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Review

Energy Transformation Within the Framework of Sustainable Development and Consumer Behavior

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Abstract: The energy transition currently defines the economic development of all market sectors, driven by technological progress and increasing environmental awareness. The requirements of a sustainable economy and green energy are evolving dynamically to address environmental challenges, emphasizing the reduction of CO_2 emissions as well as energy efficiency and renewable energy sources. It is essential to study consumer attitudes toward products manufactured using green energy, including FMCG (fast-moving consumer goods) products. The aim of this article is to examine the impact of the energy transformation, and consequently rising energy costs, on the decision-making process of consumers of FMCG products produced in accordance with the principles of sustainable development (including green energy). It explores the factors influencing their purchasing decisions and the role that generation plays in this process. Understanding how different generations respond to the energy aspects of economic functioning is crucial for the future development of the energy sector and the implementation of sustainable economic models. Therefore, it is essential to conduct research that demonstrates the extent of the influence of increasing consumer awareness of energy transformation within the framework of sustainable development.

Keywords: energy transformation; sustainable development; green energy; climate change; consumer behavior; FMCG products; generation groups

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1. Introduction

The aim of this article is to identify the key factors influencing FMCG product choices and to determine how ecological values and the level of environmental awareness differentiate the purchasing decisions of consumers from various generational groups. The main research question is encapsulated in the inquiry: Are there generational differences in the willingness to pay a premium for sustainable products, and what factors influence

FMCG product choices within specific demographic groups? To address the main research problem, several specific issues were analyzed, including:

- Does the evaluation of the quality of ingredients used in a product influence consumer purchasing decisions for FMCG products?
- Do opinions and/or recommendations from other people significantly affect consumer choices of FMCG products?
- To what extent do the reputation and credibility of the producer determine purchasing decisions in the FMCG market?
- Does the producer's country of origin (domestic or imported product) impact consumer purchasing decisions?
- Do ecological certificates and the environmental impact of the product (e.g., whether the packaging can be recycled) play a role in choosing FMCG products?
- To what extent does the price of a product affect consumer purchasing decisions for FMCG products?
- Does the fact that a product was tested on animals influence consumer choices in the FMCG category?
- Does the level of consumer sensitivity to environmental protection issues impact their purchasing decisions?
- Does individual concern about climate change matter in making purchasing decisions?
- To what extent does consumer knowledge of contemporary environmental threats influence their purchasing preferences?
- Does the level of trust in producers who claim to respect the environment in their production processes translate into consumer purchasing decisions?
- Do consumers perceive their choices as having a tangible impact on environmental protection?
- Are consumers able to recognize products manufactured in a sustainable way, and does this ability affect their choices?
- To what extent does consumer sensitivity to environmental issues, such as sustainable production methods or the possibility of recycling, influence their purchasing decisions?
- Does consumer engagement in environmental care, reflected in their daily actions, translate into their purchasing preferences?
- Are consumers willing to pay a higher price for products manufactured in an environmentally friendly manner, and what factors influence this willingness?

This article aims to contribute to the scientific discourse on generational differences in consumer behavior within the FMCG market, particularly in the context of the willingness to pay more for sustainable products compared to traditionally produced goods. It also provides a foundation for designing strategies that promote sustainable consumption tailored to the needs and values of different demographic groups. The findings enrich the understanding of how environmental awareness and ecological values intersect with consumer decision-making processes, offering insights into the unique preferences and motivations of different generational cohorts. Moreover, this research highlights practical implications for policymakers and businesses, enabling the development of targeted interventions that align sustainability goals with consumer expectations across diverse demographic segments.

2. Development of the Energy Sector Within the Framework of Sustainable Development

We are witnessing a decline in economic activity and an unprecedented increase in inflation, social tensions, and social unrest due to the easing of restrictions related to COVID-19, the war in Ukraine, and climate change [1–3]. As energy products are

important components of almost all final products and services, any changes in energy prices have a direct impact on the overall price level of these final products and services. Residential energy policy and consumer prices in Europe are influenced by reducing energy consumption in buildings, improving technological efficiency, rational energy consumption, and the transition to renewable sources [4]. Despite this, greater emphasis is placed on reducing CO_2 emissions, improving energy efficiency, and promoting renewable energy sources. The overall development of the country depends on the production volume of the industrial, agricultural, and service sectors. However, a significant increase in production is not always beneficial from the point of view of social and economic well-being. In a situation of continuous deterioration of the ecological condition of the entire nation, region, or local community, it becomes important to minimize the negative impact on the natural environment. A modern solution to the problem of the country's economic development is to switch to resource-saving, environmentally safe, and low-waste technologies [5,6]. Greenhouse gas emissions are one of the drivers of climate change and global warming. Hence, the key issue in reducing climate risk is energy transition, one of the components of the green transition of economies [7].

The result of recent events has been an ongoing discussion about the direction of changes in the energy sector. With the restriction of access to energy resources for market participants, one can observe actions aimed at increasing the share of green energy in favor of energy security. However, this does not change the fact that the main consequences of these disruptions, both for businesses and consumers in Europe, including geopolitical instability and economic uncertainty, compel leading companies to seek new ways of meeting consumers' expectations related to adapting to the prevailing conditions [8]. The same situation can be observed concerning demands that businesses should become more socially responsible and produce goods with respect for the natural environment. New consumption trends, first observed in Western markets, can also be seen in the Polish market, as it offers favorable conditions. As a result, attempts are made to adjust production so as to limit negative effects on the environment. This, however, generates additional costs. Nevertheless, at present, it seems an effective instrument in seeking ways of retaining customers and attracting new ones, preserving shares in the market and in customer expenditure, as well as sufficiently maintaining revenue and profit ratios to ensure financial stability in the short and medium term. The changing consumer preferences indicate that energy transformation is becoming increasingly important to them. On the other hand, the volume and structure of household expenditure is changing, as well as attitudes to savings and the model of consumer behavior [9]. Climate change and rising energy consumption are among the most pressing challenges facing modern society. The rapid growth in energy consumption, driven by economic expansion and technological development, contributes to increased greenhouse gas emissions and accelerates global climate change. In this context, the urgency of finding innovative solutions to enhance the efficiency of energy consumption is becoming increasingly urgent [10].

All this accounts for the fact that consumers are torn between products manufactured in line with the principles of sustainable development and those that their household budgets can afford. Taking into consideration the context of ever-changing global challenges, it is essential to find solutions that will encourage consumers to pay more attention to conscious choices directed at products manufactured in accordance with the rules of sustainable development, including the use of green energy. In order to effectively define a proposal, it will also be helpful to refer to specific features of particular generations, which show various attitudes and approaches to the decision-making process.

3. Global Concepts of Energy Sector Development

The environmental changes we are experiencing in both the short and long term are a result of human activity. Constantly striving for improvements in life conditions and quality of life, we are forced to make use of resources, including limited ones. Their excessive exploitation leads to noticeable changes, including climate change. Using the acquired knowledge, we are compelled to seek solutions that will be more environmentally friendly and that will affect the attitudes and behavior of humans—consumers accustomed to being surrounded by a multitude of products offered by the market. The panacea for the above situation is offered by the model of sustainable development, which assumes that we find a way of satisfying social and economic needs in harmony with environmental goals, taking into account their strong correlation [11]. The market, along with various global procedures, prompts companies engaged in this field to strive to improve their business systems continuously. Shipment transfer systems are highly complex, typically possessing well-developed infrastructure and numerous individual factors that influence their functioning. The path to meeting customer needs and achieving business success involves continuous analysis of the market, global trends, regulations, and the company's internal systems, followed by appropriate and timely responses [12]. The concept of sustainable development has been known for several decades and has become an inherent element of our reality, determining directions of development. The origin and increasing popularity of the concept of sustainable development have been affected by numerous events and documents, such as the UN Conference on Human Environment (1972) [13], the World Conservation Strategy (WCS) presented in 1980 by the International Union for Conservation of Nature and Natural Resources (IUCN), aimed generally at achieving sustainable development through protecting living resources [14], the activities of the UN World Commission on Environment and Development, whose effects were published in the so-called Brundtland Report (1987), the UN Earth Summit in Rio de Janeiro, which developed the Earth Charter (known as the Rio Declaration) and Agenda 21 (1992), the World Summit on Sustainable Development in Johannesburg (2002) [13], the Rio +20 Earth Summit: "The Future We Want", which emphasized the need for the greater involvement of business in the effective implementation of the idea of sustainable development [15], and the COP 27 summit in Sharm El-Sheikh in Egypt (2022) [16].

In Poland, the issue of sustainable development, in addition to the scientific discussions of the 1990s, received proper constitutional and statutory significance. The paradigm of sustainable development was written into the Polish Constitution in 1997 and thus obtained fundamental importance in the implementation of the discussed concept on all management levels (national, regional, and local) [17]. A major legal act regulating the issue of sustainable development is the Environment Protection Law from 2001, in which sustainable development is defined as "social and economic development in which political, economic, and social activities are integrated, preserving the natural balance and stability of basic natural processes in order to ensure the possibility of satisfying the fundamental needs of particular communities and citizens of contemporary and future generations" [18]. Reference to sustainable development may also be found in the National Regional Development Strategy 2030. The initial approach to sustainable development was based primarily on the ecological aspect, whereas this concept, if it is to bring the expected effects, must focus both on the level and the structure of demand, which requires a broader approach. Currently, we can observe three factors that play a vital role in the concept of sustainable development, namely respect for the natural environment, social progress, and economic development, which form a mutual circle of interaction [19]. The above-mentioned three key factors for sustainable development form a base for using energy from renewable sources, a key element in the diversification of energy sources and in fighting

climate change [20]. Zero-emission energy sources allow us to limit fossil fuel extraction, which leads to savings in water production and consumption and lower pollution of ground water and surface water [21,22]. The dynamic development of renewable energy production positively influences the economic condition of particular states as they implement new technologies and solutions based on using renewable energy sources in the area of energy conversion, transfer, and storage [23,24].

Renewable energy production plays a key role not only in protecting the natural environment but also in aiming to achieve the sustainable development of economies of particular states. This phenomenon is directly linked to the idea of the de-carbonization of the industry by decreasing greenhouse gas emissions and improving air quality, thus bringing measurable economic benefits [25].

In the 2030 Agenda for Sustainable Development (2015), a document adopted by 193 UN member states, which is a continuation of global efforts aimed at improving the quality of life of all people in the world, one can find a statement claiming that sustainable development is "intergenerational solidarity consisting in finding solutions which guarantee further growth and allow all social groups to actively participate in development processes, giving them an opportunity to enjoy the benefits of economic growth" [26]. Agenda 2030 is a valid plan of action defining the sustainable development model at the global level. It entails 17 sustainable development goals (SDGs) and 169 related tasks referring to the already-mentioned three dimensions of sustainable development—economic, social, and environmental [26]. The issues discussed in this article and in our research correspond to Goal 12: "Ensure sustainable consumption and production patterns". This goal is crucial because it integrates all dimensions of sustainable development, namely "it combines economic elements of production and consumption, social aspects driven by and resulting from production and consumption patterns, and affects the environment in various stages of a product life cycle" [27] (p. 519). It should be added that among the ways of appropriate treatment of the environment, one can find responsible action in conjunction with consumption and production [28].

The concept of sustainable development has enjoyed great popularity since its very origin, which has been manifested, for example, in numerous popular science books and articles devoted to it (for example, in the 1974–1992 period, over 70 definitions of sustainable development were developed) [29]. Jacobs (1995) identified as many as 386 definitions, whereas Carroll found over 500 in 2002 [30]. What is more, this idea became the main principle inspiring and governing contemporary reflections on the future and development of societies in particular countries, or even global society [13]. Due to this broad approach and high expectations concerning the concept, its definition is not an easy task, as rightly emphasized by an overwhelming majority of authors. While the essence of the concept seems quite understandable and usually relies on the wording included in the Brundtland Report, in which sustainable development is presented as development in which the needs of the contemporary generation may be satisfied without diminishing the opportunities of the future generations [31], the definition and the precise interpretation of what sustainable development is provoke heated discussion among both theoreticians and practitioners. The literature shows that the concept of sustainable development means different things to people, and the variety of meanings seems to be growing [32]. Lindsey suggests that we should determine some universal principles related to development, which will contribute to building a more sustainable society. These principles include waste limitation as natural capital is wasted as a result of two main mechanisms, consumption and degradation; quality improvement, which allows us to eliminate defects and natural capital waste; the introduction of better systems, as human systems are not perfect and focus mainly on individual actions, not taking responsibility for, for example, the system of their suppliers;

and the combination of sustainable principles, such as the development and implementation of better systems, which reduce waste by means of improving quality, which translates into a better-functioning sustainable society [29].

4. Greenwashing as a Phenomenon That Threatens Energy Transformation

Greenhouse gas emissions are one of the drivers of climate change and global warming. Hence, the key issue in reducing climate risk is energy transition, one of the components of the green transition of economies. Energy transition requires financing, and the scale of the necessary expenditure is currently one of the greatest challenges at the local and global levels. The demand for financing is from both the public and the financial markets. Public support programs have already been launched in many countries, but their scope still needs to be expanded, taking into account local needs. The European Union has adopted many pro-environmental solutions, including the European Green Deal, which lays down a requirement to create financing mechanisms that support the shift in energy sources, mainly by replacing fossil fuels with renewables [7].

Sustainable development encourages the implementation of social values focused on ensuring the prosperity of society. Going further, these values should be incorporated into the decision-making process, as their effects will be felt, inter alia, in the improvement of the natural environment. However, while these assumptions are right and bring hope for improvement, the market and the behavior of its participants verify this hope for quicker change. Here, one could mention practices such as greenwashing, which through unethical behavior, threatens the development of sustainable products and markets. As a result of greenwashing, consumers receive a false marketing message that products are sustainable while, in fact, this is not true. This weakens consumers' ability to distinguish sustainable products from others. What is more, it also accounts for the decline in trust for "green" products, which translates into a slower pace of sustainable transformation [33]. The level of greenwashing is examined by the European Commission and national consumer protection authorities. Screening tests for websites are used to analyze the number of violations of the EU consumer law in Internet markets. In 2021, the level of greenwashing, where companies presented their activities as ecological, was examined. The analysis showed that in over 50% of all cases, their ecological communication was imprecise and wrong. In 37% of cases, companies presented their products as "informed", "environmentally friendly", and "sustainable", although such claims were purely undocumented speculations [34].

The concept of sustainable development arouses high hopes for the improvement of the current situation. However, if we look at the time when it was introduced and the goals and assumptions underlying it, as well as the accompanying media hype, we often feel disappointed. This is shown, for instance, by Stavi, who referred to numerous meetings held all over the world, which were devoted to the mitigation of climate change over the past three decades, and presented the results of the research clearly, indicating that climate change has significantly accelerated [35]. In spite of all the actions taken in this regard, the scale of the problem seems to be virtually the same, and in some areas, it even demonstrates growing trends. The lack of visible changes also refers to other dependent areas, such as social and economic ones. This forces us to ask why, in spite of ambitious goals, we cannot see any changes for the better. If we are to find an answer to this question, we need to conduct further research and seek solutions that will finally bring visible effects and improvement. This can be achieved by understanding consumer behavior better, especially the different behaviors of particular age groups and their motivation to choose products that meet the principles of sustainable development.

5. Changing Consumer Behavior Models in Response to the Challenges of Sustainable Development

The review of the literature shows that there are various approaches to the definition of consumer behavior. Engel Blackwell and Miniard [36] define consumer behavior as all activities related to obtaining and using products and services and having them at one's disposal, together with decisions preceding and determining such activities. Others define consumer behavior as a process of choosing, buying, using, accepting, or rejecting products, ideas, or experiences in order to satisfy the needs or desires of an individual or a group [37]. Other scientists propose a broad approach, which determines consumer behavior as mental and physical activities, along with their motives and reasons, performed by individuals and groups in the consumption cycle in order to accomplish their goals and values and thus achieve satisfaction and prosperity, taking into account the individual and social effects of such behavior [38]. On the other hand, Kieżel claims that consumer behavior is "the coherent whole of actions, activities, and proceedings related to making choices in the process of satisfying consumption needs in particular social, cultural, and economic conditions" [39] (p. 42).

In the context of analyzing energy transformation, consumer behavior in Poland is seen as a result of preferences that have changed under the influence of various factors, including climate change. This has led to a change in the consumer behavior model (including its elements) and the social structure of consumer risk (when the choice is made on the basis of compromise decisions concerning the need to maintain good health, mental balance, and financial resources). The problem analyzed in this paper, therefore, stems from the fact that experiences related to consumer choices made by Poles have devalued: the household income has changed, as well as the social structure of consumer risk, social attitudes, and value orientations. Research conducted by Szabuniewicz and Majkut [40] proved that consumer attitudes have changed significantly over the past few years and points to the growing consumer ethnocentrism among Polish consumers, which is confirmed by the research data, according to which the country of origin is a factor determining consumer choices made by Poles, both in the process of purchasing goods and in the process of buying services. It should be noted that a similar trend can be observed in most European countries regarding the reaction of consumers, who are willing to support their national economy and local producers [41,42].

Research in similar areas has been conducted by Buraczyńska et al. [43]. They identified behaviors typical of Polish consumers, such as frequent online purchases, growing price sensitivity, frequent bulk purchases, a preference for Polish products, and a preference for ecological products produced in the spirit of energy transformation. Maciejewski et al. [44], on the other hand, claimed that sustainable development distinguishes Polish consumers—this is an idea that greatly inspired the authors of this paper to extend research in this area. The growing involvement in ethical consumption was examined by Zollo [45]. He proved that the Polish market of goods and services also features this trend, which is confirmed by the research findings. Lewicka-Strzałecka [46] analyzed financial aspects shaping the behavior of Polish consumers, including moral vectors, which are increasingly important in the consumption process. This research allows us to gain insight into the influence of the pandemic and other factors on consumer behavior concerning online shopping, price sensitivity, preference for Polish and ecological products, involvement in ethical consumption, and the role of financial aspects and moral values in making consumer decisions.

In light of the above, it is essential to conduct cyclical studies on consumer preferences, as they change dynamically and are a key factor in business development, especially in the era of energy transformation. The analysis of consumer behavior allows us to

assess the main driving force in the purchasing decision process, as we are faced with numerous alternatives. An understanding of consumer preferences allows companies and entrepreneurs to precisely identify product attributes and features that have a decisive impact on the purchasing decision process. Such understanding allows them to better satisfy consumer needs and helps them to determine the acceptable price range for a target group, contributing to building consumer loyalty [47]. In the context of fast-moving consumer goods (FMCG), such analyses are even more essential as they help companies understand the dynamics of consumer choices in this specific market category, which, due to its volume, is particularly important to sustainable development.

6. FMCG Products as an Element of Energy Transformation Change

Products belonging to fast-moving consumer goods (FMCG) are strongly related to everyday life and constitute an important branch of the global economy [48]. They satisfy our basic needs, allowing us to function biologically, socially, and mentally. FMCGs, as everyday-use products, are bought regularly by clients, inter alia, because they are not durable (they often have short expiry or best-before dates) and many of them are consumed in full or partly each time they are used. They are also relatively inexpensive, accounting, however, for a large part of consumer spending [49]. It should be observed that the percentage share of consumer spending on FMCGs in total spending differs between countries and depends on macroeconomic factors, such as societal wealth (its incomes) or inflation. Verma et al. noticed that FMCGs are characterized by low single-transaction value, low risk, and low consumer involvement in the purchasing process, accompanied by a high frequency of such purchases [50]. The FMCG group contains a wide range of products, such as food and beverages, cosmetics and body care products (such as safety razors or toothbrushes), chemicals and daily-use household goods, OTC drugs, and clothes and footwear. Sooner or later, all these products will become waste, which will need to be managed in line with the principles of a circular economy, which constitutes a vital aspect of sustainable development from the perspective of product and energy transformation [51].

The literature is dominated by the view that the FMCG market is characterized by a significant variety of consumers and their changing preferences, as well as by low loyalty [52], though it can be strengthened by building distinct brands and marketing activities [53]. FMCG consumers usually have high expectations concerning the convenience of shopping and the immediate availability of products. As a result, the sector is dynamic, with quickly changing demands and volumes [52]. Usually, a unit margin on an FMCG product is low, though total profits from sales of the product may be significant due to a large volume of sales. This is the so-called economies-of-scale effect, which is the most frequently observed assumption in the strategy of economic entities operating in this sector [54].

The sector of FMCG companies is quite differentiated regarding product range, scope of activities, and adopted strategies. We can observe strong competition resulting, inter alia, from relatively low barriers to entry, which are not strengthened by high technology or capital requirements, compared to other sectors [55]. This leads to fierce competition between entities operating in the market as they try to keep their market share, often lowering profit margins and initiating price wars. As noted by Shakur et al., businesses operating in the fast-moving consumer goods (FMCG) market, especially in the context of energy transformation, often engage in advertising and promotional activities, as well as those aimed at building brand awareness, thus trying to influence consumer behavior. The above-quoted authors are convinced that in order to survive in such a highly competitive environment, companies operating in the FMCG market must be characterized by a high responsiveness to customer expectations and their preferences, as well as fashion and market trends [53].

Another essential factor determining the way in which the market of fast-moving consumer goods operates is its internationalization. This is attributed to the fact that the sector, in spite of fragmentary saturations with local enterprises, also has strong well-established global entities [55]. It should be observed that for some products offered in the market, only global brands matter, as they do not have local equivalents (not counting inferior goods offered as cheap and not fully functional alternatives to global goods). In addition, many products sold in global markets are manufactured only in particular regions of the world (for example, coffee, cocoa, or tea). All this accounts for complicated supply chains, which are often composed of many links and possible transport routes [54]. Logistic difficulties in the sector are also connected with handling large volumes of various products, which must reach consumers in time [53]. Moreover, the conditions and preferences of consumers in mature global markets focus on quality, availability, price, and health and safety, as well as the environmental responsibility of the products retailed in the market.

The FMCG sector is of key importance to the consumption of energy and resources due to the intensity of processes such as manufacturing, processing, transporting, and storing products [56]. Food is a particularly essential group of FMCG products, as its production requires, among others, soil, energy, and water [57]. There are also issues related to its processing, packaging, storage, transport, and trading, which, due to the specificity of food and the need to store it, for example, in low temperatures, are also energy-consuming processes [58]. It is also important to remember that nearly a third of all produced food is wasted [57]. The key role in the process of supplying quality food and other FMCG products is played by the packaging [59], which, if produced in a non-sustainable way in a linear economy, is dumped as waste or processed in an ineffective way. The problem of packaging in the FMCG sector is particularly pressing due to the volume of turnover and the number of products sold annually, resulting in 50% of the total weight of waste from plastic produced in the world coming from packaging [60]. Moreover, waste from plastic is one of the fastest-growing types of municipal waste in the whole world [61].

The above-quoted facts characterizing the FMCG sector should oblige the entities operating in this sector to manage the green supply chain (GSCM), covering the product life cycle from design to recycling [62], or compel them to take further action. This action, known as sustainable supply chain management (SSCM), includes corporate responsibility and appropriate ethical behavior as well as environmental issues [63]. GSCM should begin with determining the demand for more sustainable (ecological) products [62], which calls for a better understanding of consumer behavior towards products manufactured in line with the principles of sustainable development. Accurate predictions concerning consumer demand are also important, as they allow us to limit waste and provide a sufficient quantity of goods for the market [64]. Green supply chain management should also integrate green product design (increasing biological value and minimizing harmful effects on the ecosystem) and manufacturing goods in a sustainable way (utilizing renewable energy sources and minimal resource use). Moreover, sustainable goods should be, as far as possible, consumed in the proximity of the place of their manufacture, so that the energy needed for transport does not exceed the energy savings obtained at the manufacturing stage, or they should be transported using green transport [62]. An important feature of FMCG goods manufactured in line with the principles of sustainable development should also incorporate appropriate packing practices, using so-called green packaging [65]. The chain should end with so-called green shopping, which involves activities aimed at supplying retail outlets and stimulating demand for products that are beneficial to our health and natural environment. In order to effectively manage the green supply chain, the actions we take should reflect the generation affiliation of consumers, as different age groups have different shopping priorities and preferences. Learning about the consumer

behavior of each generation is particularly important in the FMCG sector, as products belonging to this category demonstrate high rotation and large volumes. Simultaneously, purchasing decisions concerning these products are made frequently and quickly, which poses a challenge to producers as they have to constantly adjust to dynamically changing consumer expectations. Taking into consideration the specific needs and expectations of various generations may help to adjust marketing strategies and product offers more effectively, thus popularizing sustainable products in various age groups.

7. Generational Societal Change and the Development of the Energy Sector

According to the theory of generation developed by Howe and Strauss [66], a generation is a section of society composed of people born in the same period of time. A generation usually covers approximately 20 years, and people of the same generation are at the same stage in their lives. The external conditions (political and social situations, historical events, and education level) in which a particular generation is born and grows up constitute its common element. This is important, as it is usually assumed that characteristic features of a given generation are shaped in childhood and youth [67], and then they are simply developed and strengthened. From the perspective of contemporary society, technological progress is an element that differentiates between generations, as it causes and forces certain behaviors. The changes that take place around us affect the changes and the appearance of new social rules, as well as the lengthening of particular stages of life (for example, formal education or starting a family) [68]. Finally, the features possessed by a generation, such as shared experiences, a similar perception of reality, and social problems [69], define a particular social group as a generation, differentiating it from other groups [70].

It is worth emphasizing, however, that the division into generations on which this paper is based is typical of the Western world and does not prevail globally [71]. Some authors even claim that it is artificial, due to the fact that attributing particular features, attitudes, and mindsets to generations leads to a distortion of the true picture of society. On the other hand, it is widely acknowledged that people born in different periods of time approach particular issues in different ways and have different views and values, as well as decisions and actions. As a result, scientists frequently point at the necessary—from the perspective of analyzing various phenomena—division of society into homogenous groups, which may be classified as belonging to certain generations. The division into generations is connected with changes taking place both globally and within a particular society; therefore, divisions used in countries, for example, for statistical purposes, may differ slightly.

Relying on the concept proposed by Howe and Strauss, we must assume that contemporary society is largely composed of four generations, known as baby boomers and generations X, Y, and Z. It is worth emphasizing that according to the already-quoted theory, these generations constitute four key elements in the life cycle of generations (high, awakening, unraveling, and crisis), based on the repetition of particular features and behaviors in every fourth generation [72]. Particular elements of this cycle are characterized by the existence, or even predominance, of specific individual features and social and economic phenomena (such as birthrates and dynamics of GDP changes).

The generation of baby boomers (BB), also described as the demographic boom generation, is composed of people born between 1946–1964. It is a post-war generation (in the concept of the generation life cycle, it is a 'high' stage), which strongly emphasizes work ethic and the need for stability. Due to the post-war nature of this generation, work was a determinant of success and allowed individuals to achieve economic security. People belonging to the baby boomer generation are reliable, involved in work, attached, and loyal,

as well as ethical. The period of reconstruction after the war crisis also forced solidarity and union, as it guaranteed faster and more effective accomplishment of goals. Some authors believe that this generation can be described as the privileged generation, since these people (in most cases) grew up in conditions of increasing prosperity and improving social and economic situations. Currently, this generation is either retired or about to retire, often with a good level of guaranteed pensions and prospects of a longer life expectancy [73]. Similarly, due to the relatively large size of this group, it has become a major market participant. From the perspective of goods producers and service providers, baby boomers constitute an important group of consumers with specific expectations. Unfortunately, this also brings some negative consequences. The baby boomer generation, due to its financial potential, is often perceived as the generation driving modern consumerism [74], including excessive expenses [75], and is largely to blame for the worsening climate crisis.

The next generation, known as generation X, is composed of people born between 1965–1980. They are considered to be the first of the educated generations—education guarantees its members greater opportunities compared to previous generations. Importantly, compared to other generations, generation X (if we do not take into account the current opportunities to acquire knowledge and obtain information) is the best and most comprehensively educated generation [76]. However, it is also a generation raised in times of crisis (the 1970s) and political change. In Central and Eastern Europe, these are also people whose youth was connected with a period of fundamental social transformation, including the labor market, which significantly limited the previously enjoyed stability. As a result, representatives of generation X often experience uncertainty, suffer from low self-esteem, and feel they are redundant. They often focus on themselves, missing a broader social dimension [77], which accounts for their perception as people deprived of goals and role models. A collective nature, characterizing the previous generation, is replaced here with individualism. At the same time, this generation—as consumers—relies on customs developed in their youth, which translates into loyalty to producers and suppliers.

Generation Y—people born between 1981–1996—is the last generation born in the 20th century and often referred to as Millennials, the www Generation, the Net Generation, Echo Boomers, or the Thumb Generation. This generation was raised in times of economic expansion and prosperity and is treated as the richest generation (with the best financial situation) [78], whose capital is often not the effect of their own activity (at least not in the initial stage) but comes from family members [79]. From the perspective of the concept of generation development, generation Y is in the 'unraveling' stage, treated as the climax of the individualism period. They are perfectly familiar with technological innovations, meaning that they are able to learn more quickly (using particular tools) and multitask [76]. Representatives of generation Y—as consumers—are often focused on consumption (and related expenses), but also quite sophisticated and varied as far as their shopping preferences and tastes are concerned [80].

The last generation that is important for this article is generation Z, which consists of people born after 1995. It is the generation of the globalization era and common access to the Internet, which practically means that a large part of their activities and relations have moved online. The Internet is their main, and quite often the only, source of information, as well as the place for seeking solutions to emerging problems. Generation Z is open, courageous, self-assured, and certain of its uniqueness. They feel that there are no boundaries (geographically and culturally), and yet they have a more realistic attitude to life and clearly specified requirements (including financial ones) [81]. It is assumed that generation Z—compared to previous generations—is the most ecologically conscious and sensitive to social issues [82].

As we can see in the subject literature, particular generations are characterized by differing patterns of behavior and motives behind decision-making in various areas of life, which result from the different attitudes and values of a given generation, including their attitude to sustainable development. One can suspect then that representatives of the above-discussed generations will have different consumption and purchasing patterns, both concerning the nature of the purchased products, especially FMCG products, and the reasons behind particular purchasing decisions.

From the point of view of the green transformation, prosumers will play an important role in generational transitions. Recipients of renewable energy can be active citizens who want to participate in energy markets and who act together in organized structures, including energy communities. Anticipating the coming era of information, renewable energy, biotechnology, and an increasingly post-industrial society, the concept of "prosumer development" is emphasized, characterized by the collapse of the rigid definitions of "producer" and "consumer" developed in the industrial era revolution. Although definitions are subject to debate, renewable energy prosumers are defined as entities that both produce and consume renewable energy and actively modulate their demand [83].

The aim of the research conducted for this article was to identify the factors related to energy (green energy and sustainable development) that influence consumer purchasing decisions regarding FMCG products. It was of interest to analyze whether and how these factors are linked to generational affiliations, and whether consumers are willing to pay a higher price for products produced in accordance with the principles of sustainable development (including green energy).

The popular science nature of this work allows the results to be used as recommendations for entities and public organizations (governments and local authorities), enabling the effective implementation of sustainable development principles, particularly in the area of green energy. On the other hand, the findings can serve as informational material for producers operating in the FMCG sector to adjust energy strategies to meet the expectations of consumers from different age groups.

8. Materials and Methods

In order to accomplish the aims of our study, we used the survey research method, within which the questionnaire technique was applied. When conducting this research, we developed a research tool in the form of an Internet questionnaire with demographic questions and main questions related to the aim of our research. Respondents were asked to assess, on a 1–5 scale, the statements in the questionnaire, where 1 meant that the statement was not reflected in reality at all, and 5 meant that the assessed statement precisely reflected reality concerning purchases of FMCG products by the surveyed persons. When assessing the statements included in the questionnaire, respondents indicated the criteria they use when choosing FMCG products. This allowed us to learn to what extent, when choosing food, cosmetics, toiletries, detergents, and OTC drugs, respondents are influenced by:

- the evaluation of the quality of ingredients that a product is made of,
- the opinion and/or recommendation of other people,
- the reputation and credibility of the producer,
- the producer's country of origin (is it a domestic product or an imported one),
- ecological certificates and the impact of the product on the natural environment (for example, whether the packaging can be recycled),
- the price of the product,
- whether the product was tested on animals.

Respondents also evaluated on a 1–5 scale:

- their sensitivity to environment protection issues,

- their own concern for climate change,
- their knowledge of contemporary threats to the natural environment,
- their level of trust in producers who declare that they respect the natural environment in their production processes,
- their possibility of affecting, and their actual impact on, natural environment protection,
- their ability to recognize goods manufactured in a sustainable way,
- their own sensitivity to issues related to environmental protection, such as sustainable production methods or the possibility of product recycling,
- their own involvement in taking care of the natural environment, which is reflected in their everyday actions,
- their willingness to pay more for a product if it is produced in a way that respects the natural environment.

The survey was conducted in the second quarter of 2024 on a stratified random sample of 1068 inhabitants of Poland using the computer-assisted web interviewing (CAWI) method. The reasons behind the choice of online research were practical, such as easy contact with respondents and the convenience of filling in the questionnaire and its content, which demanded focusing on the statements included in the tool, which would be difficult in the case of phone questionnaires.

This study was conducted on a sample of 1068 people, which is a representative sample of the study population, assuming a level of confidence at 95% and an acceptable margin of error at 3%. This was intended to increase representativeness when developing quantitative analyses on individual layers of the study population, the size of which would limit the possibility of determining statistical significance. To minimize sampling errors, random sampling was used, taking into account key demographic characteristics of the population such as age, gender, place of residence, and level of education. Thanks to this, a sample structure was obtained that reflected the proportions in the studied population. The research process was carried out in accordance with the principles that meet the highest criteria for the correctness of conducting scientific research, including:

(1) The objectives of this study were clearly formulated and the respondents were assured of their anonymity.
(2) Forms of contact tailored to the preferences of the target group were selected, also ensuring the efficiency of data collection and the completeness of responses in an online survey.
(3) Monitoring of the data collection process was carried out, using reminders in case of missing data and responses within a specified time.
(4) The analysis of the results included responses from people who did not provide complete information (so-called missing data) through data imputation methods.
(5) To ensure data quality control, after this study was completed, an analysis of the sample structure was performed in relation to the population data to check whether there were any significant deviations that could affect the study results.
(6) The reporting of results also took into account the margin of sampling error and potential limitations resulting from low response rates in specific groups of respondents, which allowed for reliable interpretation of the obtained data.

The econometric model was selected for data analysis as it allows changes in the studied area to be explained and forecasted. In addition, the model-building process is systematic and it starts with defining the goals of this study, collecting data, selecting explanatory variables, selecting the model form, parameter estimation, and verification of the results. The selection of explanatory variables is based on knowledge, statistical data, and statistical methods.

Due to the assumed goal of our research, the sample reflects the population structure of people aged 13–78 (corresponding to the generation groups of baby boomers, X, Y, and Z). The size of the whole population was determined on the basis of the data obtained from the Central Statistical Office, Local Data Bank—Population on 31st December 2023. The assumed sample of 1068 persons referred to the population of 31 045 489 people aged between 13 and 78, assuming a fraction of 0.5, a maximum error of 3% (due to the stratification of the population sample), and a confidence level $\alpha = 0.05$ (95%). The research sample reflects the age structure of the analyzed population divided into four generation groups: the baby boomer generation—8,110,455 people aged 60–78 (26.1% of the whole analyzed population, generation X—8,177,620 people aged 44–59 (26.3%), generation Y—9,004,062 people aged 28–43 (29%), and generation Z—5,753,352 people aged 13–27 (18.5%)

For each generation group, the number of people N_i was calculated using the following formula:

$$N_i = (\text{percentage of the share of a given generation group in the whole population}/100) \times \text{the size of the whole population}$$

where:

N_i—the number of people in a given generation group.

Percentage of the share of a given generation group in the population—the percentage value attributed to a given group.

The size of the whole population—the total number of persons in the research sample, which is 1068 persons.

The calculation of the number of people in each generation group:

Baby Boomers (people aged 60–78, constituting 26.1% of the population):

$$\text{N Baby Boomers} = (26.1/100) \times 1068 = 278.748 \approx 279 \text{ persons.}$$

Generation X (people aged 44–59, accounting for 26.3% of the population):

$$\text{N Generation X} = (26.3/100) \times 1068 = 280.884 \approx 281 \text{ persons.}$$

Generation Y (people aged 28–43, constituting 29% of the population):

$$\text{N Generation Y} = (29.0/100) \times 1068 = 309.72 \approx 310 \text{ persons.}$$

Generation Z (people aged 13–27, accounting for 18.5% of the population):

$$\text{N Generation Z} = (18.5/100) \times 1068 = 197.58 \approx 198 \text{ persons.}$$

The sum of these values is approximately the size of the whole sample (1068 persons), whose generation structure was finally determined in the following way:

- generation of Baby Boomers—279,
- generation X—281,
- generation Y—310 persons,
- generation Z—198 persons.

The research sample was composed of the same number of men and women—534 representatives of each sex. The biggest group, containing as many as 47.0% of all respondents, were inhabitants of villages and towns with populations of under 20 thousand inhabitants. Then, 13.86% of respondents came from towns with populations between 20 and 100 thousand inhabitants, 13.11% from cities with populations between 200 and 500 thousand

inhabitants, and 13.11% of respondents were dwellers of large cities, with populations of over 500 thousand. The smallest group, accounting for 12.92% of respondents, were inhabitants of cities with populations between 100 and 200 thousand.

When analyzing the social and professional status of the respondent community, it should be noted that as many as 75.37% worked. The unemployed accounted for 9.55% of the respondents, whereas pensioners accounted for 9.37% and pupils and students were the smallest group (5.71%).

Respondents were asked for their subjective opinion of their own financial situation. Only 6.27% described their financial situation as very good, whereas 35.77% assessed it as good. The largest group of respondents—as many as 48.03%—described their financial situation as average. A total of 7.87% of respondents complained that their financial situation was bad, whereas 2.06% claimed it was very bad.

In order to accomplish the research goals, we used a number of statistical tests to analyze the data obtained from the survey; their aim was to strengthen the nature of the analyses thanks to triangulation and to supplement the analytical process with in-depth conclusions concerning the analyzed material. The applied statistical methods allow us to conduct a comprehensive data analysis, which is vital for understanding the relations between qualitative variables, and also for evaluating the differences between generation groups in the surveyed population. Thanks to these methods, we can also draw conclusions that are not only statistically significant but also have some practical value in the context of analyzing generation groups. This, in turn, may contribute to a better understanding of specific features and behaviors of particular population segments, which is of key importance in further research. That is why we used, inter alia, basic descriptive statistics for questionnaire variables, such as the mean, the error of the mean, the standard deviation, the variation, etc., for particular questions assessed on a 1–5 scale.

Then, we performed the analysis of interdependencies between the variables, using basic statistical tests:

- Chi-square to analyze the dependencies between qualitative variables [84]. The use of the chi-square test allowed us to check whether there is a statistically significant relation between particular features of the respondents and other qualitative variables in the questionnaire. Thanks to this, we can understand whether certain behaviors, preferences, or opinions are connected with the affiliation to a given age group.
- T-Student test [85] to compare mean values and to determine the general context of the analysis. It is an appropriate tool for comparing the mean values of continuous variables in two groups or in one group compared to the whole population. In this analysis, the t-Student test was used to analyze the differences in the mean values of the variables between particular generation groups of the respondents and the whole population. This allowed us to assess whether particular generation groups differ significantly from the rest of the population. This, in turn, helped to provide valuable information concerning specific features and behaviors of a given generation group.
- In order to check the correctness of the results, we additionally conducted a one-way ANOVA analysis [86] and the post hoc test (Tukey test and Bonferroni test) in order to determine the significance of statistical differences between age/generation groups [87]. That is why in order to visualize the characteristics of behavior in particular age groups, we conducted a one-way ANOVA analysis, which was aimed at determining the statistical significance of the analyzed variables, namely when the value of p is lower than the significance level (for example 0.05 or 0.01), which allowed us to claim that there is a significant difference between generation groups (baby boomers, X, Y, and Z). Then, we used the post hoc analysis, since the results of the ANOVA test only pointed at a statistically significant difference between generation

groups but did not determine which groups differ from each other. The post hoc test helped to identify particular pairs of generation groups that differed from each other. In order to preserve the triangulation nature of the evaluation of the obtained results of the analysis, we selected two methods of the post hoc test:

  - Tukey's HSD (honestly significant difference), which is particularly useful when we have the equality of variances.
  - Bonferroni's, which is more conservative and is used when we want to limit the risk of type I errors.

- Spearman's rank correlation for the level of ordinal variables and non-linear relations was conducted in order to determine the power and direction of potential correlations. The use of Spearman's coefficient [88,89] was determined by the Shapiro–Wilk normality distribution test conducted at the beginning [90,91]. The analysis of the results of this test pointed, in many places, to skewness and non-linear interdependencies; therefore, it was decided to apply the more reliable Spearman's correlation coefficient.

The conducted analytical process finally allowed us to formulate a number of interesting conclusions concerning consumer behaviors and actions in particular generation groups and may help to formulate action strategies concerning them in the future.

The results of descriptive statistics presented in Table 1 show the most important features of the distribution of the studied variables. These describe respondents' attitudes towards various aspects related to environmental protection and sustainable production of FMCG goods, including trust in producers, willingness to pay for ecological products, and ecological awareness. The number of respondents (N) for each variable is 1068, indicating complete data with no missing values. A Likert rating scale is applied, i.e., a scale ranging from 1 (minimum) "I strongly disagree" to 5 (maximum) "I strongly agree". The highest mean values are found for the following variables: the price of the product (3.93), evaluation of the quality of ingredients that a product is made of (3.74), and reputation and credibility of the producer (3.73). This indicates the great importance attached by respondents to the price of products, product ingredients, and the reputation of producers. The lowest mean (3.03) refers to the level of trust in producers who declare that they respect the natural environment in their production processes and willingness to pay more for a product if it is produced in a way that respects the natural environment (3.08), which suggests some caution or a lack of trust in producers. The smallest deviation (0.94) is for the variables "knowledge of contemporary threats to the natural environment", "the price of the product" (0.96), and "reputation and credibility of the producer" (0.98), which indicates a greater similarity of the respondents' answers. The largest deviation (1.28) appears for the variable "whether the product was tested on animals" (1.22), but also in relation to the variables "willingness to pay more for a product if it is produced in a way that respects the natural environment" and "own concern for climate change" (1.20). This means a greater diversity in the opinions of the respondents. Referring to the skewness presented in the table, it can be stated that all values are negative, which indicates that the distributions of results tend to be skewed to the left [92]. Most values close to "0" indicate an almost symmetrical distribution. In turn, more negative values (e.g., -0.507, -0.641, and -0.777) indicate a stronger asymmetry of the distribution to the left, which may suggest that most respondents gave relatively higher ratings on the Likert scale. The distribution of results shows a predominance of positive ratings with a smaller number of low ratings. The results may suggest a generally positive perception of the aspects studied, with a clear indication of a small number of people who approach these issues more critically. In turn, the visible kurtosis in the range of higher negative values (e.g., -0.935, -0.771, and -0.753) may suggest that the data distributions are platykurtic in nature ($K < 0$), i.e., the respondents' answers are more dispersed.

Table 1. Descriptive statistics for the study population.

Variables	N	Gap	Mini-mum	Maxi-mum	Sum	Mean		Std. Dev	Skewness		Kurtosis	
	Statistics	Statistics	Statistics	Statistics	Statistics	Statistics	Std. Error	Statistics	Statistics	Std. Error	Statistics	Std. Error
level of trust in producers who declare that they respect natural environment in their production processes,	1068	4.00	1.00	5.00	3240	3.034	0.033	1.079	−0.045	0.075	−0.502	0.150
willingness to pay more for a product if it is produced in the way that respects natural environment	1068	4.00	1.00	5.00	3293	3.083	0.037	1.220	−0197	0.075	−0.771	0.150
ability to recognize goods manufactured in a sustainable way	1068	4.00	1.00	5.00	3318	3.107	0.034	1.095	−0135	0.075	−0.484	0.150
ecological certificates and the impact of the product on natural environment (for example whether the packaging can be recycled)	1068	4.00	1.00	5.00	3330	3.118	0.036	1.185	−0.145	0.075	−0.735	0.150
whether the product was tested on animals	1068	4.00	1.00	5.00	3470	3.249	0.039	1.279	−0.244	0.075	−0.935	0.150
own sensitivity to issues related to environment protection, such as sustainable production methods or possibility of product recycling	1068	4.00	1.00	5.00	3479	3.257	0.036	1.172	−0.234	0.075	−0.669	0.150
opinion and/or recommendation of other people	1068	4.00	1.00	5.00	3495	3.272	0.033	1.072	−0.322	0.075	−0.367	0.150
producer's country of origin (is it a domestic product or an imported one)	1068	4.00	1.00	5.00	3524	3.300	0.036	1.193	−0280	0.075	−0.753	0.150
possibility of affecting and their actual impact on natural environment protection,	1068	4.00	1.00	5.00	3533	3.308	0.032	1.044	−0306	0.075	−0.353	0.150
own involvement in taking care of natural environment, which is reflected in their everyday actions	1068	4.00	1.00	5.00	3563	3.336	0.035	1.147	−0.507	0.075	−0.601	0.150
own concern for climate change	1068	4.00	1.00	5.00	3749	3.510	0.037	1.199	−0.341	0.075	−0.551	0.150
knowledge of contemporary threats to natural environment	1068	4.00	1.00	5.00	3812	3.569	0.029	0.944	−0.563	0.075	−0.130	0.150
reputation and credibility of the producer	1068	4.00	1.00	5.00	3980	3.727	0.029	0.948	−0.541	0.075	0.115	0.150
evaluation of the quality of ingredients that a product is made of	1068	4.00	1.00	5.00	3999	3.744	0.031	1.026	−0641	0.075	0.028	0.150
the price of the product	1068	4.00	1.00	5.00	4207	3.939	0.029	0.946	−0.777	0.075	0.449	0.150

Source: own work.

In turn, positive values such as 0.115, 0.028, and 0.449 indicate leptokurtic distributions (K > 0), in which the respondents' answers are more concentrated around the mean (De Carlo, 1997 [93]). Overall, the results indicate a certain diversity in the respondents' answers, which may result from their different attitudes. This very often happens when respondents are emotionally involved in giving answers (Tourangeau et al., 2000 [94]). The issues raised touched on important environmental issues related to sustainable development, so such a response from respondents should not be surprising.

9. Sustainable Development of the Energy Sector and Purchasing Decisions of Representatives from Different Consumer Generations

The survey of consumer behavior conducted for this article allowed us to assess the main driving forces in the process of making decisions on purchasing products from the FMCG group when there are numerous alternatives available and provided a lot of precious information on the ecological attitudes of contemporary consumers, who were divided into generation groups (Figure 1).

It is worth noticing that the obtained values are mostly within the range of 2 and 4. Only for generation Z did "choosing products because of their price" have a mean value above 4. Generally, this factor strongly dominates others as far as its impact on the choices made by respondents is concerned, regardless of their generation group (mean values oscillate around 4). At the same time, respondents suggested a very low willingness to pay more for goods produced in a way that respects the natural environment (mean value for generation Z: 0.72, for generation Y: 0.73, for generation X: 0.71, and for baby boomers: 0.73), which correlates with the previous observation and allows us to draw the following conclusion: price is the most important choice criterion for a contemporary consumer of FMCG products. Other important elements include the producer's reputation and credibility and the quality of ingredients, though these mean values are significantly lower (around 3.5). Sensitivity to product price according to energy-saving products has been examined by Wang, Deng, Liu, et al. [95]. The authors indicate that the higher the product price, the less inclined consumers are to purchase energy-saving products.

The analysis of the survey results demonstrated the importance of the majority of the analyzed factors related to consumer behavior—the choice of products and sustainable actions in the analyzed population. However, a more detailed analysis (one-tailed t-test, ANOVA, and post hoc) focused on age groups (BB, X, Y, and Z) helped us to determine key factors significantly related to particular age groups (statistical significance and mean values). As far as these factors are concerned within particular age groups, it should be noted that there is a large group of predictors whose importance diminishes along with the emergence of new (younger) generations. This means that mean values achieved by older generations, beginning with baby boomers, are higher than mean values typical of younger generations. Such factors affecting consumers' FMCG purchasing decisions in particular generations include:

- the producer's country of origin,
- the producer's reputation and credibility,
- the producers' declarations concerning production processes that care for the natural environment,
- consumers' awareness of contemporary threats to the natural environment,
- the ecological features of the product,
- concern for climate change, as well as
- sensitivity to environment protection issues.

This means that representatives of the baby boomer generation are the most interested in the above issues. For factors such as consumers' awareness and the producer's reputation,

credibility, and country of origin, the obtained results may, on the one hand, be attributed to the more extensive knowledge of older generations, who are often perceived as better-educated generations (possessing general knowledge in many fields). On the other hand, attachment and loyalty play a significant role here, as some well-established producers have often developed brands and reputations over the years.

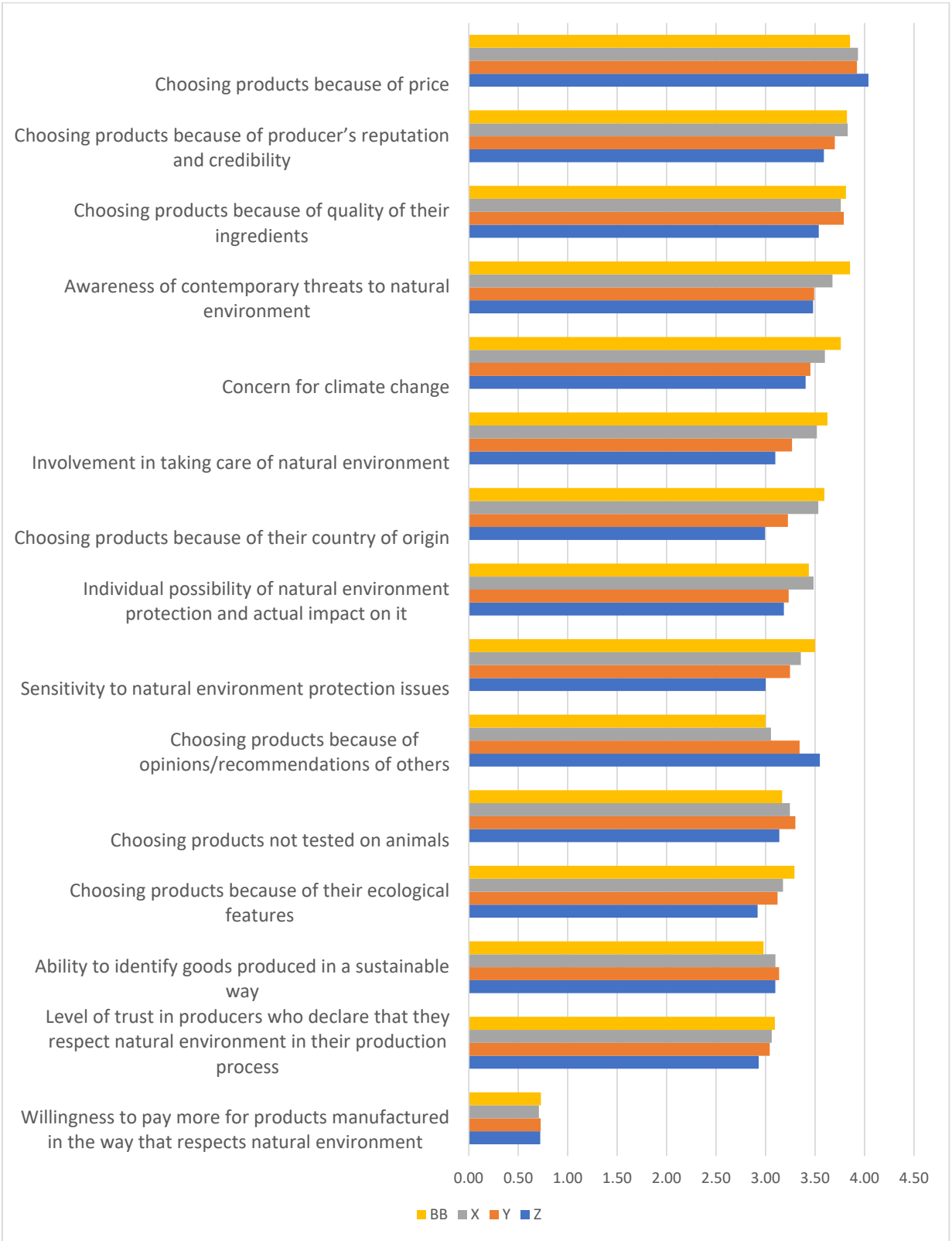

Figure 1. Mean values and different consumer behaviors in particular generation groups.

The opposite can be seen for a predictor such as the opinions and recommendations of other people. Here, the result clearly indicates that this factor is important to generation Z. It can be attributed to the specific situation in which the youngest generation functions—largely in the virtual world. Generation Z includes people who use various Internet tools, including social media, which creates reality and significantly affects attitudes, behaviors, and values. This is also confirmed by the Spearman correlation test for age and choosing products because of the opinions/recommendations of others (the result: r = −0.163 with $p < 0.001$), which indicates a relatively moderate negative correlation, meaning that older people are less willing to be influenced by the opinions of others when choosing products.

For the youngest generation (Z), product price is an essential factor affecting their purchasing decisions. It is worth emphasizing that the mean value obtained for this in the survey is the highest of all results (referring both to other predictors and other age groups). This situation may, first of all, stem from the ability to find (often "online") price bargains or even from "bargain hunting", which is typical of this generation. On the other hand, because of their age, representatives of this generation have (at least theoretically) lower financial resources than older generations. However, the conducted Spearman's correlation analysis did not point to the existence of a significant relationship between age and choosing products because of their price. In addition, the value of the coefficient is negative r = −0.047, $p = 0.110$, which could imply an opposite relationship.

It is also worth paying attention to predictors that show certain correlations with the direction of generational changes, as their highest values refer to generation X and Y (middle-aged generations). Here, one could mention testing products on animals, to which representatives of generations X and Y seem most sensitive.

Interesting conclusions also concern the ability to identify goods produced in a sustainable way. The highest results are achieved by the three youngest generations (Y and, on the same level, Z and Y, respectively), whereas the results for the baby boomer generation are significantly lower. This may indicate that in spite of the awareness of contemporary threats and concern for climate change declared by the oldest generation, it does not have the practical skills to distinguish between products manufactured in a sustainable way and other products. This is interesting when we compare it to the willingness to pay more for goods produced in this way. For this factor, baby boomers are as eager to declare purchasing such products as generation Y. It should be remembered, however, as signaled earlier, that the above factor does not play a key role in purchasing decisions by representatives of all age groups.

The calculated Spearman's correlation coefficient (r = −0.018, $p = 0.563$) demonstrated, however, a lack of a significant correlation between age and the ability to identify goods produced in a sustainable way. The negative result would point at the opposite dependence, if it exists.

Table 2 presents the results of a one-factor ANOVA analysis of variance, whose aim was to determine statistically significant differences (for $p < 0.01$ and $p < 0.05$) between the analyzed factors and the age group.

The post hoc analysis for the ANOVA test aimed at identifying visible differences between particular generation groups and pointing out how or in what area of characteristics (factors) particular generations differ from each other. Table 3 shows the results of the post hoc analysis for the generation groups variable.

Table 2. The results of the one-factor ANOVA analysis of variance for the age variable.

Predictor	Significance
Choosing products because of the quality of their ingredients	0.034
Choosing products because of the producer's country of origin	<0.001
Choosing products because of the opinions/recommendations of others	<0.001
Choosing products because of the producer's reputation and credibility	0.040
Choosing products because of their ecological features	0.055
Choosing products not tested on animals	0.462
Choosing products because of their price	0.408
Level of trust in producers who declare that they respect the natural environment in their production process	0.553
Ability to identify goods produced in a sustainable way	0.634
Awareness of contemporary threats to the natural environment	<0.001
Individual possibility of natural environment protection and actual impact on it	0.002
Concern for climate change	0.042
Sensitivity to natural environment protection issues	0.002
Involvement in taking care of the natural environment	<0.001

The results presented in Table 2 allowed us to identify predictors that are statistically significant and therefore form the basis for further exploration of differences between particular generations. Table 3 contains only those dependent variables that are statistically significant in comparing two selected generations, such as:

- choosing products because of the quality of their ingredients,
- choosing products because of the producer's reputation and credibility,
- awareness of contemporary threats to the natural environment,
- involvement in taking care of the natural environment,
- choosing products because of the producer's country of origin,
- individual possibility of natural environment protection and actual impact on it,
- sensitivity to environment protection issues,
- choosing products because of the opinions/recommendations of others.

The differences between particular generation groups allow us to develop more detailed characteristics of consumer behavior in the process of purchasing FMCG products, depending on generation affiliation. Analyzing Table 3, we can observe that there is a significant difference between generation Z and generation Y as to choosing products because of the quality of their ingredients (0.254, $p = 0.025$ for Tukey; $p = 0.029$ for Bonferroni); generation Y values the quality of ingredients more than generation Z.

Table 3. The results of the post hoc analysis for the generation affiliation variable.

Dependent Variable	Generations	Compared Generations	Difference in Mean Values (I-J)	Significance
Choosing products because of the producer's reputation and credibility	Z	Y	−0.11059	0.540602
		X	−0.241 *	0.043543
		BB	−0.23332	0.212181
	Y	Z	0.110594	0.540602
		X	−0.13069	0.249734
		BB	−0.12273	0.645961
	X	Z	0.241 *	0.043543
		Y	0.130693	0.249734
		BB	0.007966	0.999872
	BB	Z	0.233321	0.212181
		Y	0.122727	0.645961
		X	−0.00797	0.999872

Table 3. *Cont.*

Dependent Variable	Generations	Compared Generations	Difference in Mean Values (I-J)	Significance
Choosing products because of the quality of their ingredients	Z	Y	−0.254 *	0.024503
		X	−0.22346	0.11182
		BB	−0.27493	0.15018
	Y	Z	0.254 *	0.024503
		X	0.030242	0.978974
		BB	−0.02123	0.997682
	X	Z	0.223457	0.11182
		Y	−0.03024	0.978974
		BB	−0.05147	0.974433
	BB	Z	0.274928	0.15018
		Y	0.021229	0.997682
		X	0.051471	0.974433
Awareness of contemporary threats to the natural environment	Z	Y	−0.01169	0.99897
		X	−0.1967	0.135678
		BB	−0.374 *	0.009415
	Y	Z	0.011692	0.99897
		X	−0.185 *	0.041305
		BB	−0.363 *	0.002847
	X	Z	0.196702	0.135678
		Y	0.185 *	0.041305
		BB	−0.1777	0.380568
	BB	Z	0.374 *	0.009415
		Y	0.363 *	0.002847
		X	0.177696	0.380568
Involvement in taking care of the natural environment	Z	Y	−0.16929	0.324406
		X	−0.420 *	0.000878
		BB	−0.527 *	0.00162
	Y	Z	0.169286	0.324406
		X	−0.251 *	0.016815
		BB	−0.357 *	0.024212
	X	Z	0.420 *	0.000878
		Y	0.251 *	0.016815
		BB	−0.10662	0.859006
	BB	Z	0.527 *	0.00162
		Y	0.357 *	0.024212
		X	0.106618	0.859006
Choosing products because of the producer's country of origin	Z	Y	−0.23159	0.112214
		X	−0.539 *	1.71×10^{-5}
		BB	−0.600 *	0.000394
	Y	Z	0.231587	0.112214
		X	−0.307 *	0.00278
		BB	−0.368 *	0.025542
	X	Z	0.539 *	1.71×10^{-5}
		Y	0.307 *	0.00278
		BB	−0.06066	0.972639
	BB	Z	0.600 *	0.000394
		Y	0.368 *	0.025542
		X	0.060662	0.972639

Table 3. *Cont.*

Dependent Variable	Generations	Compared Generations	Difference in Mean Values (I-J)	Significance
Individual possibility of natural environment protection and actual impact on it	Z	Y	−0.04843	0.951269
		X	−0.300 *	0.01592
		BB	−0.25253	0.224241
	Y	Z	0.048425	0.951269
		X	−0.252 *	0.006565
		BB	−0.2041	0.288057
	X	Z	0.300 *	0.01592
		Y	0.252 *	0.006565
		BB	0.047794	0.980213
	BB	Z	0.252529	0.224241
		Y	0.204103	0.288057
		X	−0.04779	0.980213
Sensitivity to environment protection issues	Z	Y	−0.24668	0.074934
		X	−0.357 *	0.009231
		BB	−0.500 *	0.004331
	Y	Z	0.246679	0.074934
		X	−0.10994	0.586779
		BB	−0.25332	0.204772
	X	Z	0.357 *	0.009231
		Y	0.109938	0.586779
		BB	−0.14338	0.728362
	BB	Z	0.500 *	0.004331
		Y	0.253321	0.204772
		X	0.143382	0.728362
Choosing products because of the opinions/recommendations of others	Z	Y	0.205679	0.118533
		X	0.494 *	1.06×10^{-5}
		BB	0.549 *	0.000282
	Y	Z	−0.20568	0.118533
		X	0.288 *	0.001555
		BB	0.343 *	0.018343
	X	Z	−0.494 *	1.06×10^{-5}
		Y	−0.288 *	0.001555
		BB	0.055147	0.971648
	BB	Z	−0.549 *	0.000282
		Y	−0.343 *	0.018343
		X	−0.05515	0.971648

* The difference between mean values is significant at the level of 0.05.

Having additionally checked the correlation between two variables—the respondent's age and choosing products because of the quality of their ingredients—and calculating the Spearman's rank correlation coefficient, we concluded that there is a weak positive correlation between these two variables (r = 0.072, p = 0.018, that is $p < 005$), which implies that as we get older, we develop a slight tendency to choose products on the basis of our evaluation of the quality of their ingredients.

Further noticeable differences can be found concerning the choice of products because of the producer's reputation and credibility. Compared to generation X, generation Z shows a significant difference (p = 0.044 for Tukey; p = 0.053 for Bonferroni), which points to generation X paying more attention to the producer's reputation. Spearman's correlation test (r = 0.083 at p = 0.007) implies a weak but essential correlation between age and choosing products because of the producer's reputation and credibility, which means that with age, we appreciate the producer's reputation and credibility more when choosing products.

Awareness of contemporary threats to the natural environment is another variable in which we can observe differences between generation Z and baby boomers; generations Y and X, and generation Y and baby boomers ($p = 0.009$ for generation Z vs. Baby Boomers, $p = 0.041$ for generation Y vs. generation X, $p = 0.003$ for generation Y vs. Baby Boomers in Tukey; and, respectively, for Bonferroni: $p = 0.010$, $p = 0.050$, and $p = 0.003$). There are significant differences between generation Z and baby boomers and between generation Y and baby boomers, as the baby boomer generation has more extensive knowledge of threats to the natural environment than generations Z and Y. The Spearman's correlation test (r = 0.118 r = 0.118 at $p < 0.001$) of the age variable and the awareness of contemporary threats to the natural environment variable implies the existence of a weak but significant positive correlation, which means that older people know slightly more about contemporary threats to the natural environment.

Differences between generations can also be seen in their involvement in taking care of the natural environment. They are especially visible when comparing generations Z and X and generation Z and baby boomers ($p < 0.001$ for Tukey and $p = 0.002$ for Bonferroni), with generation Z demonstrating a lower involvement than generation X or baby boomers. There are also differences between generations Y and X and generation Y and baby boomers ($p = 0.017$ for generation Y vs. generation X and $p = 0.024$ for generation Y compared to baby boomers in Tukey; $p = 0019$ and $p = 0.028$ for Bonferroni). The demonstrated significant differences between generations show that older generations (baby boomers and X) are more involved in taking care of the natural environment. The analysis of Spearman's correlation between the age variable and the involvement in taking care of the natural environment variable implies the existence (r = 0.148 at $p < 0.001$) of a weak but significant positive correlation. This means that as respondents grow older, they become more involved in taking care of the natural environment.

If we analyze the choice of products determined by the producer's country of origin, we can conclude that as far as this variable is concerned, there is a significant difference between generation Z and generation X, as well as between generation Z and baby boomers ($p < 0.001$ for both tests), where generation Z values the producer's country of origin less than generation X and baby boomers. There are also significant differences between generation Y and generation X, as well as between generation Y and baby boomers ($p = 0.003$ for generation Y vs. generation X, and $p = 0.026$ for generation Y vs. baby boomers in Tukey; respective values for Bonferroni are $p = 0.003$ and $p = 0.030$). Significant differences between generation Z, generation X, and baby boomers prove that the latter pays more attention to the producer's country of origin than the former. Generation Y also differs significantly from generation X and baby boomers, as it does not highly value the producer's country of origin. The calculated Spearman's correlation coefficient (r = 0.160 at $p < 0.001$) points to a moderately positive correlation between the age variable and the country of origin variable. Therefore, we can claim that older people tend to notice the producer's country of origin more often than younger generations.

If we analyze the individual possibility of protecting the natural environment and the actual impact on it, we will notice that there are significant differences between generations Z and X, as well as between generations Y and X, where generation X believes that it has more impact on environmental protection.

The application of Spearman's correlation in this case (r = 0.107 at $p < 0.001$) implies a weak but significantly positive correlation. This means that as we grow older, we assume that we have better individual possibilities of protecting the environment and having an actual impact on it.

If we consider sensitivity to environmental protection issues, generations Z and Y differ greatly from generations X and BB, with younger generations having lower sensitivity to environmental issues.

The analysis of Spearman's correlation (r = 0.115 at $p < 0.001$) allowed us to find the presence of a weak but significantly positive correlation between age and sensitivity to environmental protection issues. This implies that along with age, we develop greater sensitivity to environmental protection issues.

The last variable analyzed here is the choice of products because of the opinions/recommendations of others. There are significant differences here between generations Z and X and generation Z and baby boomers ($p < 0.001$ for both tests). It should be noted that generation Z values the opinions of others more than generation X or baby boomers. There are also significant differences between generations Y and X and generation Y and baby boomers ($p = 0002$ and $p = 0.018$ for Tukey; $p = 0.002$ and $p = 0.021$ for Bonferroni). Generation Z differs considerably from generation X or baby boomers as its representatives pay more attention to the opinions of others. In addition, generation Y demonstrates significant differences compared to generation X and baby boomers, as it values the opinions of others more than the latter. It could be claimed that younger generations find the opinions of others more important when deciding to buy products from the FMCG group. The calculation of Spearman's correlation in this case demonstrated that there is a moderate negative correlation between age and choice of products due to the opinions/recommendations of others (rho = -0.163, $p < 0.01$), which implies that older people do not rely so much on the opinions of others when choosing products.

In conclusion, it can be argued that older generations (X and baby boomers) usually demonstrate greater involvement in and awareness of environmental protection, as well as greater sensitivity to environmental issues, compared to younger generations. On the other hand, younger generations (Z and Y) seem to be less focused on aspects such as the origin of products and the producer's reputation, which may be a reflection of differences in generational values and priorities.

10. Assumptions and Recommendations for Shaping Environmental Awareness Among FMCG Product Consumers

Consumers' behavior in the market is an ever-changing category, dependent on many factors that affect our decision to choose certain products and purchase them, which generates a constant need to analyze these factors. The study of consumer needs and expectations in the face of energy transformation becomes particularly important for FMCG products, which, due to the high frequency of purchases, are, on the one hand, closely correlated with consumers' habits, and on the other, are sensitive to changes in trends and the actions of competitors. The growing population, the pandemic, inflation, the threat of the climate crisis, and growing consumer awareness are just a few selected factors and external trends affecting our decisions as consumers. On the other hand, consumer decisions are also affected by internal factors, such as values, including taking care of our health, lifestyle, preferences, or needs. Purchasing behavior is an area affected by a huge number of stimuli. In addition, these stimuli are constantly changing. Although we cannot affect many of these factors, a better understanding of consumers and the criteria they use when making purchasing decisions in a given period is the key to the preparation of an appropriate trade offer or an appropriate combination of marketing instruments, stimulating sales.

The classical theory of economics usually states that buyers are stimulated to purchase FMCG products by need and then by product price. Affected by need, a consumer initiates some market activity, which is then influenced by various factors. The research conducted

here confirmed that price exerts the greatest influence on consumers' choices in this category of products, which is in line with the theses supported by representatives of the classical theory of economics. One of the most interesting conclusions that can be drawn from the conducted research is that consumers are not a homogenous category. We cannot assume that a consumer, regardless of their affiliation with a specific age group, will always be driven by price. Many producers and suppliers seem to forget about the differences resulting from belonging to a particular generation, and these differing categories of consumers evolve into a group of consumers with time. The factors that strongly affect consumers' preferences depend on generations and are greatly varied. They can be divided into three broad categories:

- factors related to the product, such as its physical, chemical, sensory (including taste), and nutrition properties, as well as its use (such as packaging, availability, or convenience) and image (producer's brand),
- factors related to consumers, their personal features (such as sex, age, education, and level of income), psychological features (personality, experience, and moods), physiological features (health and hunger satisfaction), and outlook features (beliefs, values, views, and consumer awareness),
- factors related to external environment, especially economic factors (market situation and price level) and cultural factors (trends, reference groups, and opinion leaders).

Referring to the results of our research and taking into account the division into generation groups, it is worth emphasizing a few vital issues.

The survey conducted on a group of inhabitants of Poland confirms that there are differences determining purchasing decisions made by representatives of particular generations. It confirms that people forming a particular generation have different and unique expectations, needs, lifestyles, and value systems, which affect their actions, including consumer behavior and purchasing decisions [96]. If we put aside the already mentioned predictor—price—which plays a vital role for all respondents, other factors fit into generation characteristics described in the literature.

Older generations value more factors connected with reputation and brand loyalty, as well as the level of consumer knowledge, although, as demonstrated by this research, it does not translate into the ability to identify particular goods, especially those manufactured in a sustainable way. Loyalty and habits, typical of the representatives of this generation, play a key role here. Generally, older generations (baby boomers and X) demonstrate a more pragmatic approach (they evaluate the quality of ingredients, the producer's country of origin, and the producer's reputation, as well as factors related to ecological awareness—awareness of contemporary threats to the natural environment, sensitivity to environmental protection issues, and involvement in taking care of this environment. For younger generations (Z and Y), who function in the global world of modern technology and social media, factors such as the opinions and influence of others are very important. It should be emphasized that these are often influencers, who create a particular lifestyle and actions.

When interpreting these results, we need to remember that the survey concerned FMCG products, which constitute a vital and essential part of consumption, though admittedly only a part of it. This seems to be confirmed for generation Y, for whom an important element of life (stemming from their belief in their uniqueness) consists of creating a climate of status and an appropriate image of oneself. As a result, as demonstrated by this research [97], they devote more time, effort, and emotions to purchasing decisions related to products that prove their status but do not engage in basic shopping, for example, buying food.

In spite of many decades of implementation work, as well as educational and marketing activities, the assumptions of the sustainable development concept, including the environmental protection aspect, still do not produce the desired results. An effective implementation of these assumptions requires the involvement of central and local authorities, activity from domestic and international organizations, and participation from entrepreneurs, as well as individual contributions from each person. Climate change seems to be a significant threat to humanity and to global ecosystems; therefore, there is an urgent need to understand the effects of global warming and communicate them to the community [98]. The behavior of individuals, including their decisions and choices, translates into the development of the economy. Social and economic activities affect the natural environment. An example would be food production [83]. This explains the growing amount of research devoted to individuals and their attitudes and willingness to join climate activities [99]. Starting from this assumption, we must be troubled by the results of this research, which shows that, as far as categories such as involvement in taking care of the natural environment and sensitivity to environmental protection issues are concerned, there are differences in behavior between people from different generation groups. In both above-mentioned criteria, older generations, namely generation X and baby boomers, show greater involvement and sensitivity. This situation may cause concern for two reasons. Firstly, generations Z and Y, due to their age, will play a dominant role in shaping the contemporary world. The second concern results from all circumstances that have affected particular generations concerning building and shaping ecological awareness. Younger generations, especially generation Z, are social groups for whom environmental protection issues were hyped. People belonging to this generation were educated and made sensitive to environmental actions. Yet, based on this research, we can conclude that there are no effects of such actions. On the contrary, compared to older members of society, representatives of this generation appear considerably worse.

Taking into consideration the effective implementation of the sustainable development strategy, it is worth emphasizing the aspect concerning the choice of products due to the producer's country of origin, as well as the choice determined by the quality of ingredients. The first criterion (the producer's country of origin) is particularly important for FMCG products, as they are everyday use products; therefore, they have to be replenished/delivered on a daily basis. Greater awareness and attention paid when choosing products because of their country of origin translates into such issues as transport and entrepreneurship. Choosing products that were manufactured locally or in the country inhabited by the decision-maker limits their transport and its negative impact on the natural environment (lower carbon footprint). In addition, choices directed at local or domestic producers shape so-called economic patriotism, which contributes to the development of local entrepreneurship. Just as in the areas quoted above, older generations pay more attention to the origin of the producer. For most of their lives, generations Z and Y have been subjected to the effects of globalization processes, which is visible in the different attitudes they show in various social and economic situations. Referring to the second aspect—choice made on the basis of the quality of ingredients—it is important because it leads to limiting harmful practices used by producers, namely greenwashing. Paying attention to, and also being able to, read information about the quality of ingredients is important when making valuable purchases. Consumers are usually cheated because of their ignorance. Therefore, we can assume that the more aware and knowledgeable consumers are, the lower the number of negative practices used by producers. This is particularly important if we take into account the fact that such practices lead to a loss of trust in "green products", thus weakening the implementation of sustainable development assumptions.

The analyses presented here demonstrate the need for constant research in various areas of social and economic life as far as the effectiveness of the implementation of sustainable development goals is concerned. If we learn the reasons behind trends in social perceptions of climate issues, we may be able to curb the growing skepticism towards pro-ecological activities that we are witnessing in the 21st century in some developed countries [100]. The conducted research unveils and reveals weaknesses or deficits in applied practices, which may constitute the basis for change and seeking new, more adequate solutions characterized by varied formulas and contents that are suited to recipients from different generations.

11. Directions for Future Research on Consumer Behavior in the FMCG Market in the Context of Sustainable Development

The literature review and analysis of the research material conducted within the framework of this article have certain limitations that should be considered when designing future studies in this subject area. The first limitation is the cultural and social context, which undoubtedly influences consumer attitudes and behaviors. Research conducted in Poland has a limited geographical scope, making it challenging to generalize the findings to other countries or regions with different socio-economic conditions.

Another challenge lies in the discrepancy between respondents' declarations and their actual consumer behaviors. Responses provided in surveys may reflect intentions or attitudes but do not always translate into actual purchasing decisions. This gap between declarations and reality can distort the analysis of the market and reduce the credibility of the conclusions and recommendations drawn. An additional significant limitation of studies on consumer behavior in the FMCG market is the dynamic nature of this market. Rapid socio-economic changes, such as rising inflation, regulatory shifts, or the emergence of new technologies, can significantly impact consumer attitudes and choices, rendering the findings of such studies time-sensitive. Moreover, consumers' ecological awareness evolves rapidly, which poses challenges in assessing their actual knowledge and willingness to engage in pro-environmental actions. These variables require constant monitoring and the adaptation of research approaches to ensure their relevance and reliability within an ever-changing context. Future research should concentrate on identifying acceptable price levels that indicate the readiness of different consumer groups to bear additional costs for pro-ecological solutions. An important direction for future studies should also include considering regional and cultural differences in shaping consumer attitudes and examining the effectiveness of financial incentives, such as subsidies, carbon taxes, and tax reliefs, in motivating businesses and consumers to support sustainable development efforts. As many scientists believe, climate change has become a serious global problem, and reducing greenhouse gas emissions is considered necessary for human well-being [101]. Djebko et al. (2024) wrote in their work that in the face of the growing need to counteract climate change, energy efficiency and the reduction of CO_2 emissions turn out to be one of the greatest challenges facing society [102]. Therefore, an important area for further investigation should involve understanding how consumers from different generations assess the opportunity costs (e.g., reduced convenience and inferior packaging) associated with choosing sustainable products. Additionally, research should explore the trade-offs between price, quality, and ecological values that may influence purchasing decisions. Moreover, further research is needed on the level of consumer acceptance of sustainable products and the impact of regional and cultural differences on consumer attitudes.

12. Recommendations

Based on the research results presented above and the literature review, the following conclusions and recommendations aimed at further supporting the production and sale of sustainable FMCG products can be formulated.

To effectively implement sustainable development strategies, it is crucial to consider generational differences when designing product offerings, communication strategies, marketing campaigns, and legislative and educational initiatives. The response of FMCG industry stakeholders to these findings should involve segmenting the market based on generational affiliation (Z, Y, X, and baby boomers), enabling personalized communication and tailored marketing tools to promote diverse products and develop personalized marketing strategies for different consumers age groups [103].

Promotional activities targeting younger consumers should leverage social media platforms (e.g., TikTok, Instagram, and YouTube), emphasizing the ecological impact of purchasing decisions and engaging opinion leaders and influencers as ambassadors for energy-neutral products. For older generations, traditional communication channels such as television, radio, and print media are likely to be more effective. These channels should highlight the pragmatic aspects of sustainable products, emphasizing values such as locality, high quality, transparency in production processes, and health safety. Such tailored messaging can more accurately address the needs and priorities of this demographic group, fostering trust and underscoring the tangible environmental contributions of choosing sustainable products.

In the realm of legislative actions, consideration could be given to mandating the labeling of products with appropriate symbols or certifications, categorizing them based on their energy and environmental neutrality. Such measures could be regulated at the national or EU level, for example, by extending existing certification systems (e.g., EU Ecolabel) to encompass all FMCG categories or by creating an entirely new system. Alternatively, governments should create regulations that require products to be properly labeled or certified and ensure that marketing claims are accurate.

Additionally, mechanisms to facilitate easy access to product information, such as QR codes detailing the product's origin and composition, would be valuable. The adoption of gamification tools, such as applications rewarding eco-friendly choices, could further increase younger generations' interest in sustainable products. On the legal front, tax incentives or other forms of support for local producers could help mitigate the environmental impact of transportation.

Other actionable measures include requiring FMCG producers and retailers to conduct educational campaigns aimed at raising consumer environmental awareness. Another potential strategy is incorporating sustainability and locality criteria into public procurement processes, for instance, in schools, hospitals, and other public institutions.

Finally, enhancing transparency in business practices by tightening regulations on marketing claims that may mislead consumers regarding the sustainability of products is essential. This would ensure a higher degree of accountability and provide consumers with more accurate information to support informed decision-making.

13. Summary

As demonstrated in this article, generational differences in consumer behavior merit special attention. Older generations (generation X and baby boomers) are more pragmatic in their purchasing decisions, placing greater emphasis on product quality, country of origin, and brand reputation, and displaying higher levels of environmental awareness and concern about climate change [101,104]. However, this does not necessarily translate into pro-environmental purchasing behaviors. In contrast, younger generations (generations Z

and Y) exhibit lower environmental sensitivity, with their choices being more influenced by the opinions of others, including influencers.

Notably, the price of FMCG products remains the most critical factor determining consumer choices across all generational groups. Furthermore, the willingness to pay a premium for FMCG products manufactured according to sustainable principles is consistently low among all generations. This leads to a range of pressing issues requiring urgent attention, such as the slowed-down economic transformation towards sustainable development, short- and long-term social costs associated with environmental pollution, and municipal waste management [105], as well as the real decline in the competitiveness of businesses producing in line with sustainable production principles and guidelines.

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