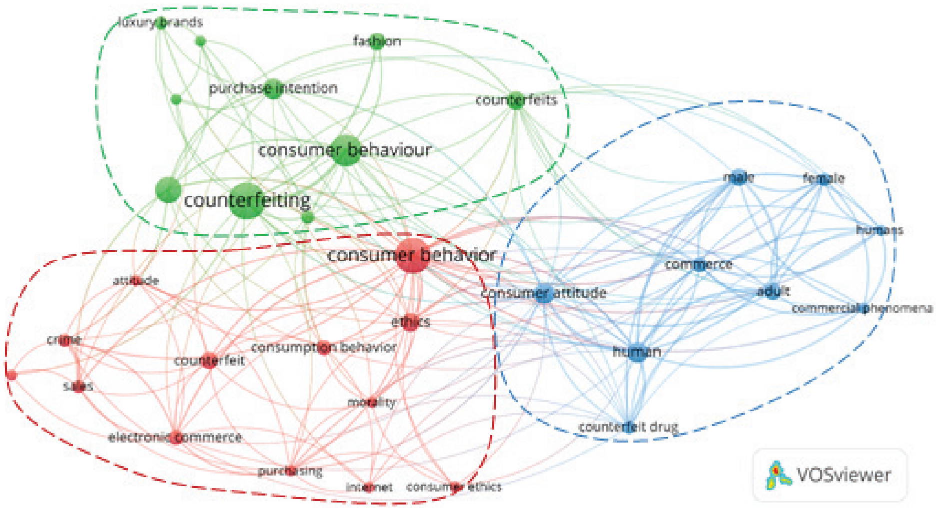

Figure 2. Intensity map of the links between keywords retrieved from the Scopus database

Source: own study.

As can be seen in Figure 2, the research on the issue of counterfeit consumption is concentrated in three areas, which were identified and organized by the VOSwiever software. The larger the circles shown in the figure above, the more frequent the keywords in question are among the 79 publications included in the Scopus database. Furthermore, the closer together the keywords are placed, the more often they appear together. In Table 3, we present a detailed set of keywords that are divided into clusters. This table complements Figure 2.

Table 3. Keywords grouped into clusters shown in Figure 2

Cluster	Color	Research area	Keywords
1	Red	Online consumer behavior and shopping ethics	attitude; consumer attitudes; consumer behavior; consumer ethics; consumption behavior; counterfeit, crime; electronic commerce; ethics; internet; morality; purchasing; sales.
2	Green	Consumption of counterfeit products and fashion brands	consumer behavior; counterfeit goods; counterfeit; products; counterfeiting; counterfeits; fashion; luxury brands; Malaysia; piracy; purchase intention.
3	Blue	The social aspects of consuming counterfeit products	adult; commerce; commercial phenomena; consumer attitude; counterfeit drug; female; human; humans; male.

Source: own study.

As we have presented in Table 3, we named the first research area "Online consumer behavior and shopping ethics." It addresses the purchase of counterfeit goods online, the factors that drive the buyer to such practices and, ultimately, the marketing implications of this phenomenon. Research by Mróz (2016) suggests that Polish consumers use pirated content, counterfeit products, and services mainly for financial reasons (high prices of the original goods, low income) and usually involve unauthorized use of music and films. In contrast, the researchers Islam et al., (2021) found that materialism and consumer novelty-seeking have a significant positive impact on the internet use and attitudes towards buying counterfeit products. This area of research also touches on the ethical aspects of buying counterfeit products. An interesting finding is provided in a study by Souiden et al. (2018), which found that ethics and religiosity influence the consumption of counterfeit goods.

The second research area has focused on the topic of consumption of counterfeit fashion products and brands. In this area, research has focused on the analysis of personality factors in the purchase of brands (Ting et al., 2016), some studies analyze consumer purchasing behavior for specific product categories such as clothing (Mayasari et al., 2022), luxury goods (Wang et al., 2023), or sunglasses (Singh et al., 2022).

The third research area covers the social and psychological aspects of counterfeit product consumption. In this research, the authors argue that the propensity to consume counterfeit products "is informed by differences in psychological states of social power and on levels of product conspicuousness (readily displayed vs. more privately consumed)" (Bian et al., 2015, 37–38). In other words, luxury brands, by exuding the visibility of their products, e.g. through a prominent logo, make the people surrounding the consumer see the product they own and thus form an evaluation of it. An interesting finding is provided by a study conducted by Gültekin (2018), in which it is the love of money that positively influences the intention to purchase counterfeit products.

In order to recognize the latest trends, we have created a map (see Figure 3), which is a useful tool for analyzing the most recent trends in research on the consumption of counterfeit products. This map allows us to classify research publications using a time scale (Shvindina, 2019).

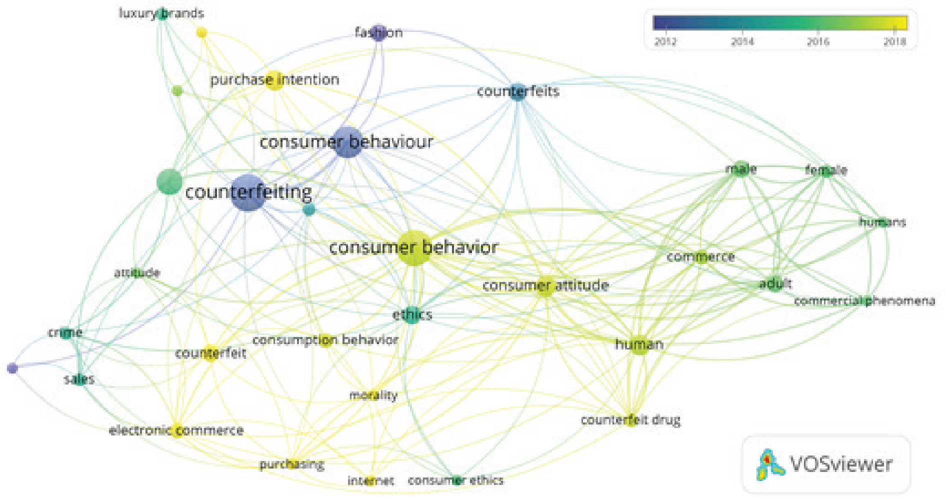

Figure 3. Keyword link intensity map with overlay visualization

Source: own study.

In the presented Figure 3, it can be seen that the different keywords are marked with a specific color, which depends on the year of publication. The oldest publications (marked in purple) focus on the purchasing behavior of buyers in the context of buying counterfeit products — especially in the fashion industry. The researchers' interest in the issue of counterfeiting in the fashion industry is not surprising, as this sector is particularly vulnerable to unfair trade practices and the trade in counterfeit fashion goods is a global problem (Certilogo, 2022). Subsequently, researchers have focused on the ethical aspects of the consumption of counterfeit goods, hence keywords such as "ethics," "consumer ethics," "crime" and "attitude" have been included in this area and part of the research analyses the social aspects of the consumption of counterfeit products "commercial phenomena," "humans," "adults." More recent studies, on the other hand, focus on the consumption and trade of counterfeit goods online "internet," "purchasing," "electronic commerce," "purchase intention," "counterfeit," "consumption behavior." This is an important thread in the discussion, as consumers, having gained the ability to purchase products with virtually no territorial restrictions via global online platforms, are also exposed to unfair sales practices. The issue of trade in counterfeit drugs has also been raised recently. Recent publications in this area have focused on investigating the impact of the COVID-19 pandemic on the circulation of counterfeit medicines and medical supplies (Hamdan, 2022).

4. Conclusions

As the world becomes more global and trade more liberal, violations of intellectual property rights are becoming more common. The illegal sale of well-known brands products erodes companies' revenues, stifles innovation, hampers economic growth and even poses a threat to consumers themselves. Counterfeit goods often do not meet quality standards and may contain harmful substances or defective components. What is more, the buyer is often unaware that he or she is purchasing counterfeit goods, which ultimately leads to damaging the reputation of the original product manufacturers. In order to counteract these phenomena, it is necessary to understand current state of knowledge, to identify and understand the most important research developments in the subject matter analyzed in this article. Furthermore, an awareness of the latest research trends may allow other researchers to plan their research projects more accurately. The key findings should be stated in context.

Firstly, most articles focused on consumer motives for buying counterfeit products analyze attitudes or purchase intentions. The stronger a buyer's purchase intention (e.g., towards counterfeit goods), the more likely the buyer is to make a purchase (actual behavior) and this claim is reflected in research results (Pavlou, 2003). Furthermore, purchase intentions are correlated with actual behavior (Morwitz, 2014). The interest of researchers also in attitudes towards the consumption of counterfeit goods is all the more unsurprising, as purchase intention (so important in the purchasing process) does not develop in isolation — it is a consequence of preceding events (including attitude formation).

Secondly, we observe a significant fragmentation of publications regarding the consumption of counterfeit goods, which are scattered across various (often thematically distant) journals. This may be due to the complex nature of the issue of consuming counterfeit products, which can encompass multiple aspects analyzed by different scientific disciplines. Additionally, no single journal dominates in terms of published works on the topic of consuming counterfeit goods.

Furthermore, the main three areas of research on the issue of counterfeit product consumption cover the following: (1) online consumer behavior and ethical aspects, (2) consumption of counterfeit fashion products and brands, and (3) social aspects of counterfeit product consumption. In the context of research trends, on the other hand, the oldest publications mainly focused on the buying behavior of buyers when buying counterfeit products, especially in the fashion industry (the fashion industry is particularly vulnerable to unfair commercial practices). Subsequent studies have focused on the ethical aspect of the consumption of counterfeit goods, and more recent studies focus on the consumption and trade of counterfeit goods over the Internet and address the issue of the trade in counterfeit medicines.

Our study has several limitations that should be considered when generalizing the results. Firstly, we conducted the bibliometric analysis based on the Scopus database. Future research would have to be extended to other databases, such as WoS or Google Scholar, as some essential and valuable publications may have yet to be included in our analyses. Secondly, we excluded book chapters and restricted the search to documents written in English only, thus limiting the generalizability of the results. Thirdly, our analysis focused only on the demand side — future research could be extended to the supply side (company perspective) and address topics such as how to protect a brand's legal rights, how to cooperate with law enforcement and even cover financial losses from the illegal trade in counterfeit goods. Finally, VOSviewer, although a useful tool, has its limitations; most notably, to the best of our knowledge, this software does not distinguish between British English and American English varieties and can duplicate keywords in particular clusters. Furthermore, combining articles from different databases, e.g., WoS and Scopus, is impossible.

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Aleksandra Wicka
ORCID: 0000-0001-7713-4953
Warsaw University of Life Sciences
aleksandra_wicka@sggw.edu.pl[1]

Ludwik Wicki
ORCID: 0000-0002-7602-8902
Warsaw University of Life Sciences
ludwik_wicki@sggw.edu.pl

The importance of current megatrends and trends in the opinion of X and Z generations

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Abstract

Contemporary changes in the world can be described by looking for similarities in phenomena occurring in different places. Currently, such megatrends include, among others: Demographic Shifts, Multipolarization of the World, Symbiocene, Bioera, and Mirror World. They are strongly related to technological progress, digitalization, and changes in societies. The aim of this article is to answer the question of whether the development trends are perceived as equally important by representatives of generations X and Z. Their attitude will be related to the willingness to accept the anticipated and already occurring changes. The research was conducted in 2023 on a sample of 500 people from generations X and Z. It was found that regardless of their generation, the respondents considered all megatrends current and important. They rated the importance of the Mirror World megatrend as the lowest, which means they are skeptical about the rapid domination of relationships by those taking place mainly on the Internet. The trends perceived as important included Mental Well-Being, Loneliness, Depopulation, and Roboticized Life, while the following were considered less important: Deglobalization, Medicine Resistance, Nation-State Collapse, and Identity Nomads. By comparing the assessments of trends by the representatives of the X and Z generations, it was

[1] Corresponding Author.

found that the importance of each of the examined trends was assessed higher by younger people from Generation Z. For the most current trends, the differences in the assessments are statistically significant.

1. Introduction

A megatrend is a concept relating to crucial development trends. According to Kożuch et al. (2023), this term was first used in the book by J. Naisbitt and P. Aburdene entitled *Megatrends 2000: Ten New Directions for the 1990s.* According to the authors, a megatrend is: "significant and lasting economic, social, political and technological changes that take shape slowly, but when they occur, for some time they influence all areas of life and, consequently, the future shape of this world" (Naisbitt and Aburdene, 1990).

Megatrends are essential (with a large area of impact) and lasting forces that influence and change the economy, society, and culture. These are global forces that affect all people. They are interconnected and influence each other (EY, 2015). Recognizing these forces and areas that change, allows us to better understand the challenges and opportunities that countries and businesses face worldwide (Bojar and Kłosowski, 2015).

A megatrend is similarly defined by Muszyński (2001): "economic, social, political and cultural phenomena arising in the process of development of human civilization, having various conditions, affecting humanity as permanent tendencies." According to Prandecki (2012), phenomena classified as megatrends should have a high chance of implementation. However, the possibility of their correction as a result of other forces should be taken into account. The supra-local scope of megatrends, long duration, and significant impact on the socio-economic environment is usually emphasized (Przybylski, 2019).

2. Currently important megatrends and trends — literature review

There are many examples of megatrends in the literature. Table 1 shows the current sets indicated by selected authors. It is worth noting that the individual proposals contain many common elements. These include population growth, urbanization, ageing of society, resource depletion, the rapid development of technology, digitization, and sustainable development.

Globalization processes resulted mainly from global trends, such as increasing similarity of countries in terms of consumer demand, increased liquidity on international capital markets, decreasing customs barriers, technological improvements, innovations, and the emergence of new competitors (Stonehouse, Hamill,

Table 1. Megatrends examples proposed by various authors

Authors	Megatrends
M. Camdessus (2019)	Old world, young continent A world of constant growth The breakthrough of emerging economies Galloping urbanization The flourishing of international trade Globalization of finance The rise of the middle class in developing economies Depletion of natural resources Climate change Rapid technological progress The new face of violence
Płonka, Kożuch, Stanienda (2022)	Digitization Globalization Urbanization and suburbanization Demographic shifts Sustainable development and green transformation of the economy Knowledge-based economy
ptsp.pl (2023)	World population growth Increasing migrations Ageing of societies in developed countries Growing social polarization A growing of middle-class Increased urbanization Growing demand for energy Digitization and automation of work Climate change Environmental pollution and loss of biodiversity Decreasing food security Rising international tensions The crisis of democracy and new models of governance

Source: authors' elaboration.

Campbell, Purdie, 2001). A common area is also pursuing sustainable development and saving non-renewable resources.

Identified megatrends often result from aggregating similar changes of smaller scope and significance. Such phenomena are considered trends. According to Natalia Hatalska, who prepared the Trend Map at the Infuture Institute in 2023, it is worth paying attention to the Mirror World megatrend related to the ongoing digitization of life (Wiązowska, 2023). It enters into the most significant number of relationships with other megatrends and digitization is changing the world in social, political, and economic aspects. Many trends seem to be mutually exclusive, which confirms the complexity of the world, which is a world of "and-and," not an "or-or" world (Naisbitt, 1997). It is worth noting that, considering our expectations, we can identify positive and negative trends in relation to these expectations (Przybylski, 2019).

The Trend Map prepared at the Infuture Institute in 2023, which we used in our research, contains five megatrends that present an assessment of the environment, society, technology, regulatory, and economic changes. These are:

1. Mirror World (intensive and constant transfer of various activities at all possible levels to the digital world).

2. Multipolar World (related to the loss of social cohesion, deglobalization, and an increasing number of conflicts).

3. Bioage (in which humans change nature and living organisms in such a way that they meet their needs, related to the intensive development of genetic engineering, tissue engineering, nanotechnology, biotechnology, etc.).

4. Symbiocene (where humans again become an equivalent part of the ecosystem).

5. Demographic Shifts.

The map also shows time perspectives relating to the highlighted trends (Table 2). These are the perspectives:

— new normal (currently leading trends),

— reactive zone (short-term perspective, the trend needs 1 > 5 years to become a leading trend),

— innovation zone (medium-term perspective, the trend needs 5 > 20 years to become a leading trend).

Setting time frames for individual phenomena is necessary so that entities operating in the market can take appropriate actions. According to the author of the Trend Map, the current perspective, i.e., the new normal zone, allows us to define areas that must be addressed most urgently. If it turns out that a company does not respond in any way to trends in the new normal zone, it is lagging behind the needs of the market or the competition's offer. When it comes to the reactive zone, i.e., a 1–5 year perspective, knowledge of trends from this perspective helps develop the organization's strategy because it is assumed to have a view of several years (Wiązowska, 2023).

On the Trend Map 2023, 50 trends were assigned to individual megatrends (Table 2). What is new, is showing the interdependence between megatrends and trends. Some trends are repeated within individual megatrends, e.g., Mental Well-Being appears in four out of the five megatrends mentioned.

As we mentioned earlier, in addition to megatrends, there are also trends. These are more detailed characteristics of areas and directions of change than megatrends. They are characterized by relatively high stability and describe changes in phenomena in a given direction (Wojtkiewicz, 2016). However, trends do not have as much power and influence as megatrends. Compared to a megatrend, a trend is easier to recognize, develops quickly, and has a relatively limited im-

Table 2. Megatrends and trends according to Trend Map 2023

Zones	Megatrends				
	Demo-graphic Shifts	Mirror World	Symbiocene	Bioage	Multipolar World
	Trends assigned to individual megatrends				
New normal	Loneliness Mental Well-Being Migration Zalpha “Silver Tsunami”	Digital Inequalities Conflict Digitalization Mental Well-Being Loneliness Techcontrol Drop Big Tech Regu-lation* No-Code	Mental Well-Being Resilience Raw Material Depletion	No-Code*	Polarization TechControl Drop Digital Inequalities Conflict Digitalization Loneliness Human Right to Science Cold War 2 Mental Well-Being Antytech Migration Backlash Against Science Resilience
Re-active zone	Identity Nomads Depopula-tion	Decentralization Non-Human Rights Dematerializ-ation Roboticized Life Generative AI* Technosocialism Antytech Interoperability	Social Economy Non-Human Rights Circular Economy E-Mining Decoupling Self-Sufficiency*	Medicine Resistance Biomaterials Bioenergy	Europe Reindus-trialization Decoupling Europe Deindus-trialization Hyperlocality Deglobalization Disillusionment with Democracy Nation-State Collapse
Innov-ation zone		Quantum Economy Metaverse Economy Biodigital Systems Internet of Beings	Bioarchitec-ture* Internet of Beings	Bioarchitecture Bioeconomy Lab Grown Editable Nature Biodigital Sys-tems Internet of Beings Human+* Depopulation*	Self-Sufficiency

Note: *some of the trends are placed on the map on the border of two or more megatrend zones.

Source: authors’ elaboration based on: https://www.infuture.institute/mapa-trendow/.

pact area. It causes evolutionary changes, not revolutionary ones, like a megatrend (Pieriegud, 2015).

In economic terms, a trend can be defined as systematic changes in the level of a given phenomenon, most often caused by the development of productive forces, for example, as a result of technical and scientific progress (Rutkowska, 2018). A trend is also called a search and compensatory movement that appears automatically in the economy and unnoticeably adjusts values to the system of new requirements (Zmyślony, Niezgoda, 2003). The importance of trends can be analyzed from a micro- and macroeconomic perspective, including examining their impact and manifestations in consumer behavior on the market (Gibbs, 1990; Mróz, 2013; Alagierska, 2018; Tkaczyk, 2012), the functioning of enterprises and institutions and entire economies (Przybylski, 2019). An example may be consumers following the trend of consumerism but also the emergence of counter-trends, e.g., sustainable consumption.

The characteristics of the trend are (Szulc, 2018):
— the relative stability in the short term, in the long term volatility appears;
— co-occurrence, i.e., mutual overlap of trends;
— divergence — the formation of countertrends.

Nowadays, trends impact marketing activities and the management of market-oriented enterprises. Identifying trends is especially important when a company operates in sectors where rapid technological changes are observed and product innovations occur frequently.

Introducing solutions by companies that consider current trends (new normal, reactive zone) may enable them to take a leading position in a given area in the future. Trends included in the innovation zone are less critical for the current functioning of the organization. However, considering phenomena expected in the future is important from a strategic perspective, giving an impulse to undertake development activities.

The inspiration and basis for conducting this research was the Trend Map 2023 published by the Infuture Institute. The co-author of the map, N. Hatalska, was included by the *Financial Times* in the New Europe 100 list, appreciating her skills in forecasting trends (2017). As part of this research, it was decided to check whether the identified megatrends and trends are equally important for generations X and Z representatives: people with experience and those just starting their professional lives. Generation Z calls itself the post-millennial generation, the prosperity generation. People from this group differ in many ways from people from Generation X. At the same time, people from these groups cooperate in various areas, including professional work, service relationships, etc., which sometimes becomes a cause of conflicts resulting from different perceptions of the importance of phenomena (Talarek, 2020; Oprzędek, 2023). The characteristics of people from generations X and Z are summarized in Table 3.

Table 3. Characteristics of Generation X and Generation Z

Generation	Characteristics
Generation X	A generation of skeptics, rebels, and contestants. Instead of the hierarchy desired by their parents, there was opposition to authoritarian attitudes. It is worth noting that at that time, technological development accelerated, which changed the perception of complex competencies from the sense of absolute professionalism towards the human being's self-development, empathy, interpersonal communication, relationships, freedom of choice, and action. It is also believed that people from this generation are very well educated.
Generation Z	A generation that has been in harmony with digital technologies since birth. Tablets, smartphones, screens, and interactive services are natural companions in their everyday lives. All the mentioned "digital riches" are at the user's fingertips. This generation is entering the labor market, which is quite mysterious; we don't know much about it yet. Experts' diagnoses indicate that these are people of above-average talent, resourcefulness and intelligence, with high ecological awareness. However, a characteristic feature of this generation is a lack of patience, possibly due to immediacy effects on desire.

Source: own elaboration based on Gawina, M. (2022).

3. Aim and methods

The aim of the article is to answer the question of whether there are differences in the perception of the importance of the identified megatrends (definitions were presented to the study participants) by representatives of the young (Z) and mature (X) generations. In the research, respondents were also asked to express their opinion on the potential importance of selected phenomena currently described as trends. Trends were considered from the following three perspectives: the current status, perspectives for 5–10 years, and perspectives for over 10 years.

The megatrends and trends used in the study were adopted according to the Trend Map 2023. In the survey, all megatrends and twelve trends were selected to assess their validity and development potential empirically. These were the trends that are repeated in the most significant number of megatrends, i.e., 1) Mental Well-Being, 2) Loneliness, 3) Digital Inequalities, 4) Deglobalization, 5) Nation-State Collapse, 6) Disillusionment with Democracy, 7) Depopulation, 8) Roboticized Life, 9) Medicine Resistance, 10) Identity Nomads, 11) Metaverse Economy, and 12) Biodigital Systems.

Selected trends are included in the new normal zone (1–3), the reactive zone — trends 4–10, and the innovation zone (11–12).

In this research, the following research hypothesis was formulated: "The assessment of the importance of megatrends depends on the respondent's generation."

The research was carried out in March 2023, using the survey method, on a sample of 500 respondents selected using the snowball method. IBM SPSS Statistics 29 was used to analyze the acquired data. To determine the significance of the relationship between the age of respondents and the assessment of selected trends, the Chi^2 test of independence was used.

The examined sample consisted of people from generations X and Z, i.e., born in 1965–1980 and 1997–2012, respectively. There were 305 people in Generation X, and 195 in Generation Z. The youngest research participant was 17 years old, and the oldest was 58. The average age of the respondents was 38 years old. The median age was 46 years.

The study involved 314 women (62.8%) and 186 men (37.2%). They indicated both the city (54.4% of respondents) and the countryside (45.6% of respondents) as their place of residence. The largest share in the analyzed sample were people still studying/learning (34.2%), the next group were people with secondary education (25.4%), higher education and postgraduate education (22.2%). Respondents with vocational education were exclusively from Generation X; they accounted for 18.2% of the sample.

4. Research results

In the first stage of the study, respondents from Generation X and Generation Z were asked to assess the importance of individual megatrends: Mirror World, Multipolar World, Bioage, Symbiocene, and Demographic Shifts (Table 4). It was evaluated whether there are differences in the assessment of their importance depending on the respondents' generation.

In the opinion of Generation Z, all the indicated megatrends are currently important (the total ratings were: important — 4 and very important — 5). The following results were obtained for individual megatrends: Demographic Shifts (84%), Bioage (80.5%), Symbiocene (78%), Multipolar World (67.7%) and Mirror World (51.2%). In the case of representatives of the X generation, for each of the megatrends mentioned, the total rating of important and very important indications was lower and amounted to: Demographic Shifts (74%), Bioage (48.5%), Symbiocene (43%), Multipolar World (57.8%), and Mirror World (33.1%).

The weighted average ratings calculated for individual current megatrends indicate that younger people (Generation Z) consider most megatrends important; for three of the five phenomena examined, the rating is 4 and higher, and only Mirror World was rated moderately important (score 3.4). However, representatives of Generation X rated the importance of all analyzed phenomena lower than Generation Z. They considered three megatrends to be of medium importance (scores 2.9–3.4) and one (Demographic Shifts) as important. The ratings for the Multipolar World megatrend were the closest and at an average level (3.6 and 3.8). The differences between the weighted average ratings for individual megatrends ranged from 0.2 to 0.7.

The Chi-square test of independence was used to determine whether respondents from Generation X and Z perceive the importance of individual megatrends equally. For the megatrends Bioage, Mirror World, Symbiocene and

Table 4. Distribution of answers regarding the importance of individual megatrends (%)

Generation	Importance rating					average	Chi^2 test results*	
	very little impor-tant (1)	not impor-tant (2)	neither impor-tant nor not impor-tant (3)	impor-tant (4)	very impor-tant (5)		$Chi^2_{emp.}$	p-value
	Mirror World (% of responses)							
Generation Z	4.1	16.4	28.2	37.4	13.8	3.4	22.241	< 0.001***
Generation X	9.8	26.9	30.2	21.6	11.5	2.9		
	Multipolar World (% of responses)							
Genaration Z	1.0	7.2	24.1	42.6	25.1	3.8	11.137	0.025**
Generation X	3.9	14.4	23.9	34.8	23	3.6		
	Bioage (% of responses)							
Genaration Z	1.5	5.6	12.3	61.5	19	3.9	54.407	< 0.001***
Generation X	3.9	16.7	30.8	32.8	15.7	3.4		
	Symbiocene (% of responses)							
Genaration Z	0.0	4.1	17.9	54.4	23.6	4.0	62.170	< 0.001***
Generation X	3.3	20.3	32.5	30.5	13.4	3.3		
	Demographic Shifts (% of responses)							
Genaration Z	1.5	1.5	12.8	40.5	43.6	4.2	6.240	0.182
Generation X	1.6	4.3	17.4	41	35.7	4.0		

Note: *N = 500, df = 4.

Source: authors' research.

Multipolar World, it was found that there is a statistically significant relationship between membership in a generation and the assessment of the importance of the megatrend (p-value is less than 0.05). Representatives of Generation Z considered them significantly more important than those of Generation X. Only when assessing the importance of the Demographic shifts megatrend respondents' opinions did not differ significantly depending on the generation. The obtained results confirm that the importance and significance of individual phenomena are assessed differently by representatives of the surveyed generations.

In the next research stage, respondents were asked to assess whether they considered the phenomena indicated as trends significant. The study asked about the 12 most frequently repeated trends: three from the new normal zone, seven from the reactive zone and two from the innovation zone.

4.1. New normal perspective

Respondents were asked whether they consider new normal zone trends such as Mental Well-Being, Loneliness and Digital Inequalities important. In the case of the Mental Well-Being trend, 97% of all respondents admitted that they consider it an important phenomenon, including 99% of Generation Z and 96% of Generation X (Figure 1).

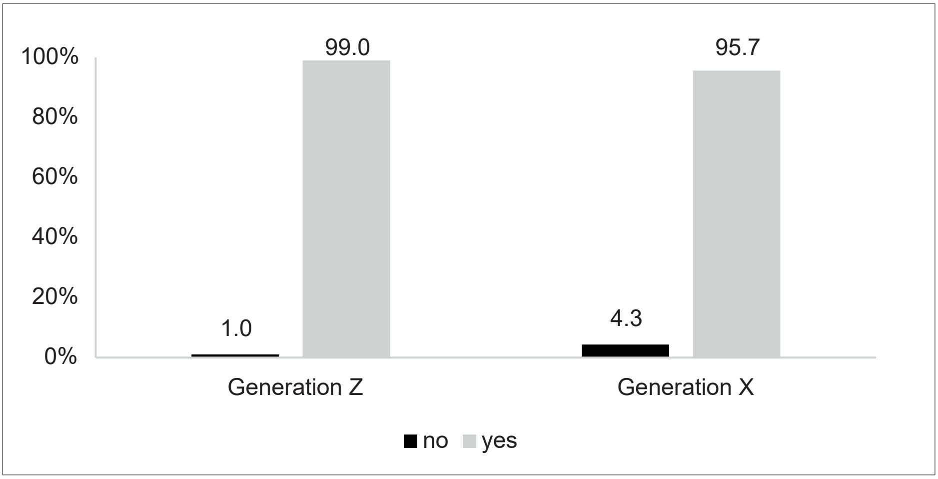

Figure 1. Distribution of responses regarding the importance of the Mental Well-Being trend ($N = 500$)

Source: authors' research.

Another trend studied was Loneliness. As many as 89.4% of all people participating in the study indicated it to be an important phenomenon (Figure 2).

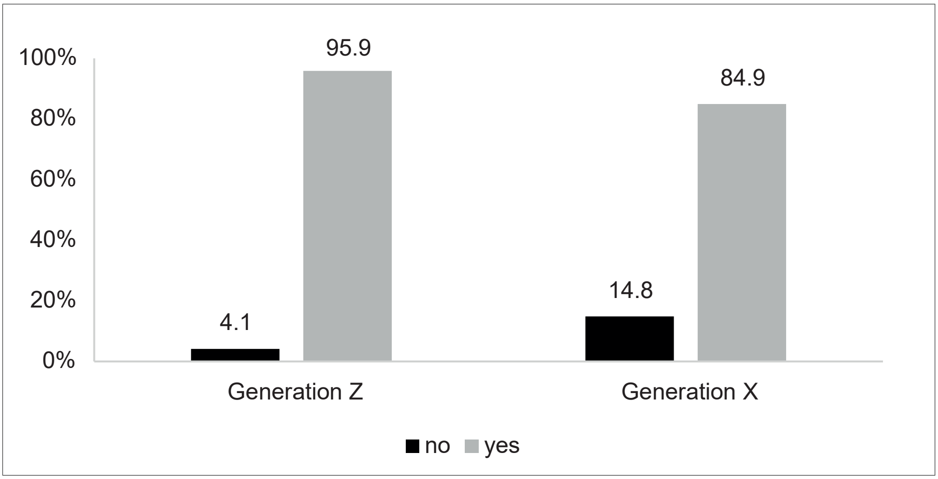

Figure 2. Distribution of responses regarding the importance of the Loneliness trend ($N = 500$)

Source: authors' research.

In the case of the Loneliness trend, 96% of Generation Z respondents indicated that it was an important phenomenon, compared to 85% of Generation X respondents. The assessment of the importance of this trend was significantly different depending on the generation ($chi^2_{emp.} = 14.97$, p-value < 0.001, $df = 1$, $N = 500$) (see Table 6).

The Digital Inequalities trend received, both in the opinion of people from Generation Z and Generation X, a significantly lower number of "yes" responses than previously analyzed (Figure 3). Only 69% of respondents from Generation Z and 55% of people from Generation X believed that this is currently an important phenomenon. At the same time, the assessment of this trend was significantly different between generations ($chi^2_{emp.} = 9.68$, p-value = 0.002, $df = 1$, $N = 500$) (see Table 6).

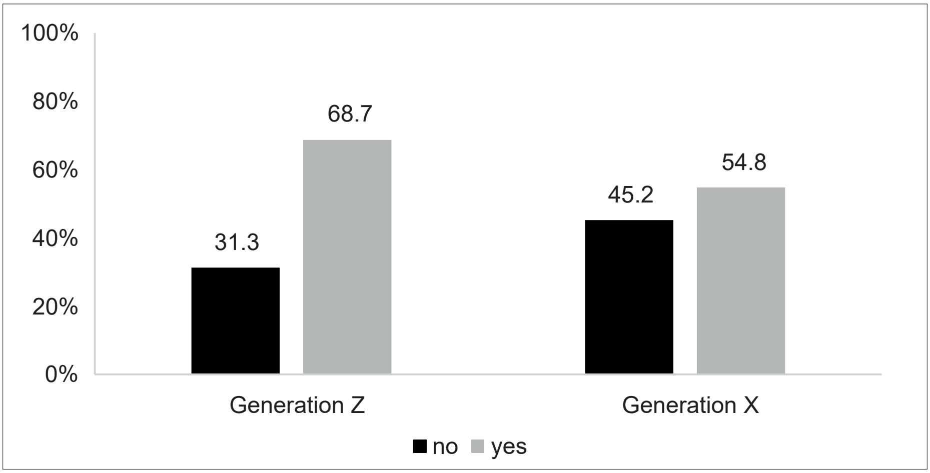

Figure 3. Distribution of responses regarding the importance of the Digital Inequalities trend ($N = 500$)

Source: authors' research.

4.2. Reactive zone perspective

Participants were also asked about the importance of trends in the reactive zone as part of the research. These were seven trends: Depopulation, Deglobalization, Nation-State Collapse, Medicine Resistance, Roboticized Life, and Identity Nomads. These social and political phenomena are expected to have a growing impact on the functioning of economies. Table 5 shows the distribution of responses regarding trends that may be important in 5–10 years.

Two of the three political trends, i.e., Deglobalization and Nation-State Collapse, have little chance of becoming leading in the opinion of people from both

Table 5. Distribution of answers regarding the importance of trends in the next 5–10 years

Trends for reactive zone	No	Yes
	responses in %	
Deglobalization will become a leading phenomenon in 5–10 years		
Generation Z	57.90	42.10
Generation X	60.30	39.70
Depopulation will become a leading phenomenon in 5–10 years		
Generation Z	41.50	58.50
Generation X	46.20	53.80
Roboticized Life will become a leading phenomenon in 5–10 years		
Generation Z	36.90	63.10
Generation X	44.90	55.10
Medicine Resistance will become a leading phenomenon in 5–10 years		
Generation Z	50.80	49.20
Generation X	51.80	48.20
Identity Nomads will become a leading phenomenon in 5–10 years		
Generation Z	38.50	61.50
Generation X	57.70	42.30
Nation-State Collapse will become a leading phenomenon in 5–10 years		
Generation Z	76.40	23.60
Generation X	71.80	28.20
Disillusionment with Democracy will become a leading phenomenon in 5–10 years		
Generation Z	40.00	60.00
Generation X	44.60	55.40

Note: $N = 500$

Source: authors' research.

Generation X and Generation Z. The answer confirming that Nation-State Collapse will be a very significant phenomenon in the medium term was given by 28.2% of representatives of Generation X and 23.6% of Generation Z. Respondents from Generation Z (42%) expressed more positive indications for the Deglobalization trend than Generation X (39.7%). The Disillusionment with Democracy trend received similar average ratings (60% and 55.4%). The increasing importance of the mentioned trends is observed in Poland and other European countries, constituting elements of the multipolar world megatrend.

The next analyzed trend was Depopulation from the demographic shifts area. This trend is considered negative and occurs mainly in European countries. The assessment of the change in the significance of the Depopulation trend in the coming years was similar in the eyes of both the younger and older generations. The number of positive indications for both groups was 50–60%.

Roboticized Life as a technological and social trend was considered to have potential for development by 63% of respondents of Generation Z and 55% of Generation X. This result seems to be relatively low.

A significant trend in the period of the so-called post-pandemic phenomenon has become Medicine Resistance. 49% of Generation Z and 48% of Generation X indicated this trend is important. The fact that this is an important issue can be proven by implementing the National Antibiotic Protection Program, a program dedicated to the fight against medicine resistance.

For six trends from the reactive zone, it was found that their perception does not differ significantly between generations (see Table 6).

To determine whether the "generation" variable is statistically significantly related to the variables assessing the development opportunities of the examined trends, Chi-square tests of independence were performed to evaluate each of the discussed trends (Table 6). A discussion of the results is provided in the text in the individual trend paragraphs. It is worth emphasizing, however, that there is no constant trend in the difference in grades. Surveyed respondents from the X and Z generations perceive the possibility of becoming most important in the coming years (5–10 years) of trends such as Mental Well-Being, Loneliness, Digital Inequalities and Identity Nomads differently. They also differ in their assessment of trends that may become leading in the longer perspective (up to 20 years), which are Metaverse Economy and Biodigital Systems. In the case of other 7 out of 12 trends, no significant differences in assessment were observed.

Table 6. Results of the Chi^2 test for the "generation" variable and assessment of the development chances of the selected trends

Trend	$Chi^2_{emp.}$	*N*	*df*	*p*-value	Independence
Mental Well-Being	4.28	500	1	0.039**	no
Loneliness	14.97	500	2	< 0.001***	no
Digital Inequalities	9.68	500	1	0.002***	no
Deglobalization	**0.28**	500	**1**	**0.597**	**yes**
Depopulation	**1.06**	500	**1**	**0.303**	**yes**
Roboticized Life	3.13	500	1	0.077	no
Medicine Resistance	**0.05**	500	**1**	**0.821**	**yes**
Identity Nomads	**17.62**	500	**1**	< 0.001***	no
Nation-State Collapse	**1.29**	500	**1**	**0.254**	**yes**
Disillusionment with Democracy	**1.02**	500	**1**	**0.312**	**yes**
Biodigital Systems	9.60	500	1	0.002***	no
Metaverse Economy	**15.92**	500	**1**	< 0.001***	no

Source: authors' research.

4.3. Innovation zone perspective

Specific trends belonging to the innovation zone are not currently widespread and highly complex, and it takes time to be adequately understood by everyone. These include, for example, Biodigital Systems and Metaverse Economy. Hence, they have been classified as trends whose importance will increase in the long run. As part of the study, respondents were asked to indicate the chances that the trends mentioned will become trends of great importance in the long term.

The respondents perceived both trends selected from the innovation zone significantly differently (Table 6). Representatives of Generation Z mostly gave positive answers about development opportunities in the area of Biodigital Systems and the area of Metaverse Economy. They assessed that in the long term, Metaverse Economy has a chance to become a leading trend (56%), as did Biodigital Systems (76%). Representatives of the X generation perceive the opportunities for developing Biodigital Systems as significantly lower but positively (approx. 63%). In comparison, they appreciate the Metaverse Economy to a lesser extent (38% of responses to yes) (Figure 4).

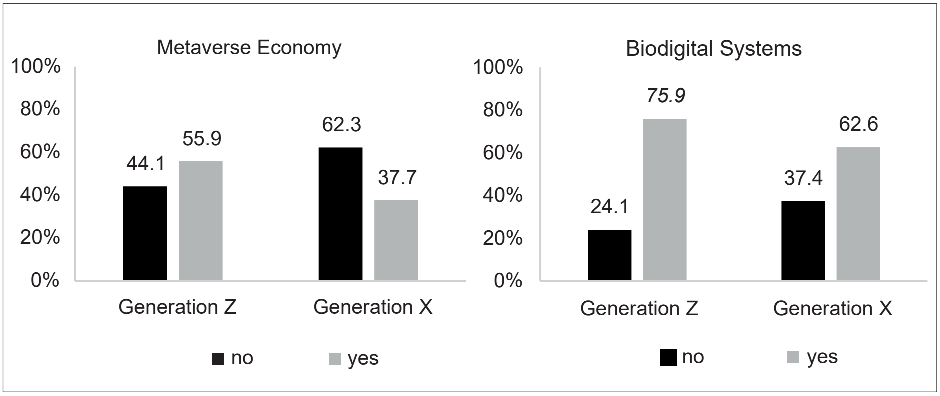

Figure 4. Distribution of answers regarding development opportunities of selected trends in the long term (5–20) years — Metaverse Economy and Biodigital Systems

Source: authors' research.

5. Discussion

As stated in our research, the importance of individual trends and megatrends is perceived differently by generations X and Z representatives. However, it should be noted that some of the assessed trends were considered important, regardless of the respondents' affiliation with a specific generation. This is due to the high intensity of the phenomenon described by the trend, which makes it more noticeable and aware by respondents.

For example, assessing the significance of the Demographic Shifts megatrend confirms that regardless of age, respondents notice changes in the social, legal, and economic environment related to the activity of older people, which is referred to as the “silver tsunami.” These changes concern health care, finances, and the professional activity of older adults. The Demographic Shifts megatrend also includes such essential trends as Loneliness and Mental Well-Being, as well as the trend regarding the importance of migration.

Mental well-being is a feeling resulting from fulfillment and satisfaction with our lives and a low stress level. It is described in the following six dimensions: self-acceptance, personal development, purpose in life, control over the environment, autonomy, and positive relationships with others (Niśkiewicz, 2016). The factors that strengthen the importance of the Mental Well-Being trend are the observed multiplication of crises. The global health crisis (the COVID-19 pandemic) and economic and political crises (wars, terrorism) overlap. These phenomena cause a weakened sense of security and anxiety, which leads to an increased number of cases of depression and contributes, for example, to an increase in the number of suicides. According to research results published in various studies, mental well-being is essential for young people. It is one of the most important aspects considered when planning private and professional life. In business reality, prevention supporting the good mental health of young employees will be critical (Cpl Poland, 2022).

According to Loneliness trend. This trend means not only the phenomenon of building social relationships via the Internet but also, for example, touching, smelling, and tasting within the Internet of the senses. Experts predict that by 2030, the internet of senses will become more widespread thanks to technologies such as artificial intelligence (AI), virtual reality (VR), and augmented reality (AR) (Ericsson, n.d.). Digitization is already taking place at the expense of social life (Nowak, 2023). The widespread of various digital channels for access to information and events leads to limited live meetings and natural interactions with other people.

The Digital Inequalities trend is also a current phenomenon. Such inequalities result from differences in access to the Internet, level of digital skills, and different motivations to use the Internet. In the long run, this leads to diversification of life opportunities (from education through work to consumption), even more so as the importance of digital services in social and economic life grows. The relatively low assessment of the importance of the Digital Inequalities trend in our research results from the fact that many older respondents grew up during the intensive development of technology. They use it efficiently (electronics, social media) and are still willing to learn new things, so digital solutions do not constitute a significant barrier for them. However, almost 55% of respondents from this age group indicate the importance of this phenomenon, observing that not everyone keeps up with changes in the IT area (mobile applications, artificial intelligence). They notice many people who cannot cope with new digital solutions. Young representatives of Generation Z see that their parents' generation does not keep up with "novelties" at the same pace as they do, which is why almost 69% of the responses say this trend is essential.

Relatively low assessment of the Roboticized Life trend by respondents from both generations. This result seems relatively low compared to the tendency observed in society to automate processes and use robots in all areas of life (Kruczkowska, 2017). Perhaps automation and robotization are not noticeable to many because they are largely implemented in operational processes in enterprises.

It is worth noting that there are no differences between representatives of the surveyed generations in the assessment of trends in the sphere reactive zone. It means that changes in the importance of trends in several years perspective are assessed similarly. This may be because knowledge and understanding of future phenomena come from analyses of the directions of development in the world that are equally available to everyone. Significantly different opinions among respondents from different generations were obtained only for the Identity Nomads trend. In the opinion of Generation Z, it has a greater chance of becoming a leader (61%) than in the opinion of Generation X (42%). The differences in assessment are probably related to the fact that the phenomenon of identity fluidity is more known and accepted in Generation Z, known for its far-reaching individualism and independence (Hatalska, 2016).

It should be noted that the assessment of the importance of trends observed in this research is not fully consistent with the results obtained by other authors. For example, aspects of robotization and automation seem to be underestimated. It should also be remembered that the assessment of changes in the world around us also results from the difference between generations in relying more on the information provided rather than on their own observations (Hatalska, 2016).

6. Conclusions

1. Megatrends are phenomena that affect countries and entire economies. They influence societies by changing the political, demographic, social, religious, educational, environmental, and technical environment. Their identification allows us to recognize and adapt to future changes or limit their impact.

2. The currently observed changes in economic conditions and the rapid development of technology are important premises for researching current and future trends. In this context, building and analyzing a trend map is essential for obtaining knowledge about the future. Information obtained based on that map can help mitigate undesirable trends in the case of negative trends or implement long-term development plans in the case of positive trends.

3. The results of empirical research on assessing the importance of current megatrends (Demographic Shifts, Multipolar World, Symbiocene, Bioage and Mirror World) confirm that the described megatrends were selected accurately. Most respondents (60–70%) believed these are important phenomena. The exception was the megatrend Mirror World, whose importance ratings were medium and low.

4. It was found that there is a significant difference in the perception of the importance of megatrends by people belonging to different generations. Younger people assigned higher importance to each megatrend; the differences were statistically significant. The exception was the Demographic Shifts megatrend, which was considered highly important by representatives of both generations surveyed. This may be because changes related to this phenomenon can already be directly observed in the environment, especially the ageing of societies and migrations.

5. Trends in the environment were assessed differently by respondents depending on the generation. However, there are no clear relationships for all the examined trends. From the current — new normal — perspective, both Mental Well-Being, Loneliness and Digital Inequalities were considered important, with the Digital Inequalities trend having a relatively low importance rating. The ratings differed significantly depending on the generation.

6. The future importance of trends established for a dozen or more years was assessed as lower than the current ones. On average, 40 to 60% of respondents considered them important. The exceptions were the Nation-State Collapse and Deglobalization trends, whose chances of becoming significant were assessed by respondents as low — at approximately 20–40%. Similarly, the opportunities for developing the Metaverse Economy trend were considered low. No significant differences were found in assessing trends from a medium-term perspective. Perhaps the respondents do not have enough experience in this field.

7. To summarize the entire study, Generation X representatives rated the chances of achieving high importance for each megatrend and trends lower. In most cases, the differences in assessment were statistically significant.

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Marcin Leszczyński
ORCID: 0000-0003-4896-6237
Poznań University of Economics and Business
marcin.leszczynski@ue.poznan.pl

Adam Metelski
ORCID: 0000-0003-1016-7579
Poznań University of Economics and Business
adam.metelski@ue.poznan.pl

Michał Litwiński
ORCID: 0000-0001-8143-6006
Adam Mickiewicz University in Poznań
michal.litwinski@ue.poznan.pl

Modern sport fans and their purchase intentions

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Abstract

Digital transformation has had a profound impact on various industries, and the sports sector is no exception. Nowadays there is a new growing group of sports fans — modern ones — who have been functioning in the digital world since birth, and therefore have unique behavioral patterns, habits, and expectations. Consequently, an increasing number of sports clubs have recognized the unique needs of these modern fans, prompting them to offer digitized sports products as a means of keeping pace with evolving trends. This article aims to explore the factors that influence the purchase intentions of digitized sports products, such as match highlights or behind-the-scenes content, among sports fans. Utilizing the logit model, our analysis revealed that relatively older individuals and those who perceive their income situation favorably exhibit a significantly higher purchase intention. Interestingly, our study also discovered that gender did not emerge as a statistically significant factor. In the context of digital transformation, understanding the determinants of purchase intentions for digitized sports products holds considerable importance. Identifying the factors that influence fans' decisions to invest in these offerings can enable sports clubs and organizations to tailor their digital strategies effectively, cater to the preferences of modern fans and, ultimately, enhance fan engagement and satisfaction.

1. Introduction

As a result of the changes taking place in the world, the economic model of sport is gradually transforming. Firstly, in recent years, a certain decrease in attendance at sports events has been observed (Deloitte, 2018), which was only exacerbated by COVID-19 (ESPN, 2020). Another challenge is that young people, the so-called Generation Z, have different preferences with regard to sports (Leszczyński et al., 2022; Leszczyński and Metelski, 2021). They declare that they are not so interested in watching matches live, and prefer to watch highlights than the whole game (Bridge, 2021). Therefore, within a few years, the average age in the stands at sports events may be higher, and there also will be fewer people willing to watch entire matches on TV. Sports clubs and organizations will have to look for new sources of income in order to keep their financial revenues at a similar level.

It is believed that sports bring together people from various socioeconomic backgrounds. Without fans, there would be no demand to show games on TV and to pay for the broadcasting rights (Coutinho da Silva and Luzzi Las Casas, 2017). It has to be stated that sports consumption involves much more than simple game attendance (Tohar et al., 2022). It is also about watching sports on TV, buying sports products, supporting sponsors of a given club, following clubs and players in social media, and many other types of activities. Fans are a specific group of consumers, characterized by involvement in the club's life, participation in events and interest in looking for information about the club. A strongly developing trend in this field is the demand of fans for products related to a given club. In the literature, these products are referred to the concepts of branded sports team merchandise (Vardhan et al., 2021) or team-licensed merchandise (Kwon and Kwak, 2014). Consumption of this type of product is a major source of revenue for sports clubs (Vardhan et al., 2021). The global market for this type of product was worth USD 33.5 billion in 2020 and is expected to reach USD 49.0 billion by 2030 (Grand View Research, 2023). Some authors predict that this market will be worth as much as USD 39.8 billion in 2027 (IMARC Group, 2022).

The study aims to investigate the phenomenon of a purchase intention regarding digitized sports products. This study represents a pioneering endeavor, as previous research has predominantly concentrated on examining the impact of sports celebrities on purchase behavior and exploring the associations between sports marketing and the propensity to purchase tangible sport products. However, it is noteworthy that only a limited number of researches have thus far been undertaken to comprehensively elucidate the fundamental characteristics and attitudes of sports fans that motivate their acquisition of digitized sports products.

The primary objective of this study, therefore, is to identify the key factors that influence the purchase intention of digitized sports products among sports fans. This research endeavor holds significant importance due to the evolving economic model of sport, wherein an increasing number of clubs and sports organizations are compelled to explore new avenues for generating income. Hence, this study not only contributes to the existing scientific knowledge but also offers valuable insights for sports management practitioners. Drawing upon an extensive literature review, we have developed a comprehensive list of factors that potentially influence the purchase intention. These factors will be presented in the subsequent section of this article.

2. Theoretical framework of the research

A sports product encompasses both goods and services within its scope. On the one hand, it includes sports events, access and broadcast rights to those events, as well as tickets to sports events and sports tourism. On the other hand, it also encompasses sports training, sports equipment, and sports apparel (Nessel, 2016). Digitalization of sports content delivery channels can be understood as the process of digitizing sports products. This process in the area of interaction with fans includes, among others: minimizing the boundaries between the event watched online and offline, increasing the digital presence of sport and developing opportunities for interaction with stakeholders through websites, mobile applications and social media (Xiao et al., 2018). Digitized sports products also provide greater freedom to view content such as non-live content, highlights/short-form, or team/athlete-generated content (Leszczyński, Metelski, Rabczun, 2022). Therefore, digitized sports products can be defined as any form of delivery of sports goods and services using digitized channels for delivering sports content, selling equipment, doing sports training, or attending sports events.

According to TRA (Theory of Reasoned Action), a person's intention is generally influenced by two types of factors, i.e., personal factor (positive or negative evaluation regarding a particular action) and subjective norm (social pressure exerted on an individual to take a particular action). This means that a positive intention towards a behavior occurs when there is a positive attitude towards a particular behavior and a positive perception of a particular behavior by its environment (Ajzen, 1985). The role of the environment in the area of subjective norms can be explained as the motivation to perform a particular behavior of a specific person by people or reference groups that are important to that person, such as friends (Peña-García et al., 2020). Perceived usefulness presented in the TAM (Technology Acceptance Model) theory (Davis, 1989) is also an important determinant of a purchase intention, it assumes that consumers will accept a solution if they believe it will improve their productivity or quality of life (Peña-García et al., 2020;

Sun and Zhang, 2021). Ajzen also points out that past behavior can influence our future behavior (Ajzen, 2002). Therefore, based on the mentioned theories, we decided to measure three key determinants of fans' purchase intentions towards digitized sports products, i.e., evaluation of the presented product, fans' involvement in the club, and fans' past behavior. Product evaluation refers to the perceived usefulness of the product, club involvement refers to the subjective norm, while past behaviors are related to involvement, i.e., attendance at sports events and frequency of searching for club information.

It should be noted that consumers' buying behavior, including their purchase intention, is determined by two categories of factors (related to the determinants of intention in general, described in the previous paragraph), i.e., individual/demographic factors and the psychological factors (Sun and Zhang, 2021). Wekeza and Sibanda (2019) based on the theory of consumer behavior divided the determinants of the propensity to purchase a product into demographic characteristics and beliefs. As the study focused on food products, the authors indicated as part of perceptions under beliefs such specific product attributes as quality, price perception, environmental friendliness or taste. In this article, this division is reflected by taking into account such demographic (gender, age) and socioeconomic factors of the respondents (income). On the beliefs side, on the other hand, we can distinguish elements such as evaluation of own involvement in the life of the club, frequency of seeking information about the club, frequency of attending matches, and evaluation of the presented product.

The literature has proven the existence of several relationships between the variables considered in the presented study. In particular, the gender of the consumer plays an important role, which is an important determinant of consumer intentions that translate into purchasing behavior and willingness to pay for digitized products. With respect to the sports product market, it is important to note that men are more likely than women to purchase sports products via the Internet and exhibit higher levels of subjective norm and frequency of past behavior with respect to online sports product purchases (Chiu et al., 2018). Sports marketing research also indicates that gender can influence product evaluation, which determines consumer purchase intentions. As a result of differences in how they process information about sports products, men are more likely to purchase sports products in the context of influencer marketing efforts (Düsenberg et al., 2016). Gender can also influence engagement in sports, research findings indicate that men are more likely to engage in sports and seek information about sports products (Chew and Leng, 2016). It is worth mentioning that participation in sport itself may be important for the perception of its attractiveness and also attractiveness of related products (Metelski, 2017). Bhat et al. (2021) in the context of online product purchases point out the importance of multifactorial demographic aspects that include the two variables we proposed, i.e., age and gender. In turn Özer and Argan (2006) indicate that men are characterized by a higher attachment to a sports club, while women derive higher enjoyment from shopping. According to previous research, men equally to women consider themselves sport fans, however men spend more time discussing sport, watching it on TV, and usually have more knowledge about it (James and Ridinger, 2002). Different are also motives why females and males become sports fans, because for females most important are social reasons (enjoying watching sports with friends and family), while males usually used to play sport themselves or enjoyed sports in general.

Research indicates that income is positively correlated with consumer spending on sports and sports products (Candemir and Zalluhoglu, 2012). It is also important to note that income can affect consumer decision-making styles (Suvadarshini and Mishra, 2021). The amount of income can also affect willingness to pay for products (Zhao et al., 2018). On the other hand, it should be noted that the sports product presented is online content, studies in this area that have looked at the willingness to consume online news indicate that an increase in income negatively affects the willingness to consume online news (Chyi and Yang, 2009). As noted by Chyi and Lee, among the main factors that directly affect paying intention for online content i.e., age, gender, news interest, format preference and online news usage, age is the strongest predictor in this area (2012). It was also found that men shop less frequently than women. Women are more likely to pay for products purchased online, but it is men who are more willing to pay for online news (Punj, 2015). A study of the German market by Buschow and Wellbrock (2019) indicates that younger users are characterized by higher paying intention to access online content (2019). Similar conclusions were reached by Goyanes (2015), Fletcher and Nielsen (2017), and Punj, who indicates that age affects the paying intent (2015).

Involvement in the club is one of the key factors in the purchase intention of club-related products. Chiu and Won showed that a brand involvement has a positive impact on consumers' purchase of its products (2016). Similar conclusions are reached by Vardhan et al. who indicate that engagement has a positive effect on TLM purchase (2021). Ko et al., in the context of purchasing products offered by sponsors, indicate that engagement increases the consumer purchase intentions (2008). Generally, fans who engage with a team, show their support by purchasing related products (Pransopon and Hoonsopon, 2019). According to the Sports Involvement Scale (SIS) by Shank and Beasley (1998) sport involvement can be expressed through watching sport, reading about sport, attending sporting events, and playing sport. Due to the multidimensional view of engagement, in our article we consider fan engagement in several areas, i.e., identification with the team, understood as the degree to which the fan evaluates the psychological bond with the team (Theodorakis et al., 2012) and the fan's past behaviors related to seeking information about the team and attending games. It should be noted that fans characterized by higher involvement are more likely to attend sport events (Fernandes et al., 2013) and spend more time acquiring content about sports, i.e., watching sports programs and reading about sports (Düsenberg et al., 2016). Lee indicates that identification with a club positively influences purchase intention (2021). Fans characterized by a high degree of identification and loyalty to the club perceive spending on team-related products as supporting the team and tend to purchase more products (Coutinho da Silva and Luzzi Las Casas, 2017).

3. Research methodology

The study was based on primary microdata obtained within an online survey that was conducted by the authors of this paper in 2021 among Polish volleyball fans. It is worth underlining that volleyball is one of the most popular sports in Poland, and the national team is one of the best in the world (World of Volley, 2020). 581 people participated in the study. Among the respondents, 61.1% were women, 38.2% were men; the others (seven people) did not want to specify their gender. The average age of the respondents is 32.2 years. This pattern roughly resembles the population of volleyball fans, but it cannot be said that it was a representative sample — the study should be then considered a pilot study. The respondents were randomly divided into three groups, the first of which watched a 2-minute film from the backstage of the match, the second — a 2-minute film concerning the after-match life, and the third group read a short text describing films about the backstage and after-match life. All research participants were then asked if they would like to watch a longer paid material. As each of the surveyed individuals answered the same questions, we were able to verify if the opinions regarding materials and purchase intention differ across the type of the latter. As stated in the Introduction, the purpose of this study was to identify the factors that influence purchase intention of digitized sports products among sports fans.

We recoded data from the survey in order to obtain dependent and independent variables (Table 1). As of the latter, socio-demographic background as well as engagement in the team's life, willingness to seek information, the number of watched matches, the type of watched marketing material, assessment of material attractiveness, willingness to watch the paid part of the material as well as the general preference to a certain type of watched material were taken into account. The choice of the explanatory variables is justified by the indications from the literature cited in the previous part of the paper. In the case of the categorical variables, dummies were created, which are more convenient for interpretation in the case of the logit model applied in the analysis. Due to missing data, some observations were excluded from the analysis. Finally, empirical models were estimated for at least 464 observations. Inference about the effect of particular factors on purchase intention was based on the ordered logit model. It is worth noting, that methods based on regression analysis were applied in similar contexts by many researchers, to name some of them: Sun and Zhang (2021), Peña-García et al. (2020), Chiu, Kim and Won (2018), Düsenberg et al. (2016), Chiu and Won (2016), and Hong and Rhee (2016). The decision about this type of specification follows from the character of the dependent variable (ordinal variable). Moreover, logit is appropriate in the situations when the majority of variables is not of continuous but rather of nominal including binary nature. The specification ensures both estimation accuracy and interpretation conveniency (Maddala, 2008; Gruszczyński, 2012).

Table 1. Variables derivation

Category	Variable name	Question in the survey	Recoding details		Output variable
Dependent variable					
—	Purchase intention	23. Assess to what extent you would be likely to buy this type of extended material	No recoding necessary		Ordinal variable, scale 1–9 (the higher the number, the stronger the purchase intention)
Independent variables					
Socio-demographic variables	Gender	1. Gender	Men	0	Binary variable
			Women	1	
			No answer	N/A (negligible count)	
	Age	2. State how old you are	No recoding necessary		Integer variable
	Income assessment	3. Assess your financial situation	Very good	7	Ordinal variable, scale 1–7 (the higher the number, the better assessment of income situation)
			Good	6	
			Rather good	5	
			Average	4	
			Rather bad	3	
			Bad	2	
			Very bad	1	
	Income	4. Specify your monthly income (net)	Below 1,500 PLN	750	Integer variable
			1,501 PLN – 2,500 PLN	2,000	
			2,501 PLN – 3,500 PLN	3,000	
			3,501 PLN – 4,500 PLN	4,000	
			4,501 PLN – 5,500 PLN	5,000	
			5,501 PLN – 6,500 PLN	6,000	
			Higher than 6,500 PLN	7,000	
			I am at such an age that I do not earn yet	0	
			I prefer not to give	N/A (negligible count)	

Category	Variable name	Question in the survey	Recoding details		Output variable
Engagement	Engage-ment	6. Rate on a scale from 1 to 9 your level of engage-ment in the club's life	No recoding necessary		Ordinal variable, scale 1–9 (the higher the number, the higher the engagement)
	Informa-tion	7. How often do you look for information about Trefl Gdańsk?	Not at all	1	Ordinal variable, scale 1–7 (the higher the number, the higher the frequency of information seeking)
			Less than once a month	2	
			Once a month	3	
			Several times a month	4	
			Several times a week	5	
			Every day	6	
			Several times a day	7	
	Match	13. In the 2019/2020 sea-son, 12 matches were played in the ERGO ARENA with the participation of the public. Including away games, please state how many times you watched Trefl Gdańsk games live in the arena in season 2019/2020 (give approximate number of games)	No recoding necessary		Count variable (max. = 12)

Category	Variable name	Question in the survey	Recoding details		Output variable
Marketing material and its attractiveness	Watched marketing material (2 binary variables; reference category: text)	Film 1	Film 1 watched	1	Binary variable
			Film 1 not watched	0	
		Film 2	Film 2 watched	1	Binary variable
			Film 2 not watched	0	
	Attractiveness	20. Assess the attractiveness of the video presented earlier	No recoding necessary		Ordinal variable, scale 1–9 (the higher the number, the higher attractiveness assessment)
	Watch_will	21. Rate how much you would like to watch the entire material of 20 minutes	No recoding necessary		Ordinal variable, scale 1–9 (the higher the number, the higher watching likelihood)
Watching preferences	Preferred material (2 binary variables; reference category: match summary)	29. What do you find most attractive (what are you most likely to watch)?			
		Full match broadcasts	Watched	1	Binary variable
			Not watched	0	
		Backstage events	Watched	1	Binary variable
			Not watched	0	

Source: own elaboration.

A model was estimated for the whole set and each group of explanatory variables separately — five models in total — which allowed us to check results robustness. Robust standard errors were used to reduce the negative effects of heteroskedasticity. As a part of the verification of the logit model: (1) Brant's test of the assumption of proportional odds was carried out (joint one and for each explanatory variable separately); (2) a joint significance test of the model with c^2 distribution was applied; (3) an assessment of the amount of information that independent variables contribute to the model was made (based on comparison of AIC, BIC and log-pseudolikelihood for estimated models). Conclusions regarding the impact of the independent variables on the dependent variable were drawn on the basis of the test significance for individual explanatory variables. For the ones involving the dummies (*type of marketing material*, *preferred material*), an additional Wald test of joint significance was conducted.

4. Results

Based on rho-Spearman[1] analysis and an adequate significance test, we find that the independent variables are mostly statistically significantly related to the purchase intention (measured on a scale 1 to 9, as per Table 1), which tentatively justifies the proposed model specification (Table 2). The exceptions are variables related to age, income, type of material viewed and preferred material. However, the indicated explanatory variables are not, for the most part, significantly correlated with the other independent variables, so they should not cause collinearity problems. The strength of the relationship between the explained variable and the independent variables remains at an average level.

Despite neither income (level) nor income assessment occurred to be correlated significantly with purchase intention, both of them were included in the model in order to verify which of them has higher influence on the purchase intention. Including them in the model which considers also all the other variables, can change the results of reasoning on significance of their relation to purchase intention. Moreover, these two variables not always reflect the same pattern within the Polish society — high income does not need to be strictly related to a fair assessment of income situation.

In the estimated logit model (Table 3), the proportional odds assumption was met. For each of the specifications (except model (5)), there are no grounds to reject the null hypothesis, both in the joint test and in the tests for each explanatory variable separately. According to the results of the joint c^2 test, each of the estimated models (except model (5)) is significant at the level of 0.01. Models with independent variables are always characterized by a higher value of log-pseudolikelihood than the corresponding models with a constant only, which justifies the inclusion of these variables in the specification. Given the above observations, model (5)

[1] The rho-Sperman coefficient is applicable to the variables considered in this study. As all of them are of non-continuous nature and most are categorical, we cannot use Pearson coefficient of correlation.

was excluded from further analysis. Among the analyzed specifications (1)–(4), the highest quality is noted for the one that includes all considered explanatory variables as compared to specifications that take into account only particular groups of independent variables — model (1) reaches the highest value of log-pseudo-likelihood and the lowest value of information criteria AIC and BIC. The inclusion of all proposed groups of explanatory variables in the model is then justified. Given the above observations, the further considerations are based on the model (1). However, it is worth mentioning that among the models for particular groups (2)–(4) the lowest values of AIC and BIC were achieved for socio-demographic variables, which indicates that this group of independent variables contributes the most information to the model.

Based on the results presented in Table 3 (model (1)), it can be concluded that the purchase intention is significantly higher for relatively older and for those who assess their income situation higher. It is worth stressing that the assessment of income situation rather than the absolute income level affects proneness to buy extended paid version of the material. On the one hand, the above results are in line with previous studies on the consumption of sports and sports products (Candemir and Zalluhoglu, 2012; Suvadarshini and Mishra, 2021; Zhao et al., 2018), on the other hand, they are not consistent with studies on news consumption (Buschow and Wellbrock, 2019; Chyi, 2005; Chyi and Yang, 2009). This may confirm that sports fans are a specific consumer group, and their purchase intention towards digitized sports products should not be considered in the same categories as general online content. However, it should be also noted that research on online content has largely referred to willingness to pay, which differs from purchase intention; while purchase intention provides an indication of whether you are willing to purchase a product (Mirabi et al., 2015), willingness to pay refers to the maximum amount a consumer is able to pay for a product (Lu and Hsee, 2019).

No significant influence on variable of interest was observed for gender. This result is particularly interesting because it is inconsistent with findings of other researchers that indicated the significance of this variable for the analyzed category (Chiu et al., 2018; Düsenberg et al., 2016). However, it should be considered that many studies focus on differences in the motivations that determine purchase intention (Ozturk, 2016; Seong, 2021), rather than the occurrence of the purchase intention and its strength. It should be also stated that in the case of volleyball, the gender distribution of fans does not reflect the gender distribution within the Polish society. The prevalence of women is noticeable here, which may also affect our results.

Table 2. The rho-Spearman correlation matrix

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
(1) Purchase intention	1.00													
(2) Gender	0.11**	1.00												
(3) Age	0.01	−0.13***	1.00											
(4) Income assessment	0.04	-0.05	0.03	1.00										
(5) Income	−0.06	−0.25***	0.65***	0.36***	1.00									
(6) Engagement	0.21***	0.14***	0.04	0.03	0.01	1.00								
(7) Information	0.27***	0.09**	0.06	−0.01	−0.06	0.55***	1.00							
(8) Match	0.10**	0.07	0.27***	0.05	0.22***	0.41***	0.32***	1.00						
(9) Watched marketing material: Film1	−0.00	0.12***	0.15***	0.05	0.05	0.04	−0.00	0.04	1.00					
(10) Watched marketing material: Film2	0.01	0.03	−0.02	−0.03	0.02	0.08*	0.06	0.06	−0.61***	1.00				
(11) Attractiveness	0.40***	0.16***	−0.10**	0.01	−0.16***	0.21***	0.25***	−0.02	−0.01	−0.07	1.00			
(12) Watch_will	0.47***	0.23***	−0.07	0.01	−0.14***	0.21***	0.32***	0.02	−0.09*	0.01	0.65***	1.00		
(13) Full match broadcasts	−0.05	−0.09*	0.07	−0.05	0.07	−0.05	−0.07	−0.02	−0.00	−0.10**	−0.06	−0.08*	1.00	
(14) Backstage events	0.06	0.16***	−0.05	0.05	−0.07	0.08*	0.12**	0.04	−0.02	0.10**	0.09*	0.15***	−0.86***	1.00

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Source: own elaboration.

Table 3. Estimation results — odds ratio and model statistics

Dependent variable	Purchase intention				
Independent variables	(1)	(2)	(3)	(4)	(5)
Gender	0.93707	1.54763**			
	(0.190)	(0.278)			
Age	1.02184***	1.02091**			
	(0.008)	(0.009)			
Income assessment	1.23024**	1.21495**			
	(0.111)	(0.101)			
Income	0.99993	0.99988**			
	(0.000)	(0.000)			
Engagement	1.04451		1.09908*		
	(0.055)		(0.056)		
Information	1.26612***		1.56378***		
	(0.112)		(0.128)		
Match	1.00877		1.01294		
	(0.024)		(0.020)		
Watched marketing material (ref. cat.: text)					
Film1	1.21901			1.66413**	
	(0.307)			(0.356)	
Film2	1.14951			1.51146**	
	(0.269)			(0.306)	
Attractiveness	1.22818***			1.27335***	
	(0.085)			(0.076)	
Watch_will	1.46487***			1.51581***	
	(0.087)			(0.076)	
Preferred material (ref. cat.: match summary)					
Full match broadcasts	0.61749				1.13409
	(0.255)				(0.438)
Backstage events	0.50900				1.63394
	(0.249)				(0.717)
Brant *p*-value	1.00	0.01	0.17	0.27	0.00
Model c^2	151.50***	18.37***	68.44***	187.63***	2.56
Type of mark. material — joint Wald test — *p* (c^2 test)	0.73			0.05	

Preferred material — joint Wald test — *p* (c^2 test)	0.38				0.28
Log pseudolikelihood	−874.84	−961.86	−1154.40	−1089.70	−1182.38
Log pseudolikelihood — model with const only	−960.08	−970.66	−1191.96	−1196.10	−1183.66
AIC	1791.68	1947.72	2330.80	2203.40	2384.76
BIC	1878.62	1997.52	2378.77	2255.78	2428.30
N	464	469	579	581	575

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$, robust standard errors

Note: tables with the original model coefficients are available on request.

Source: own elaboration.

The purchase intention is significantly more intense for people that more often look for information on a club's life. This is consistent with the results of previously presented studies (Düsenberg et al., 2016). What's not surprising, the increased assessment of attractiveness and stronger willingness to watch the full version of material were found among the decisive factors affecting chances of higher purchase intention. Importantly, we observe no statistically significant relationship between dependent variable and preference for watched material. The same was found for type of marketing material (film 1/film 2/text).

5. Discussion

Fans are a specific group of consumers, characterized by involvement in the club's life. Nowadays there is also growing a new group of sports fans — the modern ones — who have been functioning in the digital world since they were born, and therefore have unique behavioral patterns, habits, and expectations. It has to be stated that technological advances enable the development of new forms of interaction with fans through websites, apps, and social media that allow the delivery of personalized content. There is also a noticeable increase in consumer interest in non-live content, highlights/short-form content, and team/athlete-generated content. In this study, an attempt was made to answer the question what factors influence purchase intentions of digitized sports products among sport fans. It has to be stated that the purchase intention increases with age and is higher among those who assess their income situation better. Therefore, it can be assumed that relatively older people who have already achieved some level of earnings are more likely to pay for additional content related to their favorite club.

As anticipated, the study confirmed that a higher assessment of attractiveness and a stronger willingness to watch the full version of the material are decisive factors influencing the increased purchase intentions. This validates the intuitive assumption that finding something appealing increases the willingness to pay for it. Similarly, individuals who express interest in a short fragment of a film and desire to see the entire content also exhibit a higher likelihood of having greater purchase intentions. Regarding the club involvement, which literature identifies as a key determinant of purchase intentions for club-related products, our study revealed that it is significantly more intense among individuals who actively seek information about the club's activities.

The study also reported some other interesting results. Namely, according to the literature on the subject, the gender of the consumer is an important determinant of consumer intentions that translate into purchasing behavior and willingness to pay for digitized products. However, in our study gender did not turn out to be a statistically significant factor. Perhaps this is because volleyball is quite a specific sport due to the fact that a large part of the fans are women. In other sports, such as football, the vast majority of fans are men. What is also interesting and might be surprising, is that we observed no statistically significant relationship between the dependent variable and the preference for watched material. The same was found for all the types of marketing material (film 1/film 2/text). It can therefore be concluded that it is rather a person-related factor (e.g. income rating, desire to learn more about the club, perception of attractiveness of marketing materials) as opposed to external stimuli (such as type of marketing material) that determine purchase intention.

Considering the above results in terms of TRA and TAM (Ajzen, 1985; Davis, 1989), it can be seen that perceived product usefulness, as measured by ratings of product attractiveness and willingness to watch the full material, has a positive effect on the purchase intention. In the case of subjective norms, as measured by the stated involvement in a club's life, this relationship has not been proven. On the other hand, past behavior, which in our model was expressed by looking for information about the club and attending matches, indicates the presence of a relationship only in the case of looking for information.

On this basis, it can be stated that significant relationships are present for variables associated with digital products, i.e., online content (frequency of information search) and digital product attractiveness (product evaluation and willingness to watch the full material). Therefore, it can be concluded that the determinants of the purchase intention towards digitized sports products are the fan's past information-seeking behavior in the digitized area and the evaluation of the digitized product. Factors that are associated with direct experience with the club, such as attending live matches, are less important. This means that we may be dealing with a new specific type of sports product consumer, who functioning in a virtual world, evaluates the attractiveness of a digitized product by their general attitude towards digitized products, regardless of his previous participation in matches and his evaluation of his involvement with the club.

6. Conclusion

In conclusion, this study investigated the factors influencing the purchase intentions of digitized sports products among sports fans. The findings revealed that relatively older individuals who asses their income higher showed significantly higher purchase intentions, indicating their likelihood to pay for additional content related to their favorite club. The attractiveness of the content and the desire to watch the full version were identified as decisive factors impacting purchase intentions. A club involvement was found to be more intense among individuals who frequently sought information about the club's activities. Gender did not emerge as a statistically significant factor, possibly due to the specific nature of volleyball where a significant proportion of fans are women. Overall, this research contributes to the understanding of the factors influencing the purchase intentions of digitized sports products, providing insights for sports organizations and marketers to effectively engage and cater to the evolving needs and preferences of sports fans in the digital era. However, it should be added that the presented results are characterized by some limitations. First of all, it is not known if the same dependencies also occur among fans of other sports, i.e., other than volleyball. The analysis also did not show whether such tendencies occur according to other types of digitized content, because each material may have its own characteristics.

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Agata Niemczyk
ORCID: 0000-0002-5594-6296
Krakow University of Economics
niemczya@uek.krakow.pl

Donata Adler
ORCID: 0000-0001-9696-838X
College of Economics and Computer Science in Kraków
dadler@wsei.edu.pl

Jarosław A. Handzel
ORCID: 0009-0007-2554-1347
University of Applied Sciences in Nowy Sącz
jhandzel@ans-ns.edu.pl

Zofia Gródek-Szostak
ORCID: 0000-0001-6283-6952
Krakow University of Economics
grodekz@uek.krakow.pl

Luis Ochoa Siguencia
ORCID: 0000-0001-8515-0216
Jerzy Kukuczka Academy of Physical Education in Katowice
l.ochoa@awf.katowice.pl

Assessment of selected elements of healthcare in the opinion of healthcare workers

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Abstract

The healthcare system is an important part of the functioning of any country. A special role in this system is played by the personnel — especially medical, but also non-medical personnel, who perform their tasks based on the available resources. The article considers the opinions of healthcare workers about selected elements of this system proposed by Zgliczyński. The opinions of employees regarding the current healthcare system compared to the one in 2019 are also included, highlighting the nature of these changes. Bearing in mind the relatively limited literature in the field of the considerations undertaken in this article, they can be regarded as important, up-to-date, and filling the research gap in this respect. The aim of the study was achieved using a critical analysis of the literature on the subject and a diagnostic survey. Empirical data were obtained from fieldwork conducted among staff of public and/or private sector healthcare facilities.

1. Introduction

The most important component of any organization is people. It is no different in organizations that are part of an extremely complex health system. The focus of this article is on the people working in healthcare facilities, representing both medical and non-medical staff, these will include doctors, nurses, and physiotherapists on the one hand, and managers, executives, and administrative staff on the other. The literature recognizing their opinions on the functioning of the healthcare system is relatively scarce, and the one that exists refers to the past years, while the current period is so dynamic that it becomes necessary to monitor changes in this respect. It suffices to recall the COVID-19 pandemic, unforeseen by anyone, which changed the functioning of the system in many areas, such as organizational, communication, wages, and supplies (Rybarczyk-Szwajkowska et al., 2021). In this context, this article aims to present the opinions of healthcare professionals on selected elements of this system proposed by Zgliczyński (2018). It also explores the opinions of health facilities staff regarding the current healthcare system compared to that of 2019, exposing the nature of perceived changes in this area.

Two research questions were formulated:

1) Which of the elements of the health system analyzed in the study are best rated in the opinion of health facility staff, and which are least rated?

2) How much does the place of work of health facility staff (type of facility and sector) differentiate the ratings of the elements of the health system studied?

Given the above, the research problems undertaken in the article are considered important and topical, and fill the research gap in this respect. The aim of the study was realized using a critical analysis of the literature on the subject and a diagnostic survey method. Empirical data were obtained from field surveys conducted among employees of healthcare institutions in the public and/or private sectors. The structure of the article follows from the above assumptions. The first part is a review of the literature on selected elements of the healthcare system that determine its proper functioning and the specificity of employees in medical institutions. The second part discusses the methodology of the research conducted, and the last part presents the results answering the above research questions.

2. Healthcare system and staffing in medical facilities – theoretical issues

The healthcare system is an integral part of our economy. Together with its environment, it is composed of various elements of the organizational structure (governmental structures, local government, medical resources, patients, etc.), and its primary purpose is to protect the health of citizens. According to the commonly accepted concept of the so-called "triangle," the health system consists of three basic interrelated groups, i.e., patients, providers, and the payer. To elaborate, this triangle of unsynchronized interdependencies is formed by the actors of the healthcare system: the state — the recipient, the state — the provider, and the provider — the recipient, which is subject to public and private law (Paszkowska, 2020, 13–14). Indeed, the national legal order has mechanisms in place for the commercialization and privatization of healthcare facilities, with debates about whether this fact alone contributes to an automatic improvement in the functioning of the healthcare system and whether private facilities are, by definition, better managed, more profitable and more efficient (Borkowska, 2018a, 2018b; Zgliczyński, 2018). At this point, it is worth quoting Zgliczyński's definition, which, based on the WHO guidelines, specifies that a health system is "the set of all organizations and institutions, both public and private, and all resources that serve to improve, maintain or restore health, regardless of the political and institutional environment in which that system is embedded" (Zgliczyński, 2018, 9). Management theorists, when talking about organizational resources, mean: human, tangible, intangible, financial, technological, informational, intellectual, and relational resources, and the use of these resources efficiently and effectively contributes to the achievement of intended goals and value creation (Rosak-Szyrocka and Roszak, 2019).

The classification of the basic elements of the healthcare system in Poland proposed by Zgliczyński lists the following as key elements: human resources, healthcare delivery, health information system, access to medical products and technologies, financing system, and leadership and management. This terminology is adopted in this thesis as a starting point for the theoretical and empirical analysis carried out, described in the next section.

The first element mentioned, staff resources, is the intellectual capital that determines the smooth achievement of the organization's goals. It is the staff that is decisively responsible for the quality of health services (Pintal-Ślimak, Eusebio and Pietruczuk, 2018), and as a group representing the healthcare provider, they carry out their duties within the framework of care: out-patient, in-patient, and long-term care (Zgliczyński, 2018). Analyzing the human resources of the medical facilities of institutions embedded in the system, as public and private, two categories of employees are perceived: medical and non-medical (Opolski, Dykowska and Możdżonek, 2012). Lewandowski, Kautsch and Sulkowski (2013, 8) also refer to them as "white" (clinical) and "grey" (i.e., administration and technical services) staff.

Medical professionals are by far the largest group in healthcare and include doctors, dentists, nurses, midwives, paramedics, and physiotherapists, among others. According to Wiązowska (2023) 720,089 people are employed in Polish healthcare, both private and public; 384,058 in the public sector and 336,031 in the private sector. Those with the right to practice registered with the General Medical Council were 206,937 — a total of doctors and dentists as of 30 April 2023 (NIL, 2023). In comparison, in 2020, the number of doctors working directly with patients was 126,064, dentists 33,772, nurses 210,923, and midwives 27,629 (GUS, 2022), while a year later, respectively: 132,527 persons; 35,016; 215,064 and 28,534 persons. While there are increases in the number of medical professionals, the aging of the medical community is a cause for concern, according to GUS. A measurable indicator for examining the condition of the Polish health system, in addition to absolute numbers, is the ratio of the number of doctors per 1,000 inhabitants, in Poland amounting to 2.4. This state of affairs reveals certain staffing problems, which are also determined by the lengthening of the average waiting time for guaranteed health care services, and sometimes also by the closure of Hospital Emergency Departments (Szpitalny…, 2023). Thus, it is perceived that the demand for doctors, nurses, or medical caretakers is increasing, and the issue of the generation gap among medical staff is a real threat to the functioning of the entire healthcare system, not only due to the lack of staff but also their aging, which was emphasized earlier (Raczyńska, 2020). The drive to increase the number of qualified medical staff is a consequence of new organizational challenges increasing accessibility to health services aimed at older people (Szweda-Lewandowska, 2023). These and other problems (Buchelt and Kowalska-Bobko, 2020) are further compounded by the COVID-19 epidemic situation and its ongoing consequences (Banaś, 2022). After the pandemic, one would expect, on the one hand, a greater emphasis on health promotion, public education on hygiene and disease prevention, increased monitoring and response to potential health threats; and, on the other hand, improvements, funding and refinement of the health care system (Buchelt and Kowalska-Bobko, 2020). The question, raised in the research undertaken by the authors, whether people employed in medical facilities, notice this change, therefore seems important.

In addition to the quantitative profile, the qualitative view of the staff employed is equally important. According to ISO 9001, staff should be competent in their work through appropriate education, training, skills, and experience (Żebrowska, 2004).

Within the medical workforce, the qualification indicators are the specialization degrees of doctors and nurses. The literature contains the concept of "professionalism" (Rosak-Szyrocka and Roszak, 2019), understood as extensive knowledge of medical professionals and years of experience — medical competence and skills, but also professional skills such as proficiency in performing procedures. Worth noting is the recommendation to modify the distribution of roles and competencies to make better use of the professional qualifications of available staff and to relieve medical professionals of administrative and other non-medical tasks (Bociąga-Jasik, et.al., 2020). Given the above, in organizational theory, and therefore also in the health system, the competencies, attitudes, and behaviors of employees influence the processes within the organization, in this case, the treatment of patients, trust, and cooperative attitudes on the part of clients and colleagues.

The second element mentioned in Zgliczyński's classification is the delivery of health services. This is because the quality of a clinical medical service is determined by the provision of medical services by personnel with the required qualifications, as described above, but also: appropriate to the patient's health, safely and competently, at the right time and with the desired result (Cieślik, 2002). The importance and role of this issue are related to the universality of this type of service and its specificity revealed in the freedom of choice of the technology of service provision by medical personnel, the complexity of the process of meeting health needs (e.g., provision of different types of equipment, apparatus, different types of services), or finally the legal, infrastructural, organizational, or competence conditions, as mentioned above. In addition, the delivery and perception of this type of service are determined by its intangible nature. The result of a service provider will not always be due solely to their efforts and the quality of their work. The specificity of the processes and activities undertaken in the services in question should also be considered given their subject, which is the patient, and its impact on the treatment process (Rosak-Szyrocka and Borkowski, 2011).

Increasing the availability of healthcare services and improving their quality is served by the health information system, listed as the third element of the healthcare system in Zgliczyński's classification. The information system processes the data necessary for the state health policy and the financing of healthcare tasks. This aspect aims to enhance the benefits of exploiting the possibilities of information and communication technologies in the health sector, while preserving the essence, linked to the information autonomy of the individual, of patients' rights. As part of the improvement and professionalization of services, medical events require systematic reporting to the Medical Information System — an Electronic Platform for the Collection, Analysis, and Sharing of Digital Resources on Medical Events (Paszkowska, 2021). Undoubtedly, the biggest task facing the health care system in this respect is the efficient implementation of technological, dynamically changing improvements and competent information management, while maintaining the security of the collected data of beneficiaries.

Further analysis of the elements of the health system accentuates the importance of another, namely access to medical products and technologies. Medical technologies top the list of the most innovative industries. Unfortunately, the pathway for introducing new services using modern non-drug technologies to public funding is complex and extensive. As a result, healthcare providers either do not have access to them or have to finance them with their resources in the commercial sector. It is emphasized that legislative stabilization is key to improving access to innovative medical devices. Broad and rapid access to innovative drug and non-drug health technologies is one of the important elements in rebuilding the public health system and reducing health debt (Rudawska et al., 2023). In addition to technological solutions, it is also important to retrofit healthcare facilities to purchase disposable medical devices, personal protective equipment, and disinfectants.

It is the difficult financial situation of the Polish healthcare system that is permanently raised in the state policy and social discourse, and it is the manner of financing that constitutes another element of the system on the list formulated by Zgliczyński. Poland spends approximately 6.6% of its GDP on healthcare, with 72.5% of funding coming from public sources and 27.5% being so-called private expenditures (Rudawska et al., 2023). The health sector is subsidized on an ongoing basis by EU funds, e.g., the European Funds of the Infrastructure and Environment Program 2014–2020 (OPI&E), the EU NEXT Generation instrument, and the REACT-EU program. The financing of the public health sector has consequences for remuneration policy. Adequate remuneration is a real and positive motivator to work. The topic of wages being too low in relation to the type of work performed, the responsibility carried, and the shortage of staff is a frequently raised issue in the literature on the healthcare system in Poland. An increase in the remuneration of medical employees is undoubtedly one of the most important factors influencing the stabilization of the situation in the operation of hospitals from the point of view of labor resources management, especially when they are limited (Cofta et al., 2020). As of 1 July 2023, salary valorization has been introduced in the Polish health service (Świerczek, 2023). The situation is different in the private sector of medical services, where salary levels are at higher levels, due to the market nature of the services provided.

The final element that Zgliczyński highlights is leadership and management. In this context, organizations in the health care system should be looked at as working conditions that should be taken care of by the employer and over which the employee has little influence, but which affects his or her efficiency productivity, and comfort at work. They are also important for creating a good atmosphere and feeling satisfied at work. Working conditions can thus be defined as "the totality of physical (material) and psychosocial factors originating in the work environment and affecting those doing the work" (Pocztowski, 2008, 377). These determine the atmosphere at work, which is often cited as one of the advantages of work. A factor influencing it is the quality of cooperation with the direct supervisor and colleagues. As mentioned previously, the substantive, managerial, and soft skills in leadership roles of those in managerial positions, including at lower levels, are a decisive factor in personnel management. In this area, it is also worth taking care of intergenerational management, especially given the aging of the professional group of the medical community.

In summary, the proper functioning of healthcare is a topical issue for policymakers, recipients, and theorists of the subject. The year 2023 brings with it many legislative, organizational, and qualitative changes as a response to emerging barriers and problems. As part of this, a reorganization of centers, institutions, and the entire system is planned.

It seems that the need to search for a better pattern of functioning of the Polish healthcare system is still valid. Some indications, as suggestions of the personnel about their working conditions measured by the state of the equipment of the surgical infrastructure, the state of the disposable medical devices, the efficiency of communication, and, above all, the financial conditions and the atmosphere at work — i.e., about the elements of the health care system according to Zgliczyński, can be formulated based on the following studies conducted by the authors.

3. Research methodology

The following research questions were used to obtain the aim of the study:

1. Which of the elements of the healthcare system analyzed in the survey achieved the highest and lowest ratings in the opinion of the staff of healthcare facilities?

2. How much does the workplace of the staff of healthcare facilities (type of facility and sector) differentiate the ratings of the surveyed elements of the healthcare system?

Answers to the above were sought in the authors' research. The research was conducted between April 1, 2023, and May 19, 2023, among 124 employees of healthcare institutions using a diagnostic survey and a questionnaire developed by the author. The final version of the research tool was preceded by a pilot study conducted among five people, i.e., three representing medical staff and two non-medical staff. The pilot study was designed to adapt the questions to the specifics of the professions in this sector, in terms of language and content. The final research tool consisted of seven specific questions and six metric questions. This article presents the results of some of the questions from the questionnaire; the idea was to verify several research areas. The study used a purposive sampling of sample units.[1]

In the survey participated 64.5% of women and 35.5% of men. Among them, nurses and midwives (nearly ⅓) and doctors (41.9%) predominated. Non-medical staff also took part in the survey including the hospital director, accountant, and manager, among others. Detailed information is presented in Figure 1.

[1] The authors would like to draw attention to the difficulty of conducting the survey caused by the lack of willingness on the part of healthcare professionals to complete the questionnaire, which affected the size of the research sample, previously planned at a much higher level.

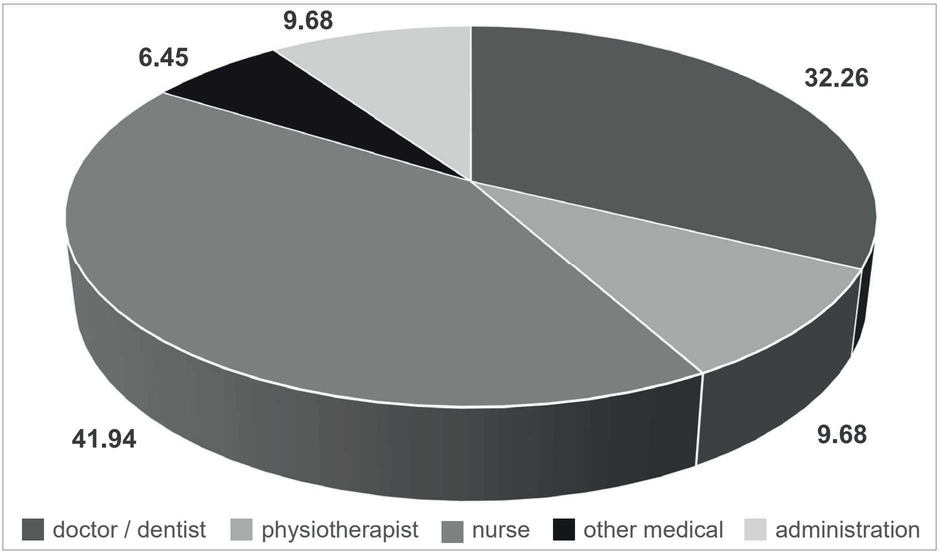

Figure 1. Structure of respondents by occupation

Source: own elaboration based on conducted research.

The study group was most represented by employees with the longest length of service (Figure 2), which makes it possible to conclude that the data obtained in the study are reliable and allow for a proper evaluation of selected elements of the healthcare system.

Those taking part in the survey mostly represented the public and private sector as their place of work (nearly 42% of the total surveyed), while the smallest percentage were those working only in the private sector (¼ of the surveyed) (Figure 3).

The object of interest was to identify the main source of livelihood of the surveyed health facility employees. The data obtained from the respondents made it possible to identify the main place of work without a dominant facility, in this respect. Almost ¼ of the responses were distributed between hospitals, primary care, specialist clinics, and other types of healthcare facilities (Figure 4). Thus, the surveyed collective, although not very large, represents all the most important establishments in the healthcare system.

All respondents work in health services: 64.5% worked on one contract, 35.5% on more than one contract.

The evaluation of the healthcare system was carried out through the prism of selected elements described in the theoretical part and summarized in Figure 5. The assessment was carried out on a 5-point scale, where 1 meant "very bad" and 5 "very good." This type of ordinal scale makes it easy to give the respondent an

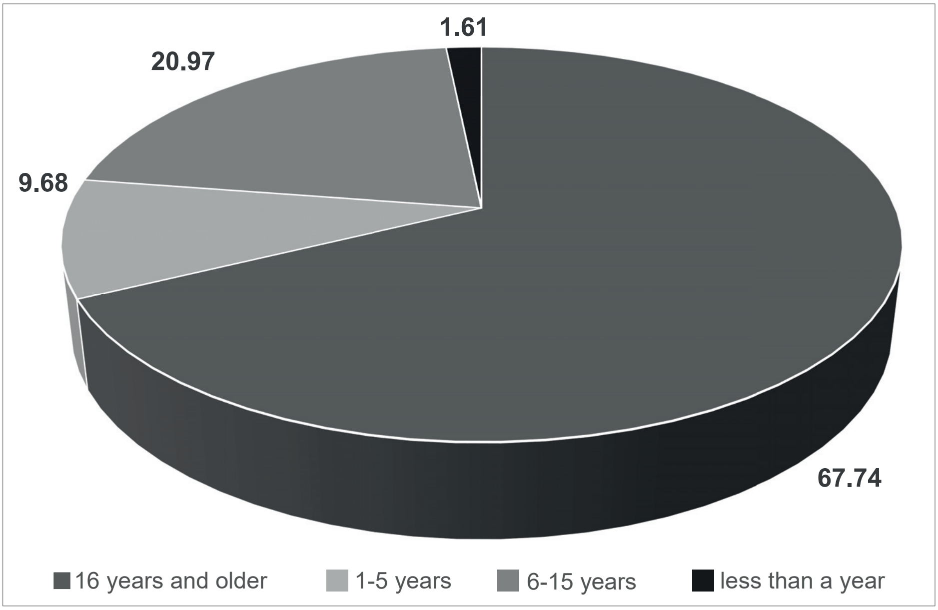

Figure 2. Length of service of respondents

Source: own elaboration based on conducted research.

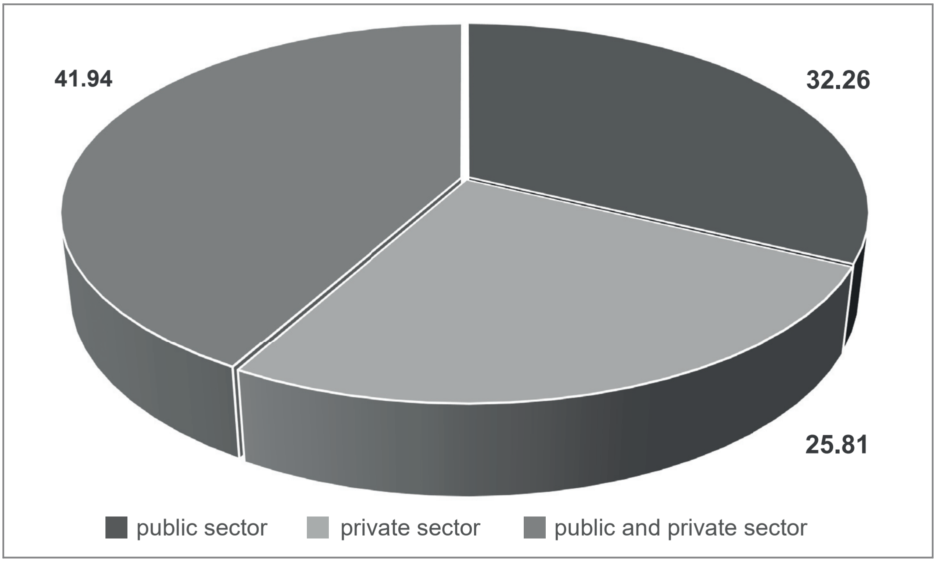

Figure 3. Respondents' place of work (sector)

Source: own elaboration based on conducted research.

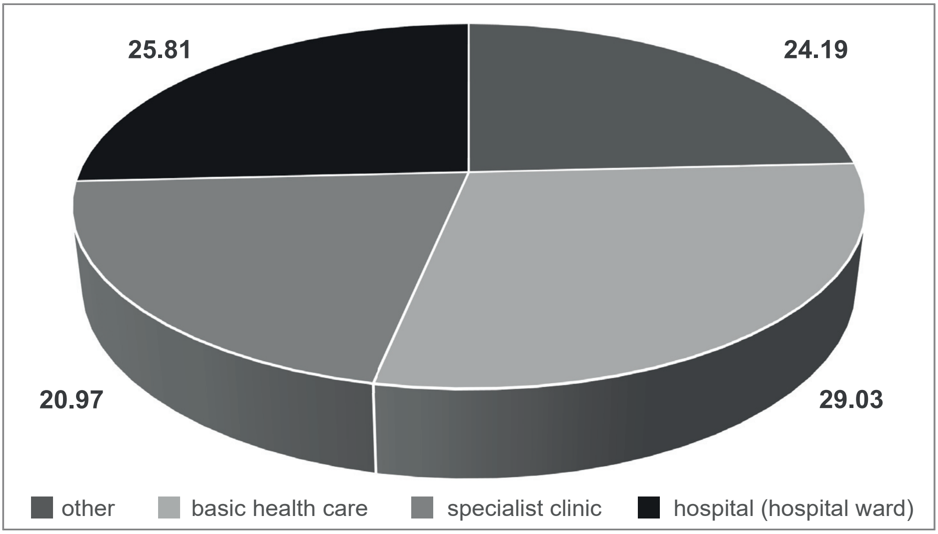

Figure 4. Respondents' place of work (main source of livelihood)

Source: own elaboration based on conducted research.

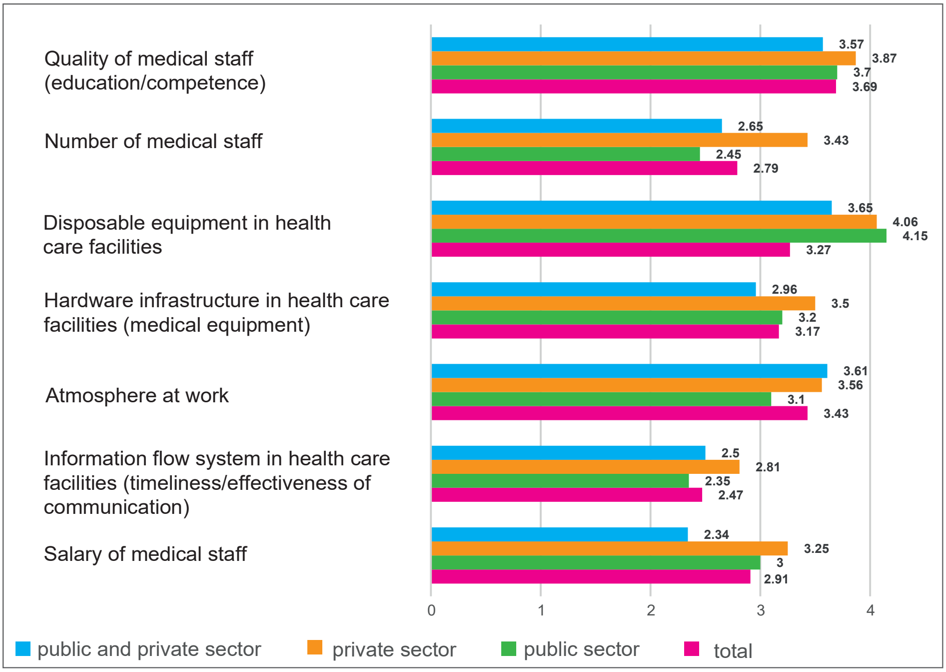

Figure 5. Assessment of selected elements of healthcare by healthcare workers in general and by workplace (sectoral approach)

Source: own elaboration based on conducted research.

appropriate rating, especially as it is also the scale associated with the school scale. The weighted average of the scores obtained is shown in Figure 5. Analyzing the data obtained from the survey, it turned out that all respondents rated the quality of medical staff perceived by education and competence the highest (rating close to 4). The second place with a rating of 3.5 is occupied by the atmosphere at work, and the podium is closed by the supply of disposable equipment. In contrast, the lowest rating was given to the information flow system (timeliness and effectiveness of communication) with a score of 2.47, i.e., at an average level.

There is an interesting distribution of ratings of elements of the healthcare system taking into account the place of work, i.e., the sector in which the respondents work (Figure 5). Representatives of the public sector rated the supply of disposable equipment highest with 4.15; interestingly, this is the highest rating of all the elements of the health system analyzed. In the group of those working in the private sector, the quality of medical staff came second; both factors discussed ranked inversely to the group of respondents overall. The podium is closed by equipment infrastructure with a rating of 3.2. The lowest rating in this group was given to the information flow system, similarly to the segment of employees in health care institutions in general, except that this rating is lower by 0.12. An identical hierarchy of importance of health care system factors was revealed among those working in private sector institutions. In all these categories, the ratings indicated by the representatives of the commercial sector are higher, except for the item "supply of disposable equipment." The hierarchy of evaluated components of the health care system is quite different between employees working in the public and private sectors. While the supply of disposable equipment opens the podium (3.65), the atmosphere at work is second (3.61) and the quality of staff is third (3.57). It is worth noting that the sector in question rated the working atmosphere the highest of the others and medical staff salaries the lowest (2.34). Regarding the latter, the highest ratings in this respect were declared by representatives of the commercial sector (3.25).

Given the tumultuous (ongoing for many years, e.g., Lewandowski, Kautsch and Sulkowski, 2013; Raduła, 2021) changes in the healthcare system in Poland in recent years (if only because of COVID-19), the authors found it interesting to have the perspective of those working in healthcare facilities on the current state of the system compared to that of 2019.

The data summarized in Figure 6 allow us to conclude a negative assessment of this issue. Assessments of worsened and worsened were declared by almost half of the respondents; noteworthy is the ⅕ declaration of definitely worsened. No change in this respect was declared by ⅓ of the employees in general. Improvement in the health care system was pointed out by one in seventeen people; no one indicated a definite improvement in this respect.

Assessing the current situation in healthcare institutions, most respondents declared a bad rating — 69.35%; one in three respondents indicated a good rating.

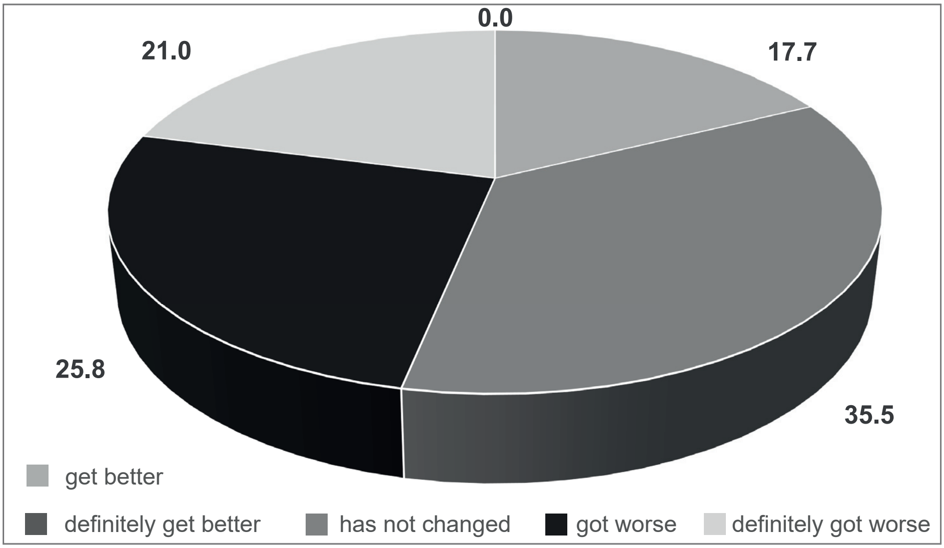

Figure 6. Current healthcare system vs. 2019 system as perceived by surveyed healthcare workers

Source: own elaboration based on conducted research.

When looking for reasons for negative ratings, those of an organizational nature were indicated, treated as the poor management system of health care entities, staff shortages, etc. — 53.48%. Such a view is not isolated, a similar view is also promoted in the literature (e.g., Raczyńska, 2020). On the other hand, 46.52% of respondents explain this state of affairs by economic reasons, such as lack or bad distribution of financial resources.

4. Conclusion

The content undertaken in the article presents a picture of the healthcare system through the prism of its selected components, which narrows the possible research areas, and the authors include this fact in the definition of the limitations of the realized project. Nevertheless, the opinions obtained seem important from the perspective of the adopted research problem, given the research sample, which was represented by people working in the system for a relatively long time (⅔ of the respondents) and, on this account, their opinions appear to be relevant to the present study. Moreover, the respondents were dominated by professions representing the largest percentage of all employees in the Polish healthcare system, i.e., nurses, midwives, and physicians.

In answering the research questions posed, it is concluded, based on the research carried out, that:

1. The lowest rating for components of the healthcare system was given to the information flow system — in the declarations of all surveyed employees of healthcare facilities, as well as those who represented the public sector and the commercial sector separately.

2. The highest rating was given to the quality of medical staff (considered from the perspective of education/competence) in the opinion of employees in general, but also to the supply of disposable equipment declared by those working in the public sector, in the private sector, as well as by employees working in both sectors (public and commercial).

As research has shown, the weakest link in the healthcare system has proved to be the system of information flow in healthcare facilities, yet proper communication, both internally and with external stakeholders, is considered an important determinant of the success of any organization (Kotler, 2005) and — an extremely important tool for building sustainable relationships inside and outside the organization (Shah et al., 2022). Although research on communication in health care devotes most attention to models in the doctor-patient relationship, or more broadly: the patient-doctor-healthcare provider relationship (Strzelecka and Syrkiewicz-Świtała, 2016), inter-professional and external institutional communication are equally important for management effectiveness (Vrucan, 2022), and it is about the latter that the authors have undertaken research formulating conclusions as a complement to the content presented in this article (Niemczyk et al., 2023).

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Danuta Jędrzejewska
ORCID: 0000-0002-3549-2645
Opole University of Technology
danuta.jedrzejewska@student.po.edu.pl

Diana Rokita-Poskart
ORCID: 0000-0003-0184-0768
Opole University of Technology
d.rokita-poskart@po.edu.pl

Brygida Klemens
ORCID: 0000-0002-4606-163X
Opole University of Technology
b.klemens@po.edu.pl

Anna Jędrzejewska
ORCID: 0009-0007-5472-7669
Medical University of Lodz
anna.jedrzejewska@stud.umed.lodz.pl

Determinants of educational and career decisions as well as educational migration based on the example of medical students at the Medical University of Lodz

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Abstract

Career decisions are most often made when taking up higher education. This is particularly true for medical students, especially medical practice students. Many factors influence the decisions made by young people. The subject literature mainly points to the importance of one's own predisposition and interests, but also to the role of remuneration and the situation of a particular profession in the labor market. The case of people who take up the medical practice course of the Ministry of National Defense (MND) at the Medical University of Lodz in Poland is particularly interesting. The purpose of this paper is to show the reasons identified during the pilot study for taking up the analyzed course, the choice of university, and the university city. The pilot study, designed in principle to verify the validity of the prepared survey questionnaire, was conducted among 29 third-year students of the MND medical practice course at the Medical University of Lodz. It was conducted using a diagnostic survey method in the form of a questionnaire with over a dozen questions. The questions addressed the factors related to the students' choice of medical practice course, determinants affecting their choice of the Medical University of Lodz and the university city. The questionnaire also contained questions about the respondents' post-graduation plans and demographics. The results of the study allowed for the identification of the most important factors that affected the respondents' choice of the medical practice course. These included personal interests, predisposition, the profession's prestige, family traditions, and the physician's remuneration. Other aspects included the factors affecting the choice of university and Łódź as the university city. The results of the study proved that the respondents chose the medical university in Łódź due to the availability of the MND medical practice course, as it is the only course of its kind in Poland. The high quality of the learning facilities, the university's prestige, and the high level of teaching were also of great importance. Łódź was chosen as the university city primarily because of its university and the availability of the MND medical practice course.

1. Introduction

The dynamics of the socio-economic changes currently taking place are forcing potential students to make well thought-out decisions regarding their future careers (Kubiciel-Lodzińska, 2014). This is particularly true for people who are planning to pursue medical professions, especially those intending to practice medicine in the future. As a rule, they are guided by a number of factors when deciding on their educational and career paths. Foreign literature, in particular, has demonstrated that they are generally guided by their interests and predispositions. The decision-making process of young people regarding the choice of university and educational migration (Rokita-Poskart, 2019; Rokita-Poskart, 2021; Rokita-Poskart and Adamska, 2022), i.e. the university city in which young medical students pursue their education, has also caught researchers' attention. Of particular interest are the motivations guiding young people in their decisions on the course of study, the university, and the university city when entering only the Polish Ministry of National Defense (MND) medical practice course provided by the Medical University of Lodz. The purpose of this paper is to demonstrate the motivations behind the educational and migration decisions of third-year students of the MND medical practice course provided as part of the quota of the MND at the Medical University of Lodz. These motivations were identified during the pilot study carried out in late spring 2023. The choice of this particular course is justified, because it is the only medical practice course in Poland provided as part of the MND quota, and students are treated as performing military service, with all the associated privileges (e.g. military emoluments, officer ranks upon graduation) and obligations (e.g. having to serve out free medical studies). The study was carried out using the diagnostic survey method in the form of a survey questionnaire consisting of over a dozen questions. They addressed many factors, including those related to the paper's objectives, i.e. factors related to choosing the medical practice course, determinants affecting the students' choice of the Medical University of Lodz and the city in which they continue their education.

The paper consists of several sections. The first section presents a theoretical framework based on a review of the literature on educational and career decisions, as well as on the motivations behind the choice of a particular university center. The following section describes the research methodology and research tool, followed by a presentation of the main research results related to the paper's objectives. The paper is concluded with a brief summary.

2. Theoretical framework of the research

The literature highlights several important factors that influence the choice of the course of study, the university, and the university city. The analysis of the existing literature concerning the motivations for choices of studies demonstrates that interests are the primary determinant (Gardocka-Jałowiec, 2021; Jarecki, 2008; Michno and Lib, 2019). However, secondary school graduates increasingly pay attention not only to their interests and predispositions, but also to the opportunities in the labor market offered by particular degrees (Heathcote et al., 2020; Hou and Lu, 2017; Nurul Liyana et al., 2019; Sedahmed and Noureldien, 2019). Other factors, such as advice from family and friends, also play a significant role in choosing a course of study (Afaq Ahmed et al., 2017; Aryani and Umar, 2020; Duku et al., 2021). Similar conclusions can be drawn from the analysis of the most important factors that determine the choice of medical studies. The majority of the existing research points to the importance of career interests and predispositions (Gyimah et al., 2018), but also to prestige, development opportunities, and salary expectations (Kelleher et al., 2016; Subait et al., 2017). Family traditions and past experiences of family and friends are also important when deciding to pursue medicine-related courses (Kelleher et al., 2016; Subait et al., 2017; Verulava, 2022).

Researchers also emphasize the factors that determine the choice of university. They usually distinguish between two groups of determinants: one related to endogenous factors and the other to exogenous factors. The level of individual educational aspirations and examination results are listed among the most important endogenous factors (Adília and José, 2021). In general, the key motivations classified as exogenous factors are those related to the university's reputation (its prestige), its placement in international rankings (Tamtekin Aydın, 2015), but also the availability of particular courses of study (Sedahmed and Noureldien, 2019).

It is also important to mention the available academic infrastructure, related to both studying (lecture rooms, laboratory equipment) and non-academic activities. In this case, the literature points to access to the accommodation offered by universities, and less frequently to access to student canteens (Sedahmed and Noureldien, 2019; Tamtekin Aydın, 2015).

A review of the existing scientific literature demonstrated that the topic of the motivations behind the choice of educational migration is extremely rarely addressed. The choice of a specific university city is mostly analyzed in studies focusing on the choice of a particular university. However, the limited number of publications indicates that the choice of educational migration is affected by factors related to the city's features and its proximity to the place of residence (Li, 2020). The most important city features that affect the choice of a university city include its economic attractiveness, i.e., career opportunities and access to a developed labor market (Aryani and Umar, 2020; Li, 2020) as well as the city's appeal derived from the availability of culture, entertainment, and recreational areas (Li, 2020). Studies indicate that the university city's location in relation to the place of residence is extremely important (Li, 2020). Other authors also highlight factors such as the availability of student accommodation (Wilkins et al., 2012), the costs of living, and the city's academic atmosphere (Ahmad and Buchanan, 2017; Tamtekin Aydın, 2015).

3. Research methodology

The pilot study, which results are presented in the article, was conducted among students of the Medical University of Lodz. It preceded the main study and aimed to initially identify the determinants of the migration of medical practice students, but also to verify the validity of the survey questionnaire and its wording. The study organization procedure consisted of three stages: a literature analysis, development of the survey questionnaire in the second stage, and carrying out the study in the third stage. The pilot study took place in April 2023 and involved 29 third-year students of the MND medical practice course at the Medical University of Lodz (medical practice course as part of the quota set out by the Minister of National Defense). The study was conducted with the use of the diagnostic survey method in the form of a survey questionnaire consisting of 14 multiple-choice questions. In each question, the respondents had the option to provide their own answers, which would serve to complete the range of answers in the main study. A five-point Likert scale was used for most of the questions in the questionnaire to assess the importance of a particular motivation to the respondent. The respondents evaluated each factor in a way that corresponded to their subjective feelings, i.e. from complete rejection to complete acceptance, while indicating whether the listed factors were "very important," "fairly important," "moderately important," "not very important" or "completely irrelevant." The survey questions addressed factors related to the students' choice of the course of study, determinants affecting their choice of the Medical University of Lodz and the city in which they continued their education. The respondents were also asked about their post-graduation plans regarding their place of work and residence, as well as the importance of particular factors in their planned internal and external migration. Additionally, the respondents were asked about their financial expectations.

The study was carried out using the PAPI (pen and paper personal interview) technique, which involved a personal interview with respondents, using a paper questionnaire with the answers marked with a pen. The respondents surveyed during the study were selected using the snowball method. As mentioned earlier, the main objective of the pilot study was to verify the research issue, which concerned the main determinants of educational and professional choices as well as the internal and external migration of the students of the analyzed course of study. An additional objective was to study the respondents' reactions to the research issue and topic, verify the correct wording of the survey questions, detect any errors and verify the accuracy of the instructions for the respondents.

4. Determinants of educational migration

In this paper, only three of the survey questionnaire's questions were analyzed: the reasons for choosing the course of study, choosing the Medical University of Lodz, and the university city of Łódź (table 1).

The metrics section of the survey contained, among others, questions about the respondents' gender, age, and year of study. An analysis of this section showed that 59% of the respondents were women (17 persons), while 41% were men (12 persons). More than half, i.e., 59% of the respondents were aged 21–22 and 41% were aged 23–24. All respondents represented the third year of the MND medical practice course in Łódź, which resulted from the way the students were selected for the study.

4.1. Determinants of the choice of course of study

The analysis of the study's results regarding the reasons for choosing the course of study revealed that the interests of the respondents were the most important factor: a total of 86% of the respondents (25 persons) declared that interests were a very important factor for choosing the medical practice course, while 14% (4 persons)

Table 1. Selected questions and answers contained in the survey

	Questions	Answer options
1	Why did you choose the medical practice course?	Due to: 1) interests 2) predisposition 3) physician profession's prestige 4) family traditions 5) physician profession's remuneration
2	Why did you choose the Medical University of Lodz?	Due to: 1) the high-quality learning facilities 2) the university's prestige – its high position in rankings 3) the MND medical practice course 4) high level of teaching 5) family/friends studied at the university in the past 6) family pressure 7) lower admission threshold at the MND medical practice course 8) the opportunity to be granted a scholarship
3	Why did you decide to take up studies in Łódź?	Due to: 1) the university 2) desire to study in close proximity to one's place of residence 3) the academic atmosphere in the city 4) studies taken by friends in the past 5) not being admitted to a university in a different city 6) family living in the city 7) size of Łódź 8) lower living costs than in most academic centers

Source: based on own research.

declared that interests were fairly important. Additionally, nearly 80% of the respondents (23 persons) declared that the physician's remuneration was a very important and fairly important factor, with only one person declaring this determinant as completely irrelevant. Regarding predisposition, 38% of the respondents (11 people) viewed it as a very important determinant for choosing the medical practice course, while 35% (10 people) declared that this factor was fairly important and 21% (6 people) declared it to be moderately important. The physician profession's prestige was considered by as many as 62% of the respondents (18 people) as a very important and fairly important factor, and only 14% (4 people) declared it to be not very important or completely irrelevant. As many as 83% of the respondents (24 people) declared that family traditions were completely irrelevant to them when choosing the course of study. The results of the pilot study confirmed the previous research available in the literature on the reasons for choosing the course of study, where interests, predisposition, remuneration and the physician profession's prestige were among the key factors. All the answers obtained during the study, regarding the reasons respondents chose their courses of study are presented on a chart in Figure 1.

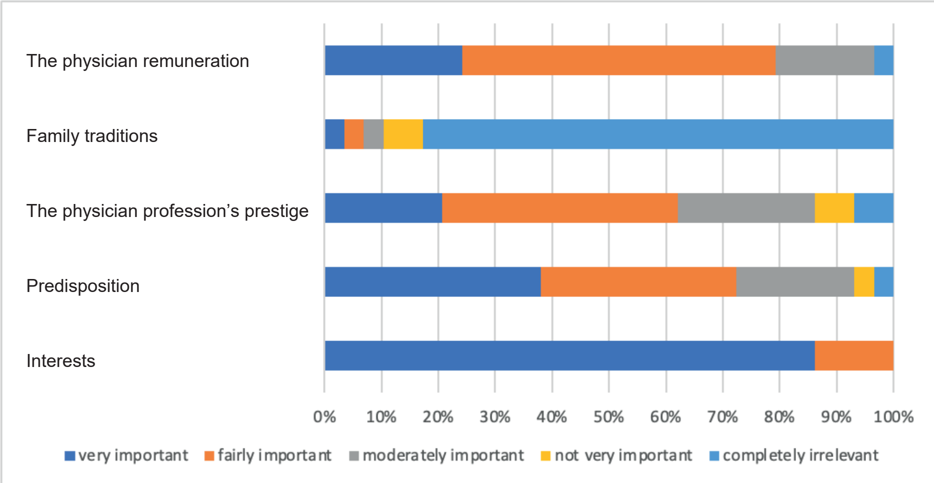

Figure 1. Determinants of the choice of medical practice course

Source: own elaboration based on own research.

4.2. Determinants of the choice of university

The results of the pilot study clearly indicate that the main reason for choosing the Medical University of Lodz was the availability of the MND medical practice course at that university. This result is not surprising, because the study was carried out among students of this particular course. It is worth noting that the Medical University of Lodz is the only university in Poland that educates military physicians within the quota of the Ministry of Defense. During the MND medical practice course in Łódź, students are accommodated and fed free of charge at the Military Medical Training Center. All costs related to studies, accommodation and catering during the course are covered by the Ministry of National Defense. As many as 93% of the respondents (i.e., 27 out of 29 persons) declared that the existence of the MND medical practice course was of great importance to them when choosing a university, while the remaining 7% (2 respondents) considered it fairly important. Respondents also highly rated the learning facilities, the university's prestige (high position in rankings), the quality of teaching, and the opportunity to receive scholarships or emoluments. For 55% of the respondents (16 individuals), the possibility of receiving scholarships or emoluments was considered very important or fairly important. It is worth noting that in addition to covering the costs of accommodation, meals, and uniforms for MND medical practice course students, the Ministry of National Defense also provides them with a monthly basic emolument in accordance with the applicable financial regulations (Medical University of Lodz, n.d.; www.wojsko-polskie.pl).

In addition to the nine defined answers in the questionnaire, one respondent provided their own answer in the "other" section: that it was very important to them to have free accommodation during the course. Although this factor likely holds greater importance, it is not yet possible to draw definitive conclusions at this stage of the study. Further analysis in the main survey would be necessary to examine this factor more extensively. Another important determinant in choosing the Medical University of Lodz was the lower admission threshold for the MND medical practice course compared to other prestigious medical universities in Poland. This difference in threshold is due to the more complex recruitment process for the MND medical practice course. Candidates applying for the Ministry of Defense's medical practice course must fulfill several requirements, including meeting formal criteria, passing a medical examination to receive a positive certificate from the military medical commission, obtaining a positive psychological certificate, and passing an English exam if the candidate did not take it during their secondary school final exams. Additionally, candidates must successfully complete a fitness test and an interview. At the initial stage of recruitment, a large selection of candidates is accepted and the results of the secondary school final exams are not yet taken into account. After passing the first stage of the recruitment process, the selected candidates undergo the second part based on the requirements of the Medical University of Lodz (Polish Army, 2023). It should be noted that civilian medical practice students only attend the final part of the recruitment process. Furthermore, 28% of the respondents (8 people) declared that a very important and fairly important factor for choosing the Medical University of Lodz was that they weren't admitted to a different university. The analysis of other answers in the survey shows that factors related to family pressure were not very important or

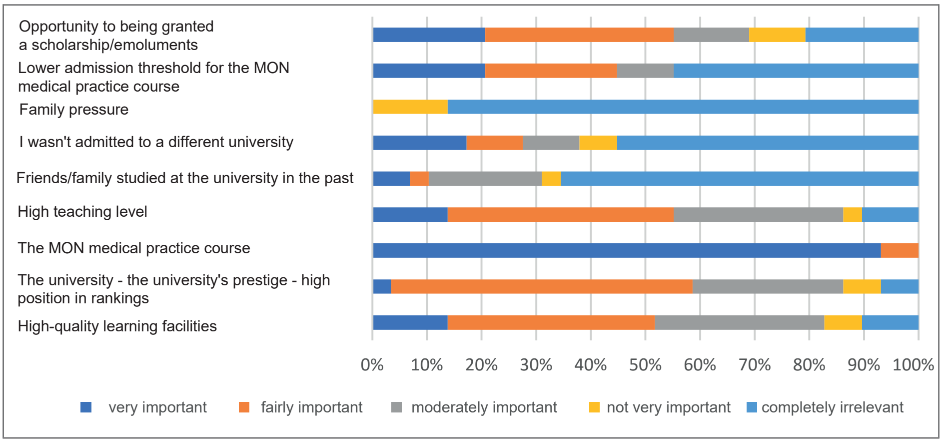

Figure 2. Determinants of choosing the Medical University of Lodz as a place to study

Source: own elaboration based on own research.

were completely irrelevant to the students, and the reason related to their friends or family having studied at the university in the past here was also completely irrelevant to them. The reasons for choosing the university are illustrated in detail on the chart in Figure 2.

4.3. Determinants of choosing Łódź as the university city

The pilot study revealed that the specific university was the primary reason for choosing the university city, according to the respondents. As many as 69% of the respondents (20 individuals) declared that this was a very important and fairly important reason for their decision. Although the survey did not include a separate answer for the question "choice of university city due to the MND medical practice course," 17% of the respondents (5 people) mentioned that the uniqueness of the MND medical practice course in Poland was the most important factor in selecting the university city. Furthermore, 38% (8 individuals) stated that not being admitted to a university in a different city was a very important or fairly important reason for choosing the current university city. Additionally, 24% (7 individuals) considered studying close to their place of residence as a very important or fairly important factor. Other reasons for selecting the university city were deemed completely irrelevant, not very important or moderately important. The results of the pilot study clearly show that the respondents chose Łódź because of the Medical University and the MND medical practice course.

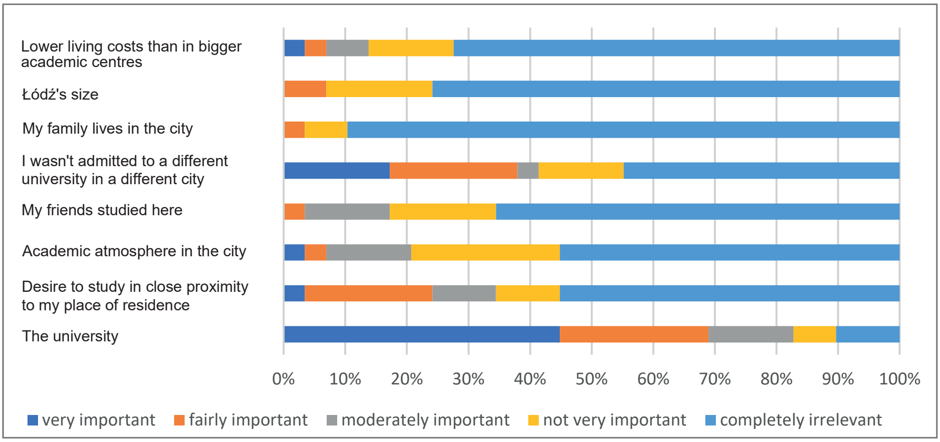

Figure 3. Determinants of choosing Łódź as the university city

Source: own elaboration based on own research.

Indeed, the answers provided by the respondents, who were exclusively MND medical practice course students, reflect their specific goal of studying this particular course. It is highly probable that the responses to these questions would differ if a group of civilian medical students were included in the sample for the main study. Civilian medical students may have different motivations and considerations when choosing their universities and university cities, which could lead to varying responses.

5. Discussion

This study examines the factors influencing students' decision-making in the area of choices: the field of medicine, the Medical University of Lodz, and the reasons for studying in the city of Łódź. The results of the authors' research indicate that several important issues are the dominant motivators of students' decisions. Although this pilot study had a relatively small sample size of 29 medical students at the Medical University of Lodz, the analysis of certain results confirms findings by other researchers on this topic.

As a rule, people who intend to pursue the medical profession are primarily guided by their interests and professional aptitude, but the prestige of the medical profession and the salary in this field are also important (Heathcote et al., 2020; Hou and Lu, 2017; Nurul Liyana et al., 2019; Sedahmed and Noureldien, 2019). While our study found some similar important decision-making factors to those reported in the literature, some differences were also identified (Kelleher et al., 2016; Subait et al., 2017; Verulava, 2022). The results of the survey conducted among medical students at the Medical University of Lodz indicate that family traditions were of little importance when they were deciding on their choice of major.

The most important factor for respondents in choosing the Medical University of Lodz is that it is the only medical school in Poland affiliated with the MND. The high-quality teaching facilities, prestige, ranking, and education level at the Medical University of Lodz were of key importance to respondents in choosing to attend the university. The results align with other studies available in the literature which similarly found these factors to be significant in students' selection of a university (Tamtekin Aydın, 2015, Sedahmed and Noureldien, 2019). For some respondents, the lower admission threshold for the MND medical program was a significant factor.

The primary reason why the respondents chose the city of Łódź was the specific university, likely because it hosts Poland's only MND medical program. Other factors impacting the choice of this university city were much less important to respondents. Unlike conclusions drawn in other studies, mainly from foreign literature, the results of this study on factors influencing the choice of academic city differed (Aryani and Umar, 2020; Li, 2020). It will be very interesting to see whether the results of this pilot study are confirmed in larger follow-up research conducted on a bigger sample of medical students in Łódź.

6. Conclusions

The division of factors determining the choice of university into endogenous and exogenous determinants is a common approach in research. The pilot study shows that the most important exogenous determinants declared by the respondents included the availability of the specific course of study, the university's prestige, and its high position in rankings. The economic factor, i.e. the opportunity of being granted a scholarship/emolument, was also fairly important. On the other hand, the study also found that endogenous determinants including interests and predisposition, were crucial factors for the respondents.

The results of the pilot study indicate that economic factors played a relatively limited role in the respondents' educational and career choices as well as their decision to pursue educational migration. The importance of economic reasons was primarily observed in two aspects: the remuneration associated with the physician profession and the opportunity of being granted an emolument at the chosen university.

The findings of the pilot study suggest that the reasons for choosing the MND medical practice course and Łódź as the university city were mostly the same. The choice of Łódź was basically only dictated by the existence of the MND medical practice course or (more rarely) not being admitted to the same course at a different university. What might be the implications of such a situation for a university city? It seems that taking care to launch a prestigious or unique but desirable course of study brings considerable benefits. A city policy should therefore strongly emphasize the role of the university as an important stakeholder in local development, and the city authorities should actively participate in lobbying for the launch of prestigious courses and in creating the right climate for a university city.

The pilot study successfully achieved its additional objective of studying the respondents' reactions to the research issue and verifying the survey questionnaire. The feedback received from the respondents in the form of comments under each question provided valuable insights into the need for additional criteria to be included in the survey questionnaire.

The results obtained from the extended study, which includes both military and civilian medical students, can provide a more comprehensive understanding of the factors that influence the choice of university and university city. This insight can guide city authorities in actively supporting and promoting the development of such courses to attract students and foster local development.

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Nicol Sosada
ORCID: 0009-0002-9680-6094
ista Customer Service Poland Sp. z o.o.
sosadanicol@gmail.com

Agnieszka Mierzwa
ORCID: 0009-0008-3201-4665
Luxmed Sp. z o.o.
agnieszkaamierzwa@gmail.com

Magdalena Syrkiewicz-Świtała
ORCID: 0000-0002-1298-7805
Medical University of Silesia
mswitala@sum.edu.pl

Public health challenges in the context of the influx of refugees from Ukraine to Poland

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Abstract

The new geopolitical situation connected Russia's invasion of Ukraine has put the Polish healthcare system in front of a huge challenge and the necessity to quickly take and implement strategic decisions aimed at providing the best possible healthcare for refugees without harming the Polish society. Objective: The main objective of the article is to present selected challenges of public health resulting from the influx of refugees to Poland. Materials and methods: the research part used a review of the current Polish literature containing information on the influx of refugees to Poland, Google Scholar, and PubMed scientific databases, as well as statistical data from the Central Statistical Office (CSO). Results: public health, despite many difficulties related to the lack of medical documentation, the threat to the health security of the Polish population, the excessive burden on the state budget, and problems with the implementation of Ukrainian specialists, developed and consistently implemented health strategies with the involvement of private health care. The reforms implemented by the Polish government, aimed at adapting to the new reality, have contributed to the provision of the necessary and specialized health services for refugees, without adversely affecting access to medical care for Polish citizens. Conclusions: The changes introduced by the Polish government, which contributed to the adaptation of the healthcare system to new challenges, such as providing support to refugees, were analyzed. The results of the analysis show that these modifications made it possible to provide the necessary and specialized health services for this group, without affecting the accessibility of healthcare for Polish citizens. The study suggests that such an approach can provide an effective model for adapting to contemporary migration challenges while meeting the needs of refugees and ensuring access to healthcare for the local community.

1. Introduction

The war in Ukraine has resulted in the largest refugee crisis in Europe since World War II. The outbreak of the armed conflict on February 24, 2022, has led to migration on an unprecedented scale that Poland has never previously experienced. It is estimated that one year after the Russian aggression on Ukraine, less than 1 million Ukrainian citizens have benefited from temporary protection, while 1.4 million Ukrainians hold valid residence permits in Poland. This represents over 80% of the total foreign population residing in Poland (Dudziak, 2023).

In this new geopolitical situation, Polish healthcare has faced a significant organizational challenge, necessitating the rapid development and implementation of a strategic plan, as well as adequate coordination of care for patients from Ukraine. The most crucial aspects were to diagnose the health problems and needs of the refugees, as well as identify and assess the scale of health issues and epidemiological risks. Establishing rules for granting refugees access to medical facilities and evaluating epidemic risks for effective planning and implementation of necessary health measures without compromising the health of Polish citizens have become the main concerns (Rozkrut and Cuchi, 2023).

2. Theoretical framework of the research

Within the scope of this publication, there are no studies or scientific sources available for direct comparison that address the same research topic and problem. The publication is an attempt at an original study of the subject and thus may constitute a new source of knowledge in the field.

3. Research methodology

The publication is based on a review of literature, articles, legal acts, reports, scientific databases, and statistical data. The source data has been systematically collected, analyzed and synthesized, and interpreted in order to understand the research problem. Based on the analysis, existing knowledge is summarized and conclusions are drawn. The resulting publication may serve as a basis for further research.

4. The influx of refugees and organizational changes in the healthcare system

The armed conflict in Ukraine resulted in a significant influx of refugees into Poland, necessitating inevitable changes in the Polish healthcare system. The Polish government was compelled to take steps to integrate the Ukrainian population within the state healthcare system. Consequently, a special law was enacted to regulate the provision of assistance, including medical care, to Ukrainian citizens (Sejm of the Republic of Poland, 2022). Primarily, this law established the procedures for granting personal identification numbers (PESEL) to refugees from Ukraine. A PESEL number is a unique identification number assigned to individuals residing in Poland. To be eligible to apply for a PESEL number, individuals had to meet several conditions, including arriving in Poland directly from Ukraine and registering a stay in Poland for more than 30 days (Ministry of Digital Affairs, 2023; Sejm of the Republic of Poland, 2004). The PESEL number enables:

— setting up and running a business in Poland;

— receiving the family benefit referred to in the Act of 28 November 2003 on Family Benefits, care benefits (e.g., nursing allowance), and child-raising benefit, colloquially known as “500 plus;”

— receiving the “good start” benefit, which is available to persons living with children in Poland. The benefit is paid to parents of children in the amount of PLN 300 each time they start the school year, until the child reaches the age of 20;

— receiving a benefit from the Family Care Capital (FCC) in accordance with the Act of 17 November 2021 on Family Care Capital;

— parents whose children attend a nursery, a children’s club, or a day caregiver are entitled to receive a subsidy to reduce the fee;

— receiving all cash and in-kind benefits granted on the basis of the Act of 12 March 2004 on Social Assistance, e.g., fixed benefits, periodic benefits, special purpose benefits, social work, or health insurance contributions;

— receiving one-off financial support, i.e., assistance in the amount of PLN 300, paid in the form of a one-off benefit without the need to document the purpose for which the funds will be allocated.

One of the organizational challenges for the Polish healthcare system is the health situation of Ukrainian nationals. The main problem identified is that refugees who visit doctors either do not have complete medical records, or their records are fragmented and missing. Additionally, the submitted documentation is in

Ukrainian language and requires translation. In such situations, Polish doctors are forced to conduct a re-diagnosis and refer the patient for further evaluation. This situation leads to prolonged treatment periods and delays in prescribing reimbursed medicines (Musiał, 2023; Sejm of the Republic of Poland, 2008; Sejm of the Republic of Poland, 2021; Sejm of the Republic of Poland, 2004; Starzewski, 2022).

In order to enhance medical services, the Ministry of Health launched the LikarPL application, which provides easier access to medical advice for Ukrainian citizens. The application facilitates communication between patients and doctors, enabling immediate diagnosis. LikarPL consists of two components: one designed for patients to fill out a form about their medical condition, available in multiple languages. After completing the form, the patient receives an individual code to be used during consultations with doctors. The second component, tailored for doctors, allows them to enter the patient's code to access the completed form. Healthcare professionals can generate this document in the language of their choice: English, Russian, Ukrainian, or Polish. During the consultation, the application provides a transcription from a foreign language into Polish, improving mutual communication and eliminating language barriers during emergency medical interventions. After the visit, the form and transcript can be downloaded in PDF format or printed out.

Another initiative to better integrate refugees into the Polish healthcare system is the introduction of the Ukrainian version of the Internet Patient Account (mojeIKP). The IKP allows patients to view prescriptions, referrals, and complete medical documentation, while the mojeIKP application enhances individuals' access to their medical data. Additionally, the Ministry of Health has extended the availability of the First Contact Teleplatform service to Ukrainian users. This service operates outside regular working hours, providing assistance in the form of medical advice, electronic prescriptions, referrals, and dismissals. (Greater Poland Medical Chamber, 2022).

4.1. Epidemic situation of Ukrainian citizens

Migration always brings new challenges to healthcare. The most important aspect is the diagnosis of health problems and needs. In the case of large-scale migration, assessing epidemic risks is crucial for planning and effectively implementing the necessary health interventions. The conflicts between Russia and Ukraine have had a long-lasting negative impact on the health of residents and the proper functioning of healthcare systems. Upon crossing the Polish border, a significant number of people seeking healthcare complained of diarrhea and fever (44%), issues related to chronic diseases (40%), and dental problems (18%). Additionally, refugees expressed the need for healthcare services for cardiovascular diseases, diabetes, cancer, and lung diseases (Central Statistical Office, 2023, February 20).

Ukraine, with fewer opportunities compared to Poland, has faced numerous infectious diseases and a strong anti-vaccination movement. According to data from the second quarter, there are fewer people vaccinated in this country compared to other European countries and mandatory vaccinations are for 10 infectious diseases. According to the National Institute of Public Health (PZH-PIB), the vaccination rate among children varies between 60% and 99% depending on the place of residence and age group. According to WHO data, the vaccination status for measles in 2020 was 81.9%, rubella 84.9%, poliomyelitis 84.2%, pertussis 81.3%, and hepatitis B 80.9%. In this situation, achieving collective resilience (requiring 90% vaccination coverage) is not possible (PZH, 2022, August 12).

Due to the outbreak of a measles epidemic in Ukraine, the Polish healthcare system was faced with the need to promote vaccinations among Ukrainian children, including them in a program of protective vaccinations, particularly against measles, whooping cough, and polio. It's important to note that the Polish population has a high vaccination coverage, especially against childhood diseases. This helps to ensure a reasonable level of safety for Polish society in the face of the development of infectious childhood diseases. It should also be noted that Ukraine has a low vaccination rate against COVID-19, one of the lowest in Europe (34%), with a high number of cases (5 million) and deaths (112,000). The COVID-19 vaccination program in Ukraine started late and was interrupted by Russia's aggression against Ukraine. Outbreaks of hepatitis A have been reported as a result of the influx of refugees and the enrollment of Ukrainian children in Polish schools. Additionally, there are approximately 250,000 people infected with HIV in Ukraine, of whom 150,000 receive treatment. The incidence of tuberculosis among the Ukrainian citizens is also significant, with a rate of 73 cases per 100,000 inhabitants, compared with the EU/EEA average of 9.5 per 100,000 inhabitants (PZH, 2022, May 05; Starzewski, 2023).

Regarding COVID-19 vaccination, it should be noted that only 55% of adults crossing the Polish border were vaccinated, with 81% of them having received two doses of the vaccine. Given this situation, it is important to protect people who live with refugees on a daily basis, the elderly, immunocompromised individuals, and children who have not received all the necessary vaccinations, from the sources of the epidemic. The key task of the Polish healthcare system is to promote preventive vaccinations, vaccinate both Polish and Ukrainian children as soon as possible, and emphasize the importance of vaccination against COVID-19 for both Polish and Ukrainian citizens (Central Statistical Office, 2023, February 20).

Children are entitled to receive protective vaccinations according to the vaccination schedule. However, doubts have arisen regarding the vaccination of Ukrainian children without medical records. In such cases, any child without a medical record is treated as unvaccinated when proceeding with immunization. The e-health center, based on the PESEL number, issues a referral for vaccination to every willing Ukrainian citizen. At the beginning of July, an information campaign was launched on the streets of Warsaw and on public transport, which aimed to encourage mothers of Ukrainian children to receive free protective vaccinations. The campaign was funded by the United Nations Children's Fund (UNICEF), which shared information about the program on social media and its website. It is worth highlighting the educational and information campaign on vaccinations of children from Ukraine, "Say YES to vaccinations," which ran from September to December 2022 and disseminated information about vaccinations and their benefits. Thanks to it, parents and caregivers of children have access to basic knowledge about protective vaccinations. For the purpose of this campaign, a helpdesk platform for parents was created, which gave the opportunity to use the help of experts and the use of chatbots. Parents could also use the Ukrainian-language hotline to talk about vaccinations. High immunization rates effectively prevent the spread of infectious diseases and protect not only the vaccinated Ukrainian and Polish citizens, but also those who are too small for vaccination or cannot be vaccinated due to medical contraindications (Deloitte, 2022).

It is important to emphasize that the challenges faced by the Polish healthcare system are not only related to infectious diseases. The health situation of Ukrainian citizens is generally worse than that of Polish citizens. Refugees above the age of 65 are burdened with cardiovascular diseases, lung diseases, diabetes, kidney diseases, and cancer. Additionally, the Ukrainian population has a higher mortality rate among citizens of working age among, partly due to inequalities in access to healthcare services based on economic and social status. The main causes of death among Ukrainians include ischemic heart disease, stroke, cirrhosis of the liver, and lung cancer. The risk of dying from chronic diseases among Ukrainian citizens aged 30–70 is 35%, which is 10% higher than in Poland. Furthermore, 10% of the refugees experience difficulties in everyday life caused by emotional and stress-related issues. Therefore, providing psychological and psychiatric support to Ukrainian citizens has become an extremely important concern (Central Statistical Office, 2023, February 20).

4.2. Accessibility of healthcare and its components

Given that Poland had no previous experience in receiving refugees on such a massive scale, the healthcare system faced the challenge of organizing refugees' access to medical facilities and hospitals following the Russian invasion of Ukraine. Considering that the conflict may lead to long-term settlement and frequent changes of the country of residence, the organization of healthcare, mobilization of resources, and activation of reserves became necessary. Within a year of the outbreak of the war, approximately 10 million people crossed the Polish border, with nearly a million Ukrainians settling permanently in Poland. By enacting a special Act on Assistance to Citizens of Ukraine (referred to as the Special Act) on March 12, 2022, the Polish government guaranteed at least access to healthcare. However, this declaration posed the risk of insufficient access to healthcare and called for long-term systemic measures (Deloitte, 2022).

Medical assistance for Ukrainian citizens is one of the most important priorities. Medical facilities were informed that every Ukrainian citizen crossing the border in connection with the armed conflict would receive free medical care. This applied to medical institutions that had signed a contract with the National Health Fund. It should be stressed that the special law does not provide solutions for the separation of health care for Ukrainian citizens. One possible solution is simply to set aside small units or parts of facilities in large agglomerations to take care of refugees. Not only did the public health sector get involved in medical assistance, but also the leaders of private medical care very soon after the start of the invasion of Ukraine opened their centers for refugees offering emergency assistance, hospital care, specialist consultations, laboratory and diagnostic tests, professional support for medical personnel from Ukraine. Luxmed Group should be mentioned here, because within two days of the outbreak of the conflict the company introduced a special medical support program, the Aid for Ukraine package. Over time, it was expanded to include professional support for doctors. The Group established cooperation with the Polish Humanitarian Action and organized individual and group collections for the benefit of Ukrainians. The Luxmed Group provided Ukraine with the necessary funds (including the purchase of two ambulances) and medical equipment and set up special medical points and all its facilities provided urgent assistance to refugees. One year after Russia's invasion of Ukraine, Ukrainian citizens can still receive immediate and long-term care at the Ptak Warsaw Expo medical center. The entire Luxmed team, which was joined by more than 270 Ukrainian healthcare workers, was involved in the unprecedented aid. In 2022, the Luxmed Group helped 201,000 people who fled the war and provided more than 360,000 medical services. In the first phase of the aid, Luxmed donated PLN 36 million for aid. After the above assistance, a medical and professional support program for refugees was officially established, which was based on three pillars: emergency assistance, hospital treatment, and professional development (Luxmed, 2022a; Luxmed, 2022b).

It should be mentioned that radiotherapy, chemotherapy, blood transfusions, treatment for malignant breast cancer, lymphatic leukemia, and chronic renal failure were among the highest-cost treatments provided to patients from Ukraine over a period of six months, including the reimbursement of medicines (7,481 cases) (Kacprzak, 2023). The vast majority of the refugees (92%) staying in Poland from June to August 2022 received the necessary healthcare, while 2% either did not have access to it or did not receive it (Central Statistical Office, 2023, February 20).

As per the Special Act, Ukrainian citizens were guaranteed access to publicly funded medical care. Moreover, any Ukrainian citizen can seek advice at any public healthcare institution nationwide without the necessity to fill out a declaration. The law also ensures their right to participate in the state's drug reimbursement program. A reimbursed prescription can be provided to any Ukrainian citizen who has legally crossed the Polish border after February 24, 2022, and possesses at least one form of identification. However, a significant issue may arise due to the absence of the patient's medical records, which can impede access to medication reimbursement. The Special Act does not specifically address the reimbursement of medications for chronic diseases.

Another critical aspect that healthcare is currently grappling with is the administration of protective vaccinations for both children and adults. In the absence of access to medical data concerning past illnesses and vaccinations, it is presumed that the vaccination has not been administered. Having previously contracted a disease does not serve as a contraindication for vaccination. Furthermore, if a doctor is to administer a protective vaccination, there is no requirement for antibody testing, which would involve additional costs and increased visits to medical facilities (Ministry of Health, 2022; Starzewski, 2022). The current concept of vaccination is strongly justified by the fact that the Ukrainian population has a high prevalence of infectious diseases, including tuberculosis, HIV/AIDS, hepatitis B and C, syphilis, measles, poliomyelitis, and multi-drug-resistant infections (Korzeniewski, 2022).

Regarding protective vaccinations against COVID-19 for the refugees, the guidelines are not clearly defined for patients who lack complete medical records (disease history), particularly for the first doses. However, booster doses may be administered to patients who have a PESEL number and received a referral. There are no statistics showing that the opening of the system to refugees has limited access to treatment for Polish citizens (Ministry of Health, 2022).

4.3. Implementation of Ukrainian doctors, nurses, and midwives into the Polish healthcare system

The ability for doctors, dentists, nurses, and midwives from Ukraine to practice their professions in Poland has been facilitated (Starzewski, 2022). According to the Act of 8 April 2022, amending the Act on Assistance to Citizens of Ukraine in Connection with the Armed Conflict on the Territory of Ukraine and certain other acts (Journal of Laws of 2022, item 830), doctors and dentists have the right to apply for conditional permission to practice their profession from the Minister of Health. The conditional right to practice applies to individuals who do not possess a diploma confirming the attainment of a specialist title issued outside the EU, as well as those who hold a specialist title issued outside the EU but lack at least 3 years of professional experience as specialists. The practice of the profession must be conducted under the supervision of a designated mentor who is a doctor. To address potential language barriers to practicing the profession, language courses have been organized at the Medical Postgraduate Training Centre "MPTC" (Polish Government, 2022).

According to statistical data, in 2021, there were 3.43 doctors per 1,000 patients, but in 2022, the doctor-to-patient ratio decreased to 2.38. The situation may improve when doctors from Ukraine gain the right to practice in Poland. However, it should be recognized that the number of doctors in Poland is lower than in the neighboring countries (Central Statistical Office, 2023, December 01).

The Luxmed Group took an active part in the implementation of the Ukrainian personnel. This assistance consisted of support in the employment process by verifying the legality of stay, work and employment opportunities, assistance in submitting applications to the Ministry of Health and OIL, and translation of documents necessary for obtaining a work permit. The Luxmed Group organized a Polish language course for doctors (both stationary and online), which was attended by 122 people and continues to this day (Luxmed, 2022a; Luxmed, 2022b).

4.4. Positive and negative effects of the influx of refugees on the Polish healthcare system

The sudden influx of the refugees had both positive and negative effects on the Polish healthcare system. Positive aspects include:

— an increase in the population, from 37 million (2021) to 41 million (2022) (Chmielewska, 2022);

— improvements in the Polish pension system (Chmielewska, 2022);

— decrease in unemployment, with the unemployment rate falling to 5.2% at the end of December 2022, compared to 5.4% in 2021 (Ministry of Family and Social Policy, 2023; Ministry of Family and Social Policy, 2022; Central Statistical Office, 2023, March 23).

Despite these positive aspects, the negative effects of the refugee influx on the Polish state are also being investigated. These include:

— an increase in scarlet fever cases among children: there were 1,368 cases in 2021 and 5,042 cases in 2022 (Department of Epidemic Control and Sanitary Border Protection of the Chief Sanitary Inspectorate (GIS), 2022);

— the lack of protective vaccinations among refugees may lead to an increased risk of infection outbreaks (Polish Government, 2022).

5. Conclusions

The public health sector is undergoing significant organizational and financial changes, including:

— the Polish government has introduced key changes designed to adapt to the new reality, such as the (special law, PESEL, mojeIKP, and First Contact Tele-platforms);

— a notable challenge is the lack of medical documentation, which can hinder the provision of effective treatment;

— there are concerns about potential threats to the epidemiological safety of the Polish population, especially in relation to infectious diseases, due to the large influx of refugees;

— treating chronic diseases could impose a significant burden on the state budget, necessitating substantial financial resources for their management;

— both public and private healthcare institutions need to be engaged to meet the demands and challenges presented by the current situation;

— integrating Ukrainian healthcare professionals into the Polish healthcare system may face obstacles that need to be acknowledged and addressed;

— these factors underscore the ongoing shifts and challenges the public health sector in Poland is experiencing in response to the mass influx of refugees and the need to adapt to evolving conditions.

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Joanna Dębicka*
ORCID: 0000-0002-8905-2565
Wroclaw University of Economics and Business
joanna.debicka@ue.wroc.pl

Edyta Mazurek*
ORCID: 0000-0001-7410-1638
Wroclaw University of Economics and Business
edyta.mazurek@ue.wroc.pl

Jana Špirková**
ORCID: 0000-0001-5864-9353
Matej Bel University in Banská Bystrica
jana.spirkova@umb.sk

Changes in the structure of mortality due to COVID-19 in Czechia, Poland, and Slovakia

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Keywords: index similarity of structure, life expectancy, age of death, COVID-19

Abstract

Objectives: The objective of our paper was to determine the statistical significance of the impact of the COVID-19 disease on the average age of death of an individual and the dependence of the average age of death on the causes of death in 2020.

Study design: Awareness of the effects and consequences of the pandemic prompted us to check whether COVID-19 had a statistically significant impact on death patterns in Czechia, Poland, and Slovakia.

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Methods: The research is based on a detailed comparative analysis of the age structure of deaths from COVID-19 in countries that are regionally and culturally close. The Renkonen similarity index is calculated, followed by the non-parametric test for similarity of structures.

Results: The average life expectancy in the analyzed countries decreased by about 1–2 years, and the forecasts of the increase in the number of deaths in 2020 turned out to be underestimated by 11% in the case of Slovakia and by 15% in the case of Poland and Czechia. COVID-19 was the fourth leading cause of death for women and the third leading cause of death for men in Poland and Czechia. In Slovakia, it was the third leading cause of death among women and the fourth among men.

Conclusions: The pandemic caused not only direct deaths from the virus, but also indirect deaths due to the disruption of healthcare systems, socioeconomic shocks, and mental health consequences.

1. Introduction

The COVID-19 pandemic not only has left a permanent mark on our way of life and work, but more importantly, it has disturbed the process of demographic change. It led to hundreds of thousands of deaths and has caused disruptions in usual care across the world (Glance et al., 2022)· There have been more excess deaths in several age groups and gender cohorts during the pandemic (Jacobson and Jokela, 2020; Torres et al., 2023). The COVID-19 pandemic is one of the causes why the improvement in life expectancy has slowed down. This, in turn, requires knowledge gleaned from an analysis of demographic change, particularly those related to life expectancy. It is essential in many areas of socioeconomic life. The European Commission's Demography Report (European Commission, 2020), describing the crucial factors of demographic changes and their impact on Europe, has already started a process to help find concrete actions and solutions to support the people, regions, and communities most affected by the crisis. Very inspiring is the article describing how the pre-pandemic situation affected the UK's response to COVID-19 (Hiam et al., 2023).

From the point of view of private institutions, such as insurance companies, any change in life expectancy or in mortality rates due to particular diseases can significantly affect the calculation of life and health insurance premiums (Dash and Grimshaw, 1993; Haberman, 1983a, 1983b; Haberman and Pitacco, 1999; Pitacco, 1994; Pitacco, 2014). Additionally, life expectancy has a significant impact on economic growth (Azomahou et al., 2009; Cervellati and Sunde, 2011). In particular, the COVID-19 pandemic triggered significant mortality increases in 2020, a magnitude that has not been witnessed since World War II. Females from 15 countries and males from 10 countries ended up with a lower life expectancy at birth in 2020 than in 2015 (Aburto et al., 2021).

The structure of causes of death can also be used to evaluate the effectiveness of public health interventions and medical treatment.

Finally, the structure of causes of death can help to prioritize research efforts. By identifying areas of high mortality rates or unexplained increases in deaths, researchers can focus their efforts on understanding the underlying causes and developing new treatments or prevention strategies.

Awareness of the effects and consequences of the COVID-19 pandemic prompted us to check whether COVID-19 had influenced death structures in particular groups in Poland, Czechia, and Slovakia. Another interesting question is whether this impact was statistically significant. Finally, it will be examined whether there have been significant changes in the causes of death in these countries in 2020. The structure of deaths will be compared with the years 2015–2019 and between countries.

However, it is important to highlight the main publications that state that each country has implemented its own system for recording deaths from COVID-19, and that the systems have evolved over the months, thus it could be that the differences in mortality observed over time and space can be attributed only to standard deviations (Garcia et al., 2021).

We also recall a very interesting article by Bhaskaran et al. (2021), in which the authors emphasize that mortality from COVID-19 shows a strong relationship with age and pre-existing health problems, as does mortality from other causes. Most of the factors associated with COVID-19 death were similarly associated with death not related to COVID-19, but the magnitude of the association varied. Older age was more strongly associated with COVID-19 death than death not related to COVID-19, as was male sex or obesity.

The analysis of mortality by cause of death (Toubiana et al., 2023) provides quantitative answers to the overestimation of the impact of the COVID-19 epidemic in France. Their analysis shows that the emergency implementation of the *COVID-19 classification* led to many biases.

A significant number of deaths, usually classified as having a different main cause, i.e., neoplasms or diseases of the circulatory system, were somehow transferred under the COVID-19 label.

2. Methods

Data on the number of deaths reported by the Central Statistical Office of Poland (GUS, 2022), the Statistical Office of the Slovak Republic (2022), the Ministry of Health of Czechia (Ministry of Health of the Czech Republic, 2022), and the Ministry of Health of the Slovak Republic (Ministry of Health of the Slovak Republic, 2022) in 2015, 2019, and 2020 were used to estimate the mean and median age for all causes, including COVID-19, divided by gender. These data were also used to determine the structure of deaths by cause in 2015, 2019, and 2020. The Renkonen similarity index (1938) was used to compare the disease structures in the studied countries, and the statistical test of structure similarity introduced by Sokołowski

(1993) was used to detect statistically significant differences between the structures. The analysis was conducted with a significance level of 0.05.

The research is based on a detailed comparative analysis of the age structure of COVID-19 deaths in countries that are regionally and culturally close. The data are taken from the official websites of each country.

The Renkonen similarity index is calculated, followed by the non-parametric test for similarity of structures.

To compare the age structures of the COVID-19 deaths in the subpopulations, an index of percentage similarity of the structures was chosen. This measure was proposed by Renkonen (Renkonen, 1938) and is sometimes called the Renkonen similarity index. To calculate this similarity measure, each population must be standardized as percentages so that the relative abundances in each population add up to 100%. Often, instead of percentages, decimal values are assigned and then the sum of all indicators of the structure is equal to 1. The similarity index of structures is then calculated as follows:

$$\omega_p = \sum_{i=1}^{k} \min\left\{\omega_i^1, \omega_i^2\right\} \tag{1}$$

where

k — number of classes into which the population was divided,

i — number of the i-th class ($i = 1, 2, \ldots k$),

ω_i^1 — structure indicator of the i-th class in population 1 (i-th element of a simple structure for population 1),

ω_i^2 — structure indicator of the i-th class in population 2 (i-th element of a simple structure for population 2).

Despite its simplicity, the percentage similarity measure is one of the better quantitative similarity coefficients available (Wolda, 1981). The Renkonen similarity index is not affected by proportional differences in abundance between populations but is sensitive to additive changes. This index ranges from 0 — no similarity, to 1 — complete similarity.

$$\omega_p = \begin{cases} 0 & \text{completely different structures} \\ (0,0.6] & \text{no similarity of structures} \\ (0.6,0.7] & \text{slight similarity} \\ (0.7,0.8] & \text{considerable similarity} \\ (0.8,0.9] & \text{high similarity} \\ (0.9,1] & \text{very high similarity} \\ 1 & \text{identical structures} \end{cases} \tag{2}$$

The calculated value of the similarity index of structures multiplied by 100% indicates how many percentages the simple structures are similar to each other. This indicator also has a very important property from the point of view of the criterion for assessing the similarity of structures. There is a statistical test of the similarity of structures based on the Renkonen similarity index given by formula (1), introduced by Sokołowski (1993). The non-parametric test for similarity of structures consists of two test hypotheses:

H_0 : The structures are dissimilar,

H_1 : The structures are similar.

For a given level of significance, we have a right-tailed rejection region.

The critical values of the similarity structure test depend on the significance level (α) and the number of classes (k) in the compared structures. Table 1 includes the critical values $z_{\alpha,k,}$ for sample significance levels and a number of classes. Since the article analyses 17 groups of causes of death and 18 age groups into which people who died from COVID-19 were divided, the critical values in Table 1 are provided for this number of classes. The critical values for $k = 2$ are only supplementary for comparative purposes.

Table 1. Examples of critical values $z_{\alpha,k,}$ for selected significance levels

Significance level	Critical value		
	$k = 2$	$k = 17$	$k = 18$
0.01	0.9908	0.6976	0.6929
0.05	0.9687	0.6465	0.6424
0.10	0.9362	0.6188	0.6153

Source: own elaboration based on Sokołowski (1993).

When the value of the test statistic ω_p (see equation 1) does not belong to the critical set ($z_{\alpha,k,}$ ∞), there is no basis for rejecting the null hypothesis H_0 that the structures are dissimilar. However, if the value of the test statistic ω_p belongs to the critical set, ($z_{\alpha,k,}$ ∞) we reject the null hypothesis H_0 that the structures are dissimilar in favor of the alternative hypothesis H_1 that the structures are similar.

An important and useful property of the similarity test for structures is that the compared structures do not have to have the same number of components. If some components are missing in the examined structures, it is assumed that these missing components are equal to 0. In other words, if there is a lack of the i-th relative frequency in the examined variables, it is assumed that this relative frequency is 0.

3. Results

To start, let us look at the average age of death in 2020 in the monitored countries.

Figure 1 presents the average age of death by sex in Czechia, Poland, and Slovakia in 2020. It can be seen that the average age of death is highest in Czechia and lowest in Slovakia. In addition, women die at an older age than men in all three countries.

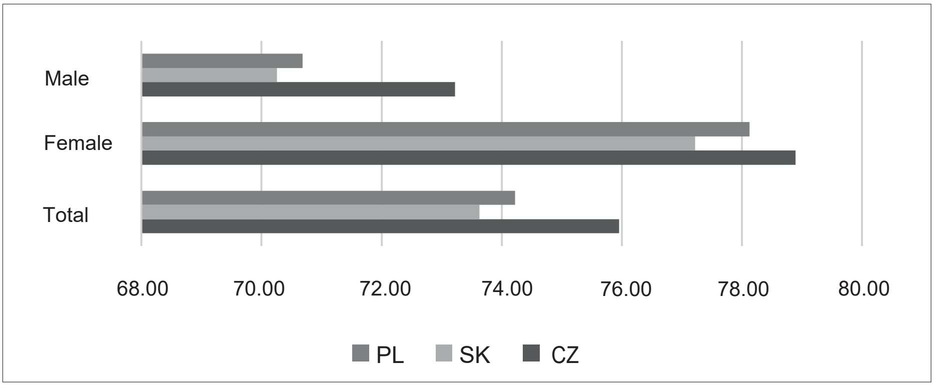

Figure 1. The average age of death in 2020 (in years)

Source: own elaboration based on Eurostat database.

To investigate what effect causes of death, including COVID-19, had on the average age of death, the mean age of death by cause of death was analyzed. In the analysis, causes of death are classified according to the International Statistical Classification of Diseases (Haberman and Pitacco, 1999), see Table 2.

The average age of death in 2020 for Czechia, Slovakia, and Poland is interpreted graphically as the sum of all bars in the graph in Figure 2, where on the horizontal axis, there are 5-year age groups (corresponding to the age of people at the time of death), on the vertical axis we have the symbols of causes of death from Table 2. The analysis of the charts allows us to identify the five causes of death that contributed most to the average age of death. These causes by country are presented next to each graph in Figure 2. It turns out that COVID-19 is in third place as a cause of death in the entire Czech population and fourth place among both the Slovak and Polish ones. In Poland, among women, the order of causes of death is the same. However, among men, COVID-19 is in third place as the cause of death that significantly impacts the average age of death. In Czechia, COVID-19 is the third most crucial cause of death among men and women. While in Slovakia, COVID-19 is the third most crucial cause of death among women and the fourth among men. In terms of age groups, the higher the age, the more significant the contribution to the average age of death.

Table 2. The causes of death's classification

Symbol	Cause of death
A–B	Certain infectious and parasitic diseases
C–D (0–48)	Neoplasms
D (50–89)	Diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism
F	Mental and behavioral disorders
G–H	Diseases of the nervous system and the sense organs
I	Diseases of the circulatory system
J	Diseases of the respiratory system
K	Diseases of the digestive system
L	Diseases of the skin and subcutaneous tissue
M	Diseases of the musculoskeletal system and connective tissue
N	Diseases of the genitourinary system
O	Pregnancy, childbirth and the puerperium
P	Certain conditions originating in the perinatal period
Q	Congenital malformations, deformations and chromosomal abnormalities
R	Symptoms, signs and abnormal clinical and laboratory findings not elsewhere classified
U	COVID-19
V–Y	External causes of morbidity and mortality

Source: own elaboration based on *The International Statistical Classification of Diseases and Related Health Problems. 10th Revision* (Ministry of Health of the Slovak Republic, 2022).

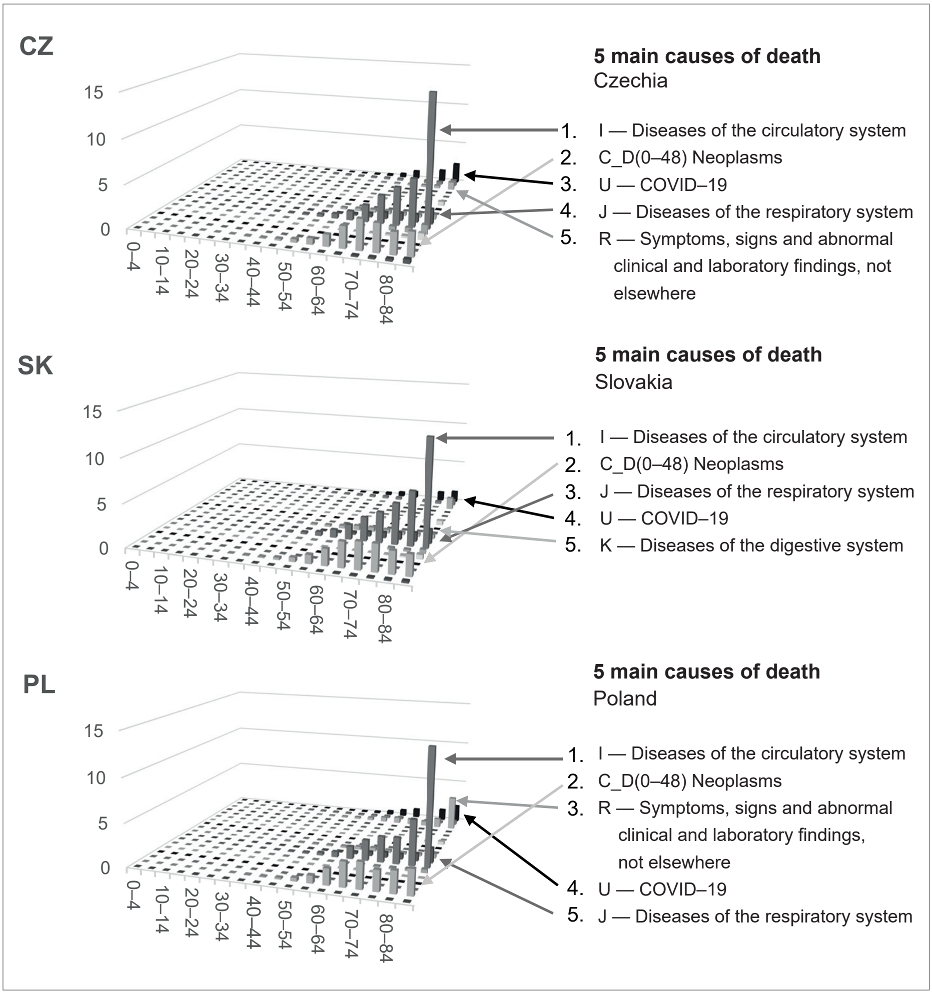

Figure 2. Contribution to the mean age of death of people in a certain age class who died of a certain cause, 2020

Source: own elaboration based on *The International Statistical Classification of Diseases and Related Health Problems. 10th Revision* (Ministry of Health of the Slovak Republic, 2022).

Figure 3 illustrates the median deaths (*Me*) and the typical range of variability for the average age (*Me–Q*, *Me+Q*) where *Q* is the quarter deviation, in the entire population and separately among those who died of COVID-19.

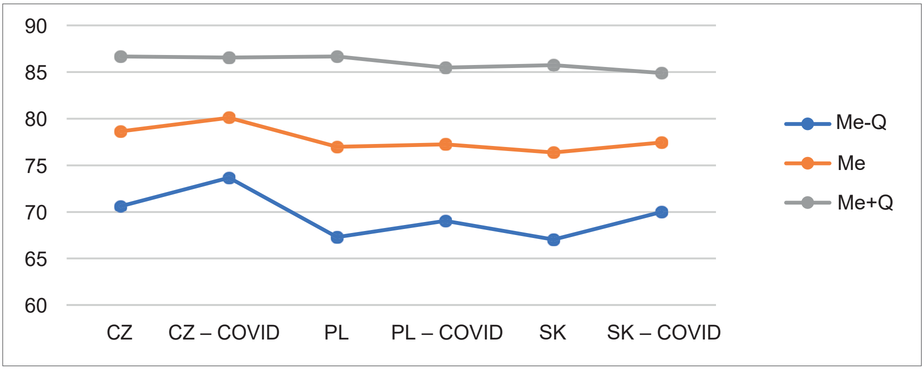

Figure 3. The median and typical ranges of the age of death in the whole population and among those who died of COVID-19 for Czechia, Slovakia, and Poland, 2020

Source: own elaboration.

Let us note that the median age of death for people who died due to COVID-19 is higher than the median age of death for people who died in 2020 by 0.4% in Poland, 1.4% in Slovakia, and 1.9% in Czechia, respectively. Larger differences are observed when comparing the typical age of death. Namely, it turns out that the typical age of people who died due to COVID-19 is within the range typical for people who died in general. This is mainly due to the fact that the quarterly deviation of the age of death among people who died of COVID-19 is 20% smaller in Poland and Slovakia, and 15% smaller in Czechia than that calculated for the entire population of people who died in 2020.

Looking at the median and typical ranges of the age of death due to COVID-19, it can be seen that in all countries, the median age of death for women is higher than for men by 3–4%. The diversity of death age for women is 10% lower than for men in Poland and 14% in Czechia and Slovakia, respectively (see Figure 4).

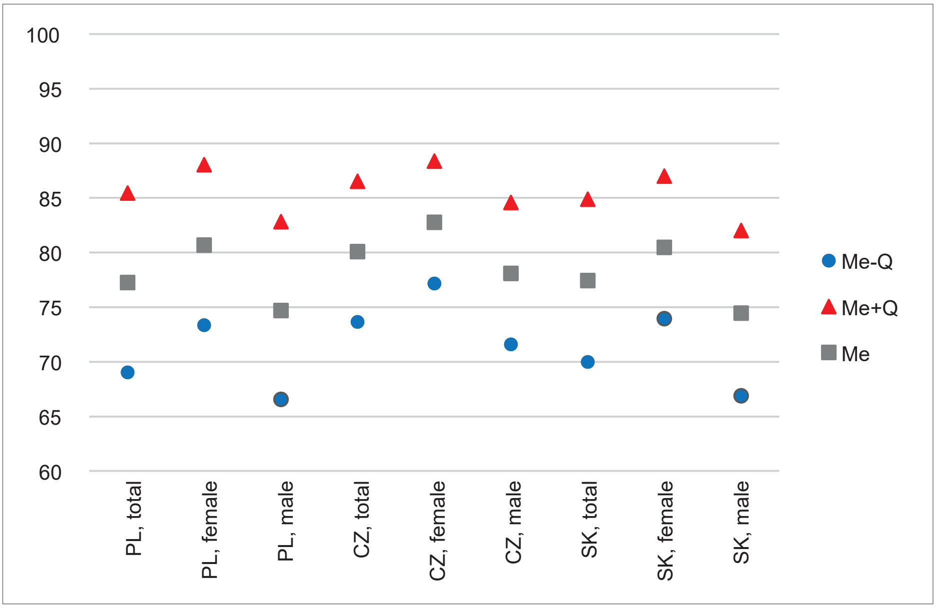

Figure 4. The median and typical ranges of the age of death due to COVID-19, 2020

Source: own elaboration.

Figure 5 presents the empirical distributions of the age of death of people who died due to COVID-19 (in general and by gender) for the populations analyzed in the article.

It is therefore natural to ask whether the age structure of COVID-19 deaths in the analyzed countries differs significantly due to gender and among themselves.

Among those who died from COVID-19, people in their 30s are a marginal part of the collective, and no differences were observed between women and men in each country. In Poland, for both men and women, the number of deaths increases until the age of 70. Afterwards, it decreases and rises slightly again from the age of 80. A similar trend is observed among Czech men; however, the correlation between age and the number of deaths increases continuously for women. In Slovakia, the number of deaths increases continuously for women like in Czechia. However, in the case of men, the situation among those who died over 80 years old is different from that in Poland and Czechia. In fact, the number of deaths from COVID-19 among men between 30 and 70 years of age increases with age, but later we observe a decline. Furthermore, relatively more men than women died from COVID-19 up to the age of 80 in Poland and Czechia and up to the age of 75 in Slovakia, while the situation is the opposite for older people, see Figure 5.

According to the similarity index of structures presented in Table 3, the similarity of the age structures of COVID-19 deaths between women and men in each country is high (see Formula (2)).

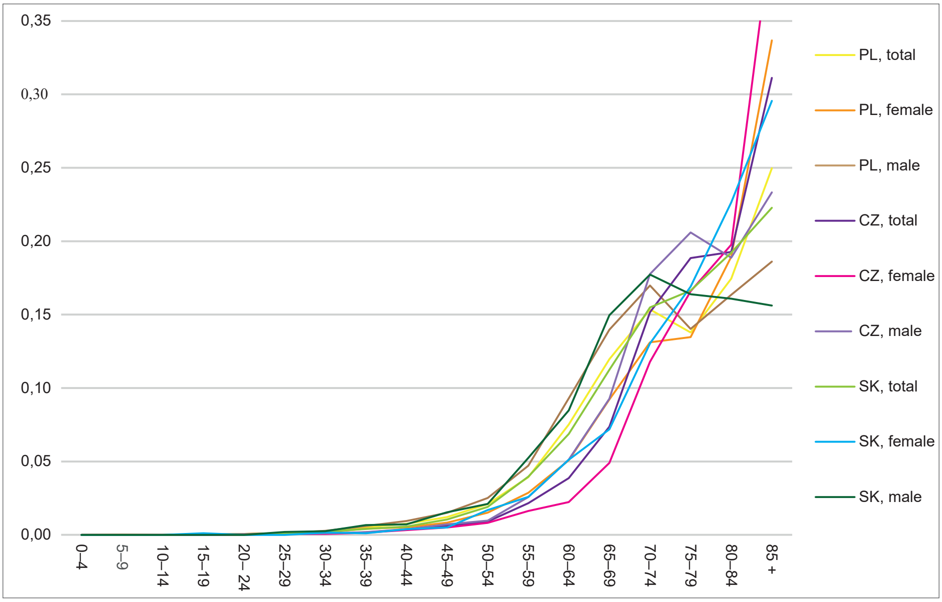

Figure 5. The age structures of COVID-19 deaths (overall and by sex) for Czechia, Slovakia and Poland, 2020.

Source: own elaboration.

Table 3. The value of the index of similarity ω_p of the age structures of COVID-19 deaths, 2020

	Populations	Structure similarity coefficient		Populations	Structure similarity coefficient
CZ	Female / Male	0.81	Female	CZ / SK	0.88
SK	Female / Male	0.79	Female	CZ / PL	0.89
PL	Female / Male	0.82	Female	SK / PL	**0.93**
Total	CZ / SK	0.89	Male	CZ / SK	0.85
Total	CZ / PL	0.87	Male	CZ / PL	0.85
Total	SK / PL	**0.95**	Male	SK / PL	**0.95**

Source: own elaboration.

Comparing the age structures of deaths due to COVID-19 in the analyzed countries, it turns out that the greatest similarity is observed between the structures of death age in Poland and Slovakia. In all cases, the similarity test of the structures rejected the hypothesis that the similarity of the structures is random. All calculated indicators ω_p gathered in Table 3 belong to the critical set $(z_{0.01,18}, \infty) = (0.6929, \infty)$ (see Table 1). Therefore, at the high significance level of 0.01, we can assume that the age structures of the deaths are very similar regardless of gender or citizenship.

To get the full picture, let's look in more detail at the empirical structure of causes of death. Over time, the change in the structure of deaths was based on observations from 2000 to 2020. This period was chosen based on a detailed analysis of deaths in Poland from 2000 to 2020. For Poland, more complex data were available. Additionally, due to proximity and similar healthcare policies, it was assumed that the structure of deaths before the COVID-19 pandemic in Czechia and Slovakia would be similar. With this data, it was possible to observe a change in trend in 2014 for most causes of death. Therefore, only the years 2015–2019 were chosen.

Based on data from 2015–2019, for each group of causes of death, the theoretical variability ranges were determined. It turned out that the data from 2020, in some groups of causes of death, exceeded the theoretical range of variability determined based on the years 2015–2019. Therefore, it can be inferred that in these groups, the number of deaths was indeed higher than in the previous five years:

— G–H: Diseases of the nervous system and the sense organs (CZ, PL);

— R: Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere (CZ);

— M: Diseases of the muscloskeletal system and connective tissue (PL),

or lower as in case of:

— Q: Congenital malformations, deformations and chromosomal abnormalities (CZ), see Table 4.

Table 4. Changes in the number of deaths in countries: total and from causes identified as outliers in relation to those in 2015–2019

Cause of death	Average rate of change 2015–2019 (%)	Increase in 2020 vs. 2019 (%)	Difference (percentage points)
CZ, total	0.08	15.18	15.10
G–H	4.00	13.00	8.00
R	4.00	138.00	134.00
Q	0.00	−14.00	−14.00
PL, total	0.70	16.16	15.46
G–H	4.00	20.00	16.00
M	1.00	12.00	11.00
SK, total	−0.22	11.30	11.52

Source: own elaboration.

It should be noted that the COVID-19 pandemic and prolonged lockdowns were the reason for changing the lifestyle of entire populations, which could significantly affect mortality from emotionally related diseases, which is very clearly visible in Czechia and Poland.

In the years 2015–2019, the number of deaths increased on average by less than 1% per year in Czechia and Poland, and decreased slightly in Slovakia. In 2020, the number of deaths increased by 16% in Poland, 15% in Czechia, and 11% in Slovakia compared to 2019. Therefore, the difference shows that for Czechia as well as for Poland, the predicted numbers of deaths, based on the data from 2015–2019, were underestimated by about 15%, and by 11% in the case of Slovakia.

The data presented in Table 4 suggest that the number of deaths from particular causes (causes identified as standing out with a high frequency of deaths compared to the previous five years) are higher and lower in only one case. Thus, the question of whether the entire structure of causes of death has been disturbed arises, see Figure 6.

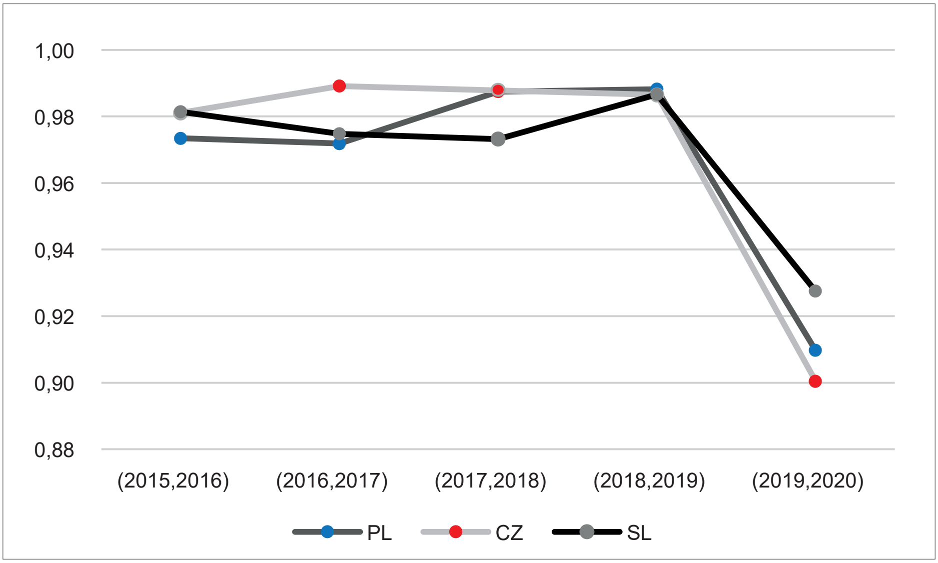

Figure 6. Similarity index of cause of death structures (year-on-year), 2015–2020

Source: own elaboration.

In each country, the coefficient of similarity of structures year-on-year decreased significantly from 2020 to 2019. However, this is not enough to reject the hypothesis that the structures are similar. The values of the test statistic for the structures of the cause of death (2020 vs. 2019) are as follows: CZ — 0.90, PL — 0.91, SK — 0.93. The verification of such a hypothesis could have been conducted due to the possibility of utilizing the discussed statistical test for the similarity of two structures with different components. However, the differences between the structures and causes of death in each analyzed country are statistically significant. The test for similarity of structures is to be checked (all similarity indexes belong to the critical set $(z_{0.01,17}, \infty) = (0.6976, \infty)$; compare with Table 1).

Let us take a detailed look at the structures of causes of death, which are presented for the years 2015, 2019, and 2020 (see Table 5).

Table 5. The structures of causes of death in 2015, 2019 and 2020

	CZ			PL			SK		
Cause of death	2015	2019	2020	2015	2019	2020	2015	2019	2020
I	0.479	0.444	0.409	0.468	0.405	0.376	0.457	0.439	0.429
C–D (0–48)	0.257	0.270	0.233	0.273	0.272	0.234	0.262	0.265	0.246
U (COVID-19)			0.086			0.089			0.065
J	0.070	0.077	0.067	0.063	0.068	0.062	0.069	0.063	0.069
V–Y	0.056	0.055	0.047	0.052	0.050	0.044	0.048	0.060	0.048
K	0.044	0.047	0.042	0.038	0.044	0.041	0.055	0.060	0.055
G–H	0.028	0.035	0.034	0.014	0.016	0.017	0.020	0.027	0.020
R	0.011	0.013	0.027	0.068	0.113	0.107	0.017	0.026	0.017
F	0.014	0.017	0.016	0.006	0.010	0.009	0.013	0.016	0.013
A–B	0.019	0.017	0.016	0.005	0.004	0.004	0.010	0.016	0.010
N	0.013	0.016	0.015	0.008	0.011	0.012	0.018	0.017	0.018
M	0.002	0.003	0.002	0.001	0.001	0.001	0.001	0.001	0.001
D (50–89)	0.002	0.002	0.002	0.001	0.001	0.001	0.001	0.001	0.001
L	0.002	0.002	0.002	0.001	0.001	0.001	0.003	0.004	0.003
P	0.001	0.001	0.001	0.002	0.002	0.001	0.002	0.003	0.002
Q	0.001	0.001	0.001	0.001	0.001	0.000	0.003	0.003	0.003
O	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Source: own elaboration.

In 2015–2019 the structures were stable and similar to each other. The introduction of the new cause of death in 2020 somewhat disrupted the death structure in three countries, as it became the third (CZ) and fourth (PL and SK) leading cause of death. However, from a statistical point of view, the difference in the structure of causes of death in 2019 cannot be considered statistically significantly different from that in 2020.

4. Discussion

This study provides a preliminary assessment of changes in the structure of mortality, taking into account COVID-19. First of all, it turned out that life expectancy in the analyzed countries fell by about 1–2 years in 2020, and the forecasts of the increase in the number of deaths in 2020 were underestimated by 11% in the case of Slovakia and by 15% in the case of Czechia and Poland. COVID-19 was the fourth most significant cause of death among women and the third among men in Poland and Czechia, and the third among women and the fourth among men in Slovakia.

Furthermore, it has been shown that COVID-19 may have an indirect impact on mortality from other causes, for example, by disrupting routine healthcare. The similarity coefficient of the cause-of-death structures (2020, 2019) decreased by (8–9)% compared to that in the subsequent years of the period 2015–2019. Nevertheless, the differentiation of the cause-of-death structures in 2020 cannot be considered statistically significantly different from that in 2015–2019. However, it is possible to distinguish causes of death due to which the number of deaths increased enough in 2020 compared to 2015–2019 to significantly disrupt the average rate of change in the number of deaths due to these causes. The results show that COVID-19 is undoubtedly a disease that generated demographic changes in the monitored countries. The pandemic has caused not only direct deaths due to the virus, but also indirect deaths due to the disruption of healthcare systems, social, and economic upheaval, and mental health consequences.

However, it is necessary to be very careful when using these data to assess the structure of mortality, including the coronavirus, not only between the countries but also within one country. The methods of diagnosing the disease vary; a different set of criteria is used, and it can change even within one country during a pandemic wave (Tsang et al., 2020). Some infected people have no symptoms. Therefore, it is very unlikely that they will be included in the coronavirus statistics. The World Health Organization (2020), in its guidelines for the certification and classification of COVID-19 as a cause of death, gives a broad definition that include confirmed and suspected cases.

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Ethical approval

The authors declare that they have written a completely original work based on their own research and if they have used the work or words of other authors, it has been properly cited or cited to the best of their knowledge.

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Elżbieta Kawecka-Wyrzykowska
ORCID: 0000-0002-6655-874X
SGH Warsaw School of Economics
ekawec@sgh.waw.pl

Carbon Border Adjustment Mechanism (CBAM): Geographical and commodity scope in Polish imports

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Abstract

The Carbon Border Adjustment Mechanism (CBAM) is a new instrument of the EU's European Green Deal policy. It is intended to contribute to the reduction of greenhouse gas emissions in the world. The CBAM provides for a levy (tax) to be imposed on energy-intensive imports which heavily pollute the environment. The aim of the study was to provide a quantitative assessment of the commodity and geographical coverage of the CBAM in Polish imports. Several indicators were calculated to assess the possible negative impact of CBAM. These indicators can be interpreted as rough measures of the effects of the tax. They were compared with similar indicators calculated by other authors for the whole EU.

This paper is a continuation of earlier studies of other researchers who analyzed CBAM coverage and possible implications, while adopting assumptions other than those finally included in the CBAM Regulation.

The key findings and main conclusions are as follows: Negative effects of the CBAM will be concentrated on several product groups: steel products, chemicals, polymers, and aluminum. These products accounted for as much as 96% of Poland's external import subject to the levy. The scale of the final effects of the tax will depend mainly on the level of ETS allowance prices and the intensity of adjustments made by domestic companies and foreign partners. The study ends with two conclusions: First, manufacturers have several years to prepare a strategy to limit the negative effects of the levy (it will be charged as of 2026), but they should start the adjustments as soon as possible. Second, the carbon footprint of a product (as low as possible) is becoming an increasingly important factor in the manufacturers' international competitiveness.

The method of descriptive analysis as well as statistical methods were used.

1. Introduction

One of the most urgent global problems is climate change, its negative effects are already felt by many countries and are rapidly spreading to the entire globe. It is primarily (though not only) about the rapidly progressing climate warming, caused to a large extent by the emission of greenhouse gases (GHG) resulting from human activity. The EU is implementing a program to reach climate neutrality in 2050. The program provides for a radical reduction in greenhouse gas emissions, so that in 2050 these emissions would not be higher than those that nature is able to neutralize itself (e.g., thanks to more trees absorbing CO2). An important instrument of this policy is currently the EU ETS (Emissions Trading System), which offers companies the possibility to purchase allowances for additional GHG emissions, above the limit of free allowances granted to them. The cost of allowances is passed on by producers to the prices of their products. In most non-EU countries, a system similar to the ETS is not in place or is being developed, so suppliers of carbon-intensive products from these countries do not incur such charges. This makes them more competitive than the EU producers.

Due to the rising costs of GHG emission allowances, some producers move the production of high-emission components outside the EU, to countries with lower levels of climate protection (without the cost of ETS) and, as a result, lower production costs. This phenomenon is called carbon leakage to other countries and means that the level of GHG emissions on a global scale does not decrease, but only changes the place of their generation (European Commission, 2021a). The new instrument to prevent carbon leakage and to reduce GHG emissions, introduced recently in the EU, is the carbon border adjustment mechanism (CBAM).

This mechanism provides for an import levy (tax) designed to offset the cost of purchased emission allowances under the ETS, incurred by EU producers (Regulation, 2023/956). Thus, the new tax is to level the conditions of competition in the EU single market (European Commission, 2021b, 14–15). CBAM is therefore an important instrument of the EU climate policy, consistently being implemented since 2019 under the European Green Deal and strengthened on the basis of the gradually implemented package "Ready for 55" (Kawecka-Wyrzykowska, 2022). At the same time, the CBAM is to level the conditions of competition of the EU industry in relation to suppliers from countries that do not have such strict climate and environmental regulations as the European Union (European Commission, 2021b, 14-15). The third goal of the CBAM, apart from reducing the risk of GHG leakage and improving the competitiveness of the EU industry, is to persuade foreign partners to introduce regulations similar to the ETS.[1] In this way, the decarbonization effect would be much stronger on the scale of the global economy. The

[1] The incentive for the partners to introduce provisions similar to the ETS should be the desire to avoid the deterioration of the price competitiveness of their products offered on the EU market, as the costs of GHG emissions incurred abroad will be deducted from the cost of ETS allowances.

amount of the tax will depend on the GHG emissions content of production (carbon footprint) and the difference between the EU ETS price and any carbon price paid in the production country (outside the EU). The EU importers will be allowed to deduct carbon footprint costs if the supplying country uses a system similar to the EU ETS. The new levy will be collected from 2026,[2] but the CBAM started operating in October 2023. In the first, transitional phase, importers are only required to report emissions on a quarterly basis. The border carbon levy will be imposed on selected goods, the production of which generates high GHG emissions, as a result of which they are most exposed to the risk of pollution leakage (see their list in Table 1).

The aim of this study is to identify products in Polish imports that are most exposed to the effects of the tax and the main countries from which such products are imported. The other aim is to calculate several indicators which can be interpreted as rough measures of the effects of the tax, e.g., the share of CBAM products in imports of relevant groups of products and in GDP. Indicators for Poland were compared with similar measures calculated by other authors for the whole EU. As a result, conclusions were drawn regarding the scope of possible negative effects of CBAM for Poland compared to other EU countries. The conclusions also address the issue of how Polish enterprises can adapt to the new tax in order to mitigate its negative effects.

2. Theoretical framework of the research

The carbon levy has a strong theoretical basis, mainly in the theory formulated by A.C. Pigou (1920).[3] Pigou was the first economist to present the concept that the tax (since then called the Pigou tax) can be used to reduce the negative side effects (so-called externalities)[4] of the activities of entities (Pigou 1920, 168). Pigou's contribution to the theory includes introducing a clear distinction between individual (private) and social costs of economic activity (Grądalski, 2002; Prandecki, 2007). Pigou stated that the actual social costs of economic activity are greater than the sum of the individual, "market" costs of production that are charged to the producer. The difference between them is the externality of economic activity. He pointed out that producers aim to maximize their marginal private profit, without incurring individual costs that they pass on to other entities (usually consumers). This cost is therefore externalized. The purpose of the tax proposed by Pigou is to

[2] In order to avoid double protection of EU industry, which would be incompatible with GATT/WTO rules, the length of the transition period and full introduction of CBAM are linked to the phasing out of free allowances under the ETS.

[3] A few years ago, a carbon tax as a good answer to the threat of climate change was supported by a number of Nobel Prize winners, including M. Friedman, A. Laffer, W. Nordhaus.

[4] The very concept of externalities was introduced to the theory by A. Marshall at the end of the 19th century.

internalize the costs of externalities (although Pigou did not use those terms), i.e., assigning them to a specific producer that caused the cost (and including them in the company's bill). In this way, the tax would reflect the real environmental cost of the activity.

A different approach to solving the problem of externalities was proposed by Coase. According to his theorem (Coase, 1960), when the activity of one entity negatively affects the other entity and external costs arise, the solution to the problem between the parties concerned is negotiation. The condition for its effectiveness is low transaction costs. This concept is often criticized, e.g., for the lack of precision and the defense of the free market, in a situation where a significant part of economists believe that externalities are an important cause of market failures (distort the "invisible hand" mechanism) and require the involvement of the state (e.g., in the form of ecological taxes). This concept has relatively little use in environmental protection, but it has revolutionized economics by drawing attention to the fact that government intervention is not always needed. Since the 1960s, economic theory has increasingly taken into account the issue of environmental protection costs (Zrałek, 2016). The environmental aspect gains value within various sub-areas of economics, such as environmental economics and ecological economics. It is also visible within the framework of already existing theories, as well as new economic ideas, including the theory of sustainable growth, the theory of prosperity, the concept of strong sustainability, etc.

An important addition to the idea of the Pigou tax is the theory of the double dividend formulated by Pearce (1991). It is also known as ecological tax reform (ETR). It provides for a change in the structure of taxation of factors of production. The gradual reduction of the tax burden on traditional factors — labor and capital — is to be accompanied by an increase in the tax burden on other resources, mainly energy. The result is two types of benefits: in the form of the so-called economic dividend resulting from the reduction of the cost of traditional taxes and the so-called environmental dividend, i.e. ecological benefits. In order to achieve such goals, a reform of the entire tax system is needed. The ETR has been to a large extent a response to the inefficiency of the existing tax systems, which do not encourage the economical use of natural resources, as well as to the growing perception of environmental external costs by societies (Kudełko and Pękala, 2008).

The very idea of the tax as an instrument for preventing the adverse effects of human activity has also been developed. The concept of green taxes and other instruments that burden entities with negative effects on the natural environment has emerged (Milne, 2007). Such taxes can work in two ways. One is a tax increase that discourages activities or commodities that are environmentally damaging. The second one is a tax decrease that encourages environment-friendly decisions. In both cases, the tax instruments should reflect the standard principles of tax theory, such as equity, economic efficiency, and administrative feasibility. In addition, green taxes should take into account the environmental impact of the tax instrument. Examples of both types of green taxes are the CBAM concept and the reduction of CO_2 emissions.

3. Research methodology

Reliable analysis and assessment of the possible impact of the carbon border levy require a complicated research apparatus.[5] Also, detailed data is required and that is not readily available. For these reasons, this article uses a simplified approach to the analysis of the possible impacts of the introduction of the border levy for Poland. The value of the CBAM imports was calculated, and the goods and partners subject to the levy to a relatively greatest extent were identified. The obtained values were used as the basis for drawing conclusions as to the scale of the effects of the application of the levy, in terms of goods as well as geography (main goods and suppliers to Poland exposed to the effects of the levy). A similar approach has been used by other authors (Darvell, 2022; Dumitru et al., 2021). Calculations were made on the basis of data on the value of Poland's imports in 2021, taken from the Central Statistical Office database. According to the CBAM Regulation, imports by country of origin will be the basis for calculating the value of the tax and this concept was adopted in this study.[6]

Data for 2021 was used for the calculations. This year seems to be the most representative, although trade statistics for 2022 are already available. Data for 2021 reflect the overcoming of the great freeze of economies (and trade) introduced in 2020 in the aftermath of COVID-19. At the same time, they are not burdened with price distortions visible in 2022, mainly as a result of the war in Ukraine. The analysis includes goods from outside the EU (alternatively: extra-EU import), because only such goods will be covered by the tax.[7] Where they were compared with global imports (extra-EU imports to Poland plus intra-EU acquisitions), this was clearly stated. The list of goods subject to border levy includes products agreed upon by the Council and the European Parliament at the end of 2022 (there are seven groups, see Table 1).

[5] Such calculations for the entire EU, with particular emphasis on Poland, were made, among others, by Pyrka et al. (2020). They are not referred to here due to significant methodological differences with other studies, discussed later in this section.

[6] For all taxable products analyzed here, imports by country of origin were slightly higher than by country of dispatch. The only exceptions were cement and electricity, but the differences in the value of imports were small.

[7] Due to the fact that the levy is not yet collected, the term "import of goods subject to the border levy" is understood as the hypothetical value of import of CBAM goods, calculated on the basis of historical data from 2021.

4. Research results

4.1. Value and structure of imports subject to the CBAM in Poland — results of own research

Table 1 shows that in 2021, Poland's imports of CBAM goods amounted to almost EUR 12.8 billion (C.2 item in Table 1). This accounted for 9.6% of imports to Poland from outside the EU (item C.3) and 4.4% of total imports to Poland. At the same time, the analyzed products accounted for slightly less than 1/3 of total imports of these products (29.6%, item C.4). In other words, the vast majority of the products in question came from EU suppliers and will not be affected by the imposition of the CBAM (70.4%, item C.8). The situation was, however, different in the case of individual groups of products.

The imports of products subject to CBAM are dominated by four groups: polymers, steel products, aluminum, and chemicals (a total of EUR 12.3 billion — column 2, i.e., about 96% of extra-EU imports covered by the levy — column 5).[8] From the point of view of the effects of the levy, the share of these products in the total imports of a given group from outside the EU is more important (column 4). The higher it is, the greater the effects of the levy will probably be.[9] The share understood in this way (share of CBAM products in import of a given group of goods) was the largest in the case of aluminum and chemicals, as it amounted to approx. 49% and 43%, respectively, of total imports of these products from outside the EU (column 4). The effects of imposing a levy on these goods can therefore be relatively large for the recipients of both product groups. The share of imports subject to the CBAM (and possible scope of effects) was also high for fertilizers — almost 50% of their external imports to Poland was covered by the CBAM. However, the scale of these imports was much smaller: slightly more than 3% of extra-EU imports of CBAM goods, while the corresponding shares for aluminum and chemicals were 16% and 14% (items B.3, B.5, B.6, column 5). Also in the case of cement and electricity, the effects of introducing a carbon border tax should not be severe due to small imports of these products, in particular imports from outside the EU. Polymers and steel products are products that weighed the most in all imports subject to the levy: the share of both items was similar and amounted to approximately 33% of each of these imports (items B.7 and B.4, column 5). At the

[8] In this part of the analysis, we assume that all imports from outside the EU are actually subject to the tax. We therefore omit (due to the lack of reliable data) countries that apply a GHG reduction system similar to the ETS in the EU.

[9] From the point of view of the presented conclusions, it would be more correct to calculate the share of imports from outside the EU in the total consumption of a given product. In the vast majority of cases, the analyzed goods are most likely produced in Poland, and imports from outside the EU only supplement this production. Such an approach was prevented by the lack of comparable data for the import and consumption of the analyzed products.

Table 1. Poland's import, including CBAM products, in 2021 (EUR million and %)[10]

Products	Total import (EUR mln)	Extra-EU import				Intra-EU import		
		Value (EUR mln)	% share of CBAM products in total extra-EU import	% share of CBAM products in a given group of goods	% share of CBAM products in total import subject to the levy	Value (EUR mln)	% share of products in total intra-EU import	% share of products in a given group of goods
	1	2 = 1 − 6	3 = 2 : A.2	4 = 2 : 1	5 = (2 : C.2)	6	7 = 6 : A.6	8 = 6 : 1
A. Total import	289,606	132,983	100	45.9	—	156,623	100.0	54.1
B. CBAM products								
B.1. Cement	121	32	0.0	26.6	0.3	89	0.1	73.4
B.2. Electricity	891	47	0.0	5.3	0.4	844	0.5	94.7
B.3. Fertilizers	851	418	0.3	49.2	3.3	433	0.3	50.8
B.4. Steel and products	15,222	4,305	3.2	28.3	33.5	10,916	7.0	71.7
B.5. Aluminum	4,102	2,019	1.5	49.2	15.7	2,083	1.3	50.8
B.6. Chemicals	4,096	1,741	1.3	42.5	13.6	2,355	1.5	57.5
B.7. Polymers	18,078	4,269	3.2	23.6	33.2	13,809	8.8	76.4
C. Sum (B.1.–B.7)	**43,361**	**12,831**	**9.6**	29.6	**100.0**	**30,530**	**19.5**	**70.4**
D. Other import	246,245	120,152	90.4	48.8	—	126,094	80.5	51.2

Note: other imports — other products within the analyzed groups that are not subject to the levy (e.g., the levy applies only to Portland cement, not to other types of cement); it is the difference between total imports and the sum.

Source: own elaboration based on Central Statistical Office data, 2022.

[10] For the purposes of this subsection, statistical data was collected and compiled by Dr. Łukasz Ambroziak.

same time, these goods accounted for about ⅓ each of the import of a given product group: approximately 24% and 28%, respectively (item B.7 and B.4, column 4). For these reasons, Polish recipients of polymers and steel products are most exposed to price increases following the full implementation of CBAM Regulation.

Figure 1 shows which countries the goods subject to the levy originated from. In 2021, these were first of all Russia and China, accounting for 19% and 17% of all such imports, respectively. The shares of Ukraine, South Korea, and Turkey were also relatively high, respectively 12%, 7%, and 5% of Poland's external imports. Together, imports from these countries accounted for 96.4% of imports of goods covered by CBAM. Let us remember that these data reflect the situation in Polish trade in 2021. Russia's invasion of Ukraine caused significant shifts in the geographical and commodity structure of Polish imports and in 2023 the above proportions were certainly different.

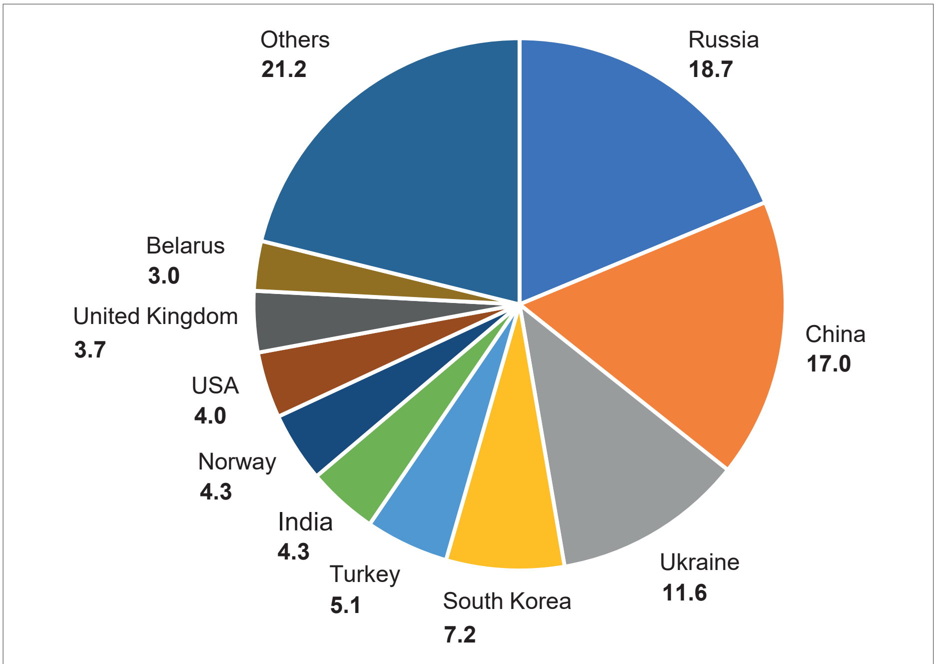

Figure 1. Countries that weigh the most in Polish imports covered by the border levy (share in Polish extra-EU imports covered by the levy in 2021, in %)

Note: imports from Norway, as a member of the European Economic Area, are exempt from the levy.

Source: own elaboration based on Central Statistical Office data, 2022.

The above indicators refer to countries which are Poland's significant trading partners and the scale of imports subject to the levy discussed here will have relatively the greatest impact on Polish importers and final recipients of these goods.

However, the picture of the possible effects of the levy from the point of view of foreign suppliers is different. Figure 2 shows that the share of CBAM goods was very high in 2021 total exports of several countries to Poland. Among them were Iceland, Moldova, and the United Arab Emirates (UAE), for which the share fluctuated around 60%. From the Polish perspective, they were tiny suppliers of goods in question. Let us note that for Iceland's exporters to Poland the levy will not matter, because the country participates in the EU ETS and thus is not subject to this levy.[11] Also in the exports of Egypt, Belarus, Serbia, and South Africa, the share of goods subject to the levy was high, as it exceeded 20% of their total export to Poland. In turn, the share of CBAM goods in imports from such countries as China, USA, Vietnam, and Japan was relatively low (less than 10%).

The carbon border levy, when it begins to be collected (in 2026), will result in a deterioration of the competitiveness of the products concerned. Their export to Poland (and to other EU countries) may decrease. A necessary condition for avoiding the levy is the existence in the exporting countries of an instrument similar to the EU ETS, which will encourage producers to reduce GHG emissions. In a few years only, it will be possible to assess to what extent this measure has achieved its goal.

The absolute value of the commodities discussed was usually modest and Polish recipients will probably be able to adjust to the levy relatively easily (e.g., by improving production efficiency and reducing the consumption of imported inputs per production unit). However, for the above-mentioned countries, the situation may be more difficult, in particular when Poland is an important market for them.

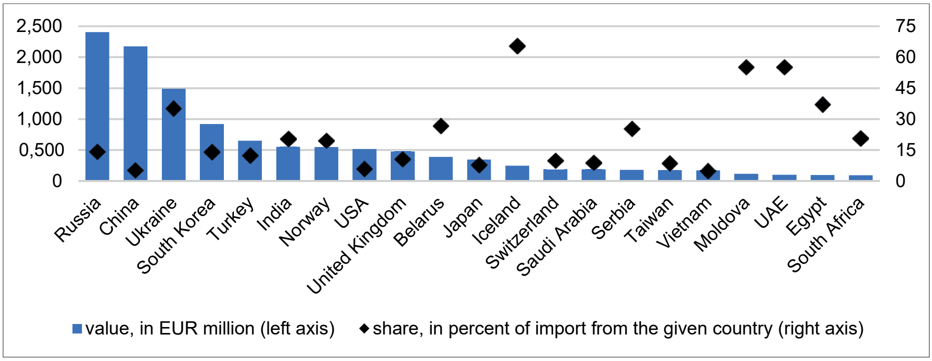

Figure 2. Countries in Polish imports most at risk of border duty in 2021: Share of CBAM products in total countries' exports to Poland

The value means Polish import of CBAM goods from a given country.

Source: own elaboration based on Central Statistical Office data, 2022.

[11] Also, other European Economic Area members (Norway and Liechtenstein) participate in the EU ETS. Switzerland has also been connected to this system on the basis of a separate agreement.

Steel and its products, the largest group of products covered in 2021 by CBAM (33.5%, Table 1), came from many countries. The biggest suppliers were Ukraine and Russia (28% and 24% of imports of steel and steel products covered by CBAM). These products were also imported from China, India, South Korea, Belarus, and Turkey. The value of imports of polymers was almost identical (33.2% of imports of CBAM products). The largest suppliers were: China and South Korea (respectively 25% and 13% of imports of these goods). Chemical products originated mostly from China and Russia. In turn, in the imports of individual countries, the most important were: from China — polymers and chemicals (respectively 50% and 25% of imports of products from this country covered by the levy), from Ukraine — steel (82%), from South Korea — polymers (58%), from Turkey — polymers, steel and chemicals (37%; 31% and 30%), from India — steel (52%), from Vietnam — steel (51%), from the UAE — aluminum (70%).[12]

4.2. Import of goods subject to the levy in Poland against the background of the entire EU

From the point of view of the effects of the CBAM, it seems interesting to show the volume of imports subject to the levy in Poland against the background of the entire EU27. Calculations for the entire group were carried out by, among others, Darvell (2022). His results are comparable to the above calculations for Poland, because they were made according to a similar methodology (the same 2021 as the basis for the calculations and the same range of seven product groups).

The main conclusions from this comparison are as follows. EU27 imports of CBAM products from all non-EU countries accounted for 9.2% of total EU external imports (in 2021)[13] (Darvell, 2022). In Poland's imports from outside the EU it was 9.6%, so not much more. This share in Poland's total imports (intra-EU plus extra-EU) reached 4.4%. In nominal terms, China was by far the largest supplier of CBAM products to the EU27, followed by the USA, Russia, and the United Kingdom, with a total of 55% of EU CBAM imports from ten major suppliers. Turkey, Japan, South Korea, India, Vietnam and Taiwan occupied further places with much lower supplies to the EU. In the case of Poland, these were Russia, China, Ukraine, South Korea and Turkey. These five partners accounted for 54% of all CBAM imports. In relative terms, the largest share of EU imports covered by the levy came from India (24% of imports from this country), followed by Turkey (around 16%) and South Korea (15%). Next on the list were: Vietnam, China, the USA, Japan, Russia, the UK, and Taiwan with shares ranging from 7% to 11% of the CBAM

[12] Own elaboration based on Central Statistical Office data (GUS, 2022).

[13] Based on similar calculations for 2020, Hufbauer et al. (2021) came to the conclusion that Ukraine was also among EU partners with the largest share of CBAM goods, i.e., 16% of EU's imports from Ukraine.

imports from these countries to the UE (Darvell, 2022). These shares can be interpreted as measures of the impact of the border levy. They relate to important EU trading partners. This list does not include smaller suppliers for whom this ratio could be higher. As mentioned above, the Polish example, taking into account all trading partners, shows that the countries most exposed to the levy in 2021 were Moldova and the UAE: around 60% of supplies of each of those countries to Poland included CBAM products. In imports from Ukraine, the respective share amounted to 35%, from Belarus — 27%, from Serbia and India — 20% each, from Russia — 14%, and from China — 5%. In terms of goods, there is a very strong concentration of CBAM goods in EU imports. Three product groups: polymers, chemicals and steel products constituted a total of 87% of imports subject to the levy (respectively: 31%, 29% and 27% of all analyzed imports subject to CBAM).[14] In the case of Poland, steel and steel products as well as polymers were also among the products significantly exposed to the effects of the border levy, constituting ex aequo each 33% of imports subject to the CBAM. The next two groups of goods, with a share lower by half, were chemicals and aluminum. These four groups accounted for as much as 96% of Poland's external import subject to the levy.

In addition to this comparison, let us add that among the EU27 countries, Bulgaria is most exposed to the effects of the levy: in this country, as much as 65% of external imports were covered by the border levy. Ireland and Greece did not have much smaller shares. In turn, the corresponding rate was between 40%–50% in Italy, Lithuania, Latvia and Belgium. In Poland it was around 25%.[15] On the other hand, it was the lowest in Luxembourg and Austria — less than 10% (Dumitru et al., 2021).

The final impact of the levy on the economy of a given country will depend on various factors. First of all, it is a question of the share of CBAM imports in the production of particular groups of goods. The effects of the border levy on the economy would be small if even 100% of imports of steel elements to produce bicycles were covered by the levy, but these imports accounted for only a small portion of the value of the bicycles produced. In the case of the entire economy, the share of CBAM imports can be related to GDP and interpreted as an approximate measure of the cost of imposing the levy (Dumitru et al., 2021). Available calculations indicate that this indicator was below 0.5% of GDP for most EU members (before the COVID-19 pandemic). However, in several countries the situation was different. The rate was highest in Bulgaria (1.9% of GDP), followed by Lithuania and Latvia (1.1%–1.3% of their GDP), Sweden and Belgium (approx. 0.7%–0.8% of their GDP). In Poland, this share was calculated at around 0.4% (Dumitru et al., 2021). In turn, Chepeliev's calculations (although not fully comparable) indicate that from the point of view of foreign suppliers to the EU, the relatively largest

[14] Own calculations based on Darvell (2022, 4).

[15] This figure is much higher than the one calculated by this author (9.6%). An explanation is probably different statistics taken into account in both calculations.

negative impact of the levy would be on income per capita in Ukraine (a decrease of 0.4%) and in the rest of Europe (countries outside EU, decrease by 0.3%). In other countries of the world, this decrease was imperceptible — below 0.04% of income per capita (Chepeliev, 2021). In terms of goods, the largest costs would be borne by suppliers of steel products from India and Ukraine (decrease in imports by 5%–6%), as well as chemical products from India and Russia (by about 1.4% and 4.5%).[16] The decline in imports of other products would be much lower. These data confirm that, on average, the negative effects of the levy should not be high. At the same time, however, it is obvious that average indicators are misleading and for specific goods (and suppliers) the scale of effects can be much larger.

At the end of this comparison of Poland's position against the background of the EU27 in terms of the scale of possible effects of introducing the border carbon levy, let us note that the presented calculation results do not give a full picture of the scope of the levy and its significance (Dumitru et al., 2021). First of all, they do not take into account the intensity of GHG emissions in imported goods, which varies, for example, depending on whether the energy used for production comes from renewable or non-renewable sources. This different intensity will translate into a different amount of the levy (cf. Section 1) and the import price. Moreover, the possible costs of emissions incurred abroad (by foreign suppliers) which would reduce the levy, import prices, etc. are not taken into account.[17] This information will only be available when the entire carbon border adjustment mechanism, requiring such detailed information from importers, comes into force. Despite these limitations, the calculations give an overall picture of the possible effects of the introduction of CBAM.

5. Summary and conclusions

CBAM is a new instrument of the EU's European Green Deal policy. It is to contribute to the reduction of GHG emissions worldwide by limiting the risk of carbon leakage from the EU to other countries where climate protection requirements are lower; by reducing the intensity of emissions in the EU, as well as by persuading partners to introduce their own GHG emission reduction systems (to neutralize the negative effects of the EU levy on their exports). In the light of the research conducted, the levy seems to be a good instrument from the point of view of climate protection. It can be expected that in the EU and on a global scale, CBAM will contribute to a decrease in GHG emissions over the next few years, to the benefit

[16] The estimated decrease in electricity imports was much higher (by 30%). However, this product is not representative here, mainly due to the low value of imports and their large fluctuations depending significantly on weather conditions.

[17] A system of reducing GHG emissions similar to the ETS is already used by about 45 countries around the world, emitting approx. 19% of global pollution and a levy similar to CBAM has been announced by Canada and Japan (Titievskaia et al., 2022).

of the climate and people. Polish (EU) importers of products with a high carbon footprint coming from outside the EU should be interested in making their production less carbon-intensive to avoid worsening their competitiveness (through the increase of energy efficiency, increased use of renewable energy, etc.). Such changes are not costless and the associated expenses will be passed on to consumers.

The assessment of the CBAM is different from the point of view of customers of products subject to this mechanism. The new levy poses a risk of increasing the prices of EU imports of the most emission-intensive products, with all possible negative effects for importing countries (increase in production costs of final goods basing on imported emission-intensive inputs, deterioration of price competitiveness of some products, decrease in employment and income, etc.). Negative effects appear also for non-EU partners (decrease in production and income of exporters of these products). Because of these implications, the size of the carbon footprint of the products (as low as possible) has become a new, important factor in the international competitive advantage of products.

The above-presented results of own and other authors' research suggest that the negative economic effects of the border levy will be moderate in Poland compared to the EU average. Several indicators of possible negative effects of CBAM for Poland were calculated and presented, including the percentage share of CBAM products in total non-EU imports, the percentage share of CBAM products in overall imports of a given group of products, and the percentage share of CBAM products in a country's GDP. In Poland, as well as in the entire EU, the share of goods covered by the levy (based on the import value and commodity structure in 2021) has been estimated at slightly more than 9% of total imports from outside the EU. Negative effects will be concentrated on a few product groups. In the whole EU imports, three groups of goods: polymers, chemical products and steel, accounted for ⅔ of imports subject to the levy, based on the 2021 data. In the case of Poland, this concentration was even higher, because only steel products and polymers accounted for ⅔ of CBAM imports. Three foreign suppliers to the EU mostly exposed to the cost of CBAM were India (24% share of CBAM products in total country's exports to the EU), Turkey (almost 16%), and South Korea (15%). In the case of Poland, the effects of introducing the levy may be much greater for some suppliers. The share of CBAM goods reached 55% in the case of imports from Moldova and the UAE. In imports from Ukraine, it amounted to 35%, and from Belarus to 27%. On average, the negative effects of the levy for Poland, as measured by the CBAM share in total imports or in GDP, seem to be modest. However, such an average share is misleading and for specific goods (and suppliers) the scale of effects, including price increases, may be much larger. Let us note, that the negative effects of the levy on prices will be weakened by the fact that the CBAM will be introduced within a few years, giving foreign suppliers and EU importers time to adjust. However, the parallel gradual withdrawal of free GHG emission allowances, announced with the adoption of the ETS, will have the opposite effect, introducing pressure on the increase of prices of allowances. At the same time, the levy combined with the elimination of free ETS allowances will provide a stronger price signal than before, encouraging high-emission entities to switch to low-emission production. Among the adverse effects of the levy, one should mention the increase in bureaucracy and the associated increase in costs, which will be a burden in particular for small and medium-sized enterprises.

The scale of the final effects of the levy will depend, on the one hand, on the price of ETS allowances, and on the other hand, on the intensity of adjustments and reactions of domestic companies and foreign partners (reactions of a regulatory nature at the national level, as well as specific adjustments at the level of companies producing and consuming products subject to the levy). More radical changes in the strategies of companies will be necessary, aimed at reducing the intensity of GHG emissions of manufactured products, shifting purchases to suppliers with less emissions, etc. Opportunities to meet these challenges are created by the rapidly growing broadly understood eco-market, including products manufactured using zero-emission (or low-emission) energy sources, e.g., buses powered by electricity generated from renewable energy sources, production of photovoltaics, new generation wind farms, chemical products, ecological food. Many specialists will also be needed to produce such products, as well as to service some of them (e.g., wind farms). There is also a growing demand for new production technologies enabling energy saving and reduction of fossil sources, which are scarce and their extraction and processing consumes often a lot of energy (e.g., aluminum). At the same time, the rapidly growing market of eco-products will allow for the expansion of a profitable scale of production. Companies that take actions in this area earlier can count on a better competitive position in relation to those that will continue high-emission production. An additional risk for the latter is the possibility of EU bans on placing high-emission products on the market. A good example is the regulation of 2023 which introduced a ban on registering new petrol and diesel cars from the beginning of 2035. In general, CBAM adjustments should not be treated only as a cost, but also as an opportunity to restructure operations and participate in the fast-growing market of renewable energy sources, green products and services. Producers have several years to prepare a strategy to limit the negative effects of the levy (it will be collected from 2026), but they should start adjustments as soon as it is possible.

In adapting to the effects of the levy, fast, clear, and reliable information about the EU regulation introducing the new tax (Regulation 2023/956, 2023), the range of goods it covers, necessary documents, etc. can be of great help. Industry associations, but also public institutions responsible for monitoring compliance with the new laws, have an important role to play in this regard. Given the rapid pace of negative climate changes, it is extremely important that all countries in the world strengthen their climate policies and do much more to protect the climate than they are doing now.

The consequence of the new levy will also be a wider implementation of the taxonomy, the aim of which is to improve environmental protection by redirecting capital from investments that harm the environment to more ecological solutions. These are EU guidelines (the first act on this matter was adopted in June 2020), for entrepreneurs, as well as for credit providers, indicating which types of economic activities comply with the requirements for a given activity as environmentally sustainable and should be preferred. Taxonomy rules specify what conditions must be met for a given economic activity to be considered environmentally friendly. Banks and other financial institutions, already do not want to grant investment loans in sectors that do not comply with the principles of sustainable development. Support for "green" activities is preferred. This factor is an additional argument for companies to start CBAM adjustments as quickly as possible. In this situation, the alignment of emission standards for products manufactured in the EU and imported may be a great opportunity for Polish and EU enterprises to start and develop environmentally friendly goods and services.

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Wydawnictwo
Uniwersytetu
Wrocławskiego

Wydawnictwo Uniwersytetu Wrocławskiego
pl. Uniwersytecki 15
50-137 Wrocław
wydawnictwo@uwr.edu.pl

wuwr.eu
Facebook/wydawnictwouwr