

Article

Prospects and Constraints of Sustainable Marketing Mix Development for Poland's High-Energy Consumer Goods

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Abstract: The research examined awareness, prospects and constraints of sustainable marketing mix development (SMD) from the perspective of Poland's high-energy consumer goods (HECG), i.e., confectionery products, as an example of the Polish food industry. A questionnaire survey was designed for this purpose. The purpose of the survey questions was to evaluate selected areas of SMD; thus, a reference value ratio was proposed. An original approach to pairwise comparisons technique was applied to rank the value of each survey to provide an intensity measure for each examined area, i.e., a non-heuristic approach with verifiable accuracy and reliability. It was found that a high level of awareness among respondents exists in relation to SMD. Considering all aspects of constraints intensity for SMD, it could be concluded that SMD for Poland's HECG is at a quite high level. However, considering all aspects of prospects intensity for SMD, this evaluation supported the conclusion that its level for Poland's HECG is moderate only. It was also found that prices of sustainable products constitute the highest ranked determinant of SMD. Considering these research findings regarding awareness, limitations and perspectives for the development of a sustainable marketing mix in the enterprises operating in Poland's HECG sector, it can be concluded that there are many more problems and difficulties in implementing sustainable marketing mix programs than there are prospects for the development of this concept.

Keywords: sustainable development; sustainable marketing mix; high-energy consumer goods; food industry



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1. Introduction

The food industry, including the production of high-energy consumer goods (HECG), has a negative impact on the natural environment. Production of HECG is accompanied by the emission of harmful gases, waste production, and significant consumption of water, energy, fuel and gases needed for manufacturing. The observed demand for electric energy is a result of the development of the Polish food industry and increased consumerism in the food market in Poland. Energy producers, to meet existing needs, increase the production of energy, which consequently contributes to the pollution of the natural environment. To produce electricity in Poland, mainly coal is used. Fossil fuels, which include hard coal and lignite, will be systematically eliminated in favor of renewable energy sources due to their negative environmental properties. Use of green energy sources will help limit the destructive effects of the conventional power industry on the ecological environment [1]. As evidence of the reduction of carbon dioxide emissions into the atmosphere, the authors of [1] present data from the largest producer of electric energy in Poland. In the period from 1989 to 2019, the power company has significantly reduced CO₂ emissions per unit of energy produced—from a level of about 1.20 t CO₂/MWh to about 1.08 t CO₂/MWh (Figure 1).

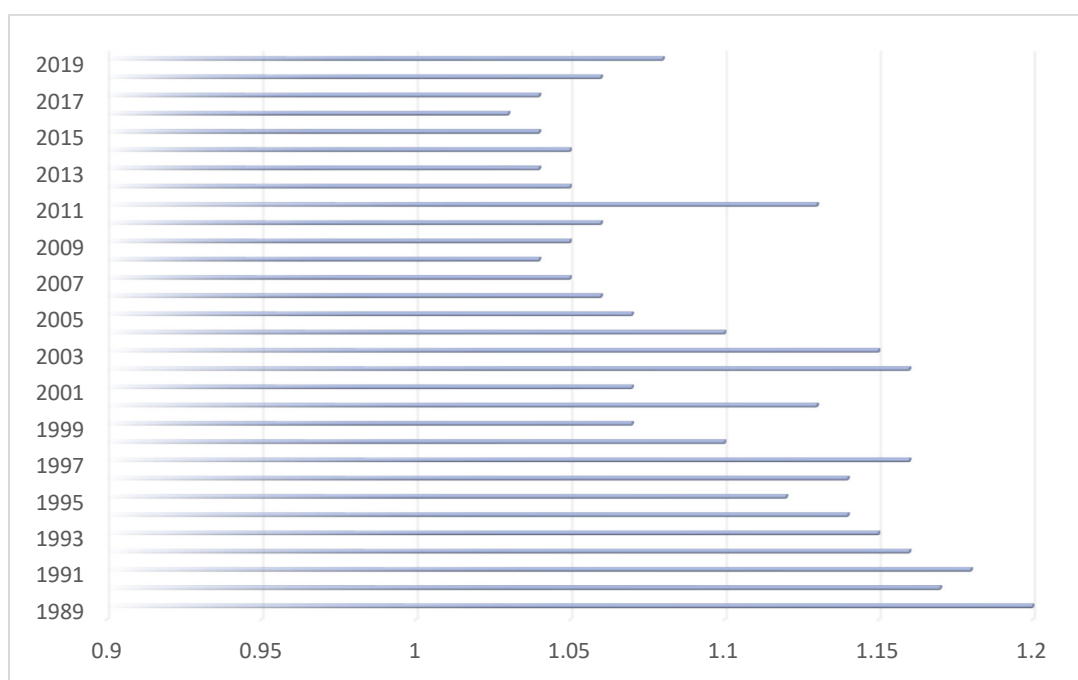


Figure 1. Reduction of CO₂ emissions from 1989 to 2019 [Mg CO₂/MWh].

Apart from the negative environmental impact of HECG production, there are other risks related to the production of these types of products, including diseases caused by excessive consumption of food products. The features described contribute to the irreversible degradation of the natural environment and reduced quality of life [2].

In response to emerging threats, a helpful solution is to implement the principles of sustainable development. The concept of sustainable development is the basis of, and provides guidelines for, creating a sustainable marketing mix of products in the HECG sector, including the confectionery industry. The implementation of this concept creates opportunities for the development of organizations by making their product offering more attractive with new HECG produced which take into account environmental and social effects. However, changing the traditional marketing mix to the concept of a marketing mix based on sustainable development principles involves overcoming existing barriers and difficulties. Considering the limitations and difficulties in developing a sustainable marketing mix in Poland's HECG, it should be emphasized that all enterprises face constant changes taking place in their environment. One of the most important factors influencing change in the functioning of enterprises in the food market is sustainable development, which is a challenge for management [3]. Innovative management of sustainable production activities requires reorientation of existing management functions, which include planning, organizing, managing and motivating employees, as well as controlling production activities. Adaptation of the listed areas of economic activity management to the principles of sustainable development will contribute to the transformation of the enterprise into a sustainable economic organization [4].

Senior decision makers in the company must be aware of the importance of aligning the management function with the requirements of sustainability. The form and degree of implementation of sustainable operations management will have a significant impact on the functioning and success of the business in the marketplace in the changing economic environment of the organization [5]. Effective management of a sustainable enterprise, involving employees at all levels, requires the implementation of the above management functions, suitably adapted to the individual needs and conditions of the specific enterprise [6].

Degradation of the natural environment impacts negatively on the health of modern societies and reduces the development potential of future generations. To meet the

problems of existing environmental and social challenges, more consideration should be directed to sustainable development. The issue of sustainable development is increasingly becoming a topic of discussion, involving exchange of views among representatives of governments, politicians, scientists, and managers, managing not only international corporations, but also those responsible for the functioning of smaller organizations. Sustainable development affects business rules and philosophy of operation, and shapes their application in management and marketing. The identified environmental and social risks require investigation on both theoretical and empirical grounds. Before proceeding with the research study, the authors formulated the research questions and objectives. The main research question was defined as follows: What limitations and barriers exist in the implementation of marketing mix based on the principles of sustainable development and what are the prospects for the development of a sustainable marketing mix concept for companies operating within the HECG sector in Poland?

The research question presented in this way highlighted the need to formulate additional, detailed research questions, as follows:

- (1) Whether and what actions taken in the production sphere are constraints to the development of sustainable products, and what are the prospects for creating sustainable HECG products?
- (2) What is the pricing policy for including environmental and social costs in product prices? Does the company intend to include costs related to environmental protection and health care of buyers in product prices?
- (3) What factors and conditions limit the development of sustainable product distribution, and what are the prospects for minimizing the negative impact of distribution on the environment and people?
- (4) Are the media, forms of communication, and message content, used in communication processes with market participants sustainable? What are the limitations and prospects in this regard?

In addition to establishing the questions, the research process requires defining the main goal of the research and specific objectives.

The objective of this research was to identify barriers to implementation of steps in the field of sustainable marketing mix occurring in the HECG sector in Poland and to define the prospects for the development of the concept of sustainable marketing mix in the analyzed enterprises. The main objective was reinforced by the specific objectives:

- to identify barriers to the production of sustainable confectionery products
- to verify the costs included in the pricing processes for sustainable confectionery products,
- to identify the main factors that constitute barriers to the implementation of sustainable product distribution
- to identify the difficulties surrounding the creation and communication of promotional messages used in sustainable promotional mix activities.

The purpose of the study was guided by the research hypothesis: the development of a sustainable marketing mix for the Polish HECG sector, as a representative of Poland's food industry, encounters attitudinal (mental), and structural (including financial, technological, organizational) limitations, which in turn have a negative impact on development prospects of this concept in the analyzed organizations. The data was obtained from the authors' own research for 2018–2019, and data development was supported by Microsoft's Excel Software. The QSP Multi Criteria Decision Support Tool [7] was also applied to the data which supports the ground-breaking Tomashevskii and Tomashevskii pairwise comparison methodology [8] selected from other available approaches [9–15].

When embarking on the research, the authors of this paper identified limitations that accompanied the research study. One such limitation was the reluctance of respondents to provide information on their business activities in terms of sustainable development. Another limitation that the authors of the article encountered while conducting the research

was the lack of time that the respondents had to devote to participate in the study, as well as difficulties in referring to confidential data of the company, which they may be unable to disclose. A significant limitation in conducting the present research was the issue of research funding. Due to the high cost of conducting a comprehensive study, the authors of this paper focused on one sector, i.e., HECG branch, out of several food industries in Poland. The choice of the HECG branch as the area of research was dictated by the fact that the analyzed sector is, next to the meat and vegetable/fruit sectors, one which has the most negative effects on the environment and the quality of life of societies, related to the consequences of the consumption of confectionery products.

2. Literature Review

Considering the barriers and perspectives for the development of a sustainable marketing mix in food industry enterprises, it is first necessary to explain the essence of the concept of “sustainable development”. Currently, there are many definitions of sustainable development in the literature on the subject. The official definition of sustainable development is presented in the “Our Common Future” report as development “which guarantees the satisfaction of the needs of present generations without compromising the ability of future generations to meet their own needs” [16]. The presented definition gave rise to similar concepts relating to the essence of sustainable development. Christen [17] points out that sustainable development can be best understood as an attempt to provide the right of a decent life to all living people without jeopardizing the possibility of a decent life for people in the future. The essence of sustainable development focuses on respecting the natural environment and considering the social impacts of the economic activity of enterprises, while taking into account the economic goals of organizations. Managing enterprises in accordance with the principles of sustainable development aims to provide development opportunities for future generations, and even to increase these opportunities for development [18].

The concept of sustainable development gave rise to the formation of a new scientific trend known as sustainability marketing. Pomeroy and Johnson [19,20] claim that in the last decade the issues of sustainable marketing (including sustainable marketing mix) have attracted growing interest from scientists and researchers. Their literature research indicated, however, only a modest publishing output devoted to the issues of sustainable marketing and sustainable marketing mix. In the literature research, no item devoted to the perspectives and limitations of sustainable marketing mix development in the HECG sector was identified. This implies a scientific gap, which consists of a complete lack of studies in the subject area. The literature review was conducted both in terms of sustainable marketing mix and marketing mix in relation to confectionery products. It is also of note that the scientific output in the area of marketing mix in relation to sustainability is not large and is not comprehensive. We have only identified a small number of publications [21–29] devoted to this concept. Due to the existing unsatisfactory state of scientific literature in this area and the identification of the theoretical and cognitive gap, research on this important and not fully recognized area of knowledge is warranted.

In analyzing the state of knowledge in this area, we have paid particular attention to the studies of the following authors: Belz and Peattie [23], Fuller [25], Martin and Schouten [22]. The above-mentioned publications contain chapters relating to the individual elements of the marketing mix, in which extensive and important findings are described, which relate the details of the marketing mix elements to sustainability. The mentioned publications also include broader considerations. Apart from the content devoted to the marketing mix components, the authors also present important issues of sustainable marketing, e.g., balanced market segmentation or balanced marketing strategies of enterprises. Publications by Belz and Peattie [23], Fuller [25] and Martin and Schouten [22] are significant contributions that bring closer the nature and importance of sustainable marketing and marketing mix. Valuable publications devoted to the analyzed issues of marketing mix have also been produced by Emery [21], Kadirov [26] and Leitner [27]. The authors refer to

aspects of sustainable marketing mix, addressed selectively rather than as a whole. The publications of the mentioned authors jointly represent a broad overview covering the area of sustainable marketing. In addition to the presented publications, it is worth referring to the publications by Rudawska [28], Kazibudzki and Trojanowski [29]. These authors present issues related to specific elements of marketing mix with respect to sustainability and emphasize the importance of marketing mix elements supporting sustainable development. They suggest that existing threats and problems, resulting from an unbalanced approach in terms of individual elements of the marketing mix, at the same time provide opportunities to eliminate or reduce inappropriate behavior of an organization.

The analysis of the state of knowledge indicates that the issue of sustainable marketing mix has been given little attention. The issues relating to an important theme in sustainable marketing, i.e., balanced marketing mix, are particularly important due to the influence of the four components of the marketing mix on the natural environment and society.

The modest scientific output in the field of sustainable marketing and balanced marketing mix, as well as a complete lack of studies on identification of perspectives and limitations in development of balanced marketing mix in the HECG sector, is not the result of underestimation or neglect of this area of knowledge. The reasons for this situation reflect the fact that sustainable marketing, including the sustainable marketing mix, is a young and developing scientific field that needs to be further developed and improved through theoretical and empirical research.

Based on the literature survey conducted, it can be concluded that sustainable marketing, which is a dimension of sustainable management, aims to achieve not only economic, but also environmental and social goals. The marketing mix instruments, which include product, price, distribution and promotion of the mix, play a special role in this respect.

The sustainable marketing mix of the food industry includes four instruments of marketing impact on customers: sustainable product [30,31], sustainable price [32], sustainable distribution [33,34], and sustainable promotion mix [35]. Proper management of these elements by managers in the confectionery industry is associated with the achievement of not only financial benefits, but also social and environmental benefits. Achieving these triple bottom line benefits by a confectionery company, as exemplified by [21,36,37], means building the economic, social and environmental potential based on the idea of sustainable development [38]. Nevertheless, the experience and considerations of researchers show that the triple bottom line is not a common or dominant business model for manufacturing companies [3,39,40]. The reason for the reluctance to take actions aimed at achieving triple benefits by enterprises of the HECG sector in Poland are the constraints that burden the surveyed enterprises.

3. General Research Concept

Consistent with the basic objective of this research, 74 randomly selected companies operating within Poland's confectionery sector were invited to take part in a questionnaire survey. Seventeen questions, out of 50 presented in the questionnaire, were devoted to the examined problem. They were devoted to three basic areas of the sustainable marketing mix concept: its awareness among respondents, its development perspectives, and its development constraints. The questions were developed through brainstorming with nine experts. Before determining the final form of the questions in the questionnaire, a pilot study was carried out to assess the validity of the questionnaire in terms of form and content. The pilot check constituted a validation test prior to the actual survey, which is recommended for the proper selection of research instruments and techniques [41,42]. The purpose of the pilot survey was to verify the clarity and meaning of the questions, to confirm the consistency of the researcher's intentions with the answers provided, and to verify the reliability (stability) and homogeneity (internal consistency) of the questionnaire [42–44]. This study resulted in clarification of some of the questions and response options, as well as more concise guidance on how to respond. After making the necessary changes and corrections, the questionnaire was given in its final form. The correlation

coefficient relating to stability was acceptable, i.e., $r \geq 0.70$. Moreover, as frequently used in the development of scales with multiple-choice items, the alpha coefficient was above 0.70, which indicates good reliability of the questionnaire [41,42,45].

Taking into consideration the objective of the survey, i.e., to examine the respondents' opinions about certain areas of sustainable marketing mix development, in particular its development intensity within the researched areas, the reference value ratio (reVR) was chosen based on the variation from exemplary value, i.e., the gradient method [10,46–48]. A description of the ratio and detailed design are given in the next section. This ratio represents the degree of sustainability of the marketing mix in the areas that were diagnosed through the interview technique; thus, each question was rated on a seven-point Likert scale [49]. This is a popular technique for measuring social attitudes in research [45,50,51]. The justification for choice of a seven-point scale over a five- or eleven-point scale is open to discussion. Different views have been expressed on this issue [52]. However, with the study's objective in mind, and given the limited channel capacity of humans [53–55], a seven-point Likert scale was thought to be the best choice here. Baseline ratios were calculated for all domains of the sustainable marketing mix questions based on the respondents' responses. The importance of the questions was then weighted for each domain. To determine the weights accurately, a paired comparison approach was used (from among other available methods) [9–12].

In principle, two measurement techniques can be chosen for this purpose, namely absolute and relative measurement. If there are many alternatives, the first technique is often used [55–57]. As the most appropriate for this investigation, a standard relative measurement technique was applied due to its high credibility for a small number of alternatives [15].

In the first stage of assessment, each question's importance within the researched area of sustainable marketing mix development was evaluated. In this process, each question's importance was established by comparisons in pairwise mode [58] (which possesses the properties of a ratio scale). The questions' importance was established and reflected by fractions normalized to unity within each researched area of sustainable marketing mix. In the second stage of assessment, mean reference value ratios (MreVRs) for each question were weighted by the importance of the particular question, and weighted mean reference value ratios (wMreVRs) were established for each researched area of the sustainable marketing mix.

In the survey, there were 17 questions in total. Thus, there were 17 reVRs established by the survey responses, which assessed the status of the 3 researched areas of sustainable marketing mix development. However, 12 reVRs were a part of a further examination using the pairwise comparison technique. Weights for 12 reVRs needed to be derived in pairwise mode for diagnosis of the researched areas, i.e., weights for 3 reVRs derived for evaluation of the sustainable marketing mix development awareness, weights for 5 reVRs derived for evaluation of the sustainable marketing mix development prospects, and weights for 4 reVRs derived for evaluation of the sustainable marketing mix development constraints.

The pairwise comparisons technique in its original form [8] was applied for this purpose. A classic five-point linguistic preference scale for pairwise comparisons was applied, i.e., extreme, very strong, strong, moderate, and indifferent, with its intermediate intensities and with its numerical equivalents determined using a geometric scale which is defined by the numbers computed in accordance with Formula (1):

$$f(n) = \psi^{n/2} \text{ for } n \in \{-8, \dots, 8\} \wedge n \in I \quad (1)$$

where ψ denotes its parameter which, in this study, equaled 1.5. This was found to be more appropriate regarding possible estimation errors of weights during the pairwise comparisons procedure [59–62].

The rationale for choice of a five-point linguistic preference scale which was utilized for preferences expression during pairwise comparisons may be questioned. However, it is emphasized that this scale was considered optimal for this research purpose, considering the goals of pairwise evaluations, potential errors in the process, and the limited channel

capacity of humans [53–55]. All required numerical analysis was facilitated by use of the QSP Multi Criteria Decision Support Tool [7] which made the process more straightforward. The objective of the approach was to evaluate the significance of the survey's questions to provide a weighted mean reference value ratio ($wMreVR$) for each researched area of the sustainable marketing mix concept, i.e., the concept awareness, $wMreVR^{(AW)}$, its development prospects, $wMreVR^{(PR)}$, and its development constraints, $wMreVR^{(CN)}$.

4. Examination Methodology

The subjects of interest were enterprises of the HECG sector, i.e., confectionery industry businesses operating in the Polish market and classified under the activity codes PKD 10.72.Z (manufacture of rusks and cookies; manufacture of preserved pastry goods and cakes) and PKD 10.82.Z (manufacture of cocoa, chocolate and sugar confectionery) registered in the REGON database of the Central Statistical Office.

The REGON register is compiled based on information reported by national economic entities, which are obliged by law to make entries in the register, as well as to report changes covered by the entries. For these reasons, the scope and validity of the data included in the REGON register is declarative, i.e., it depends to a large extent on the reliable declarations of the persons reporting their business activity. Many companies registered in the REGON database may have already liquidated their business activity or may be temporarily suspended. Entrepreneurs may have declared several areas of their activity, with the primary focus of their business in an area other than confectionery production. For these reasons, the REGON database is not fully reliable and trustworthy.

Data other than from the REGON register were also obtained from two other more reliable sources, i.e., from the Central Register and Information on Business Activity (CEIDG) and the National Court Register (KRS). After analysis, it was found that there were 223 enterprises in Poland which conducted confectionery production and constituted the core of Poland's HECG sector, i.e., the operational layer of all firms which declared confectionery operations as a part of their activities. It was estimated that the relation between the number of companies operating within the HECG sector in Poland to all firms which declared such activity was about one to five.

Due to limited funding for the survey, it was decided to survey only a portion of the target population. If dependent sampling is used, and the level of significance and precision of the results are determined, the minimum sample size can be calculated using Formula (2), as follows [29]:

$$n \geq \frac{N\mu_{\frac{\alpha}{2}}^2}{4(N-1)d^2 + \mu_{\frac{\alpha}{2}}^2} \quad (2)$$

where:

- N population size,
- n sample size,
- d level of accuracy,
- $\mu_{\alpha/2}$ quantile of order $\alpha/2$,
- α significance level

Hence, for an assumed level of confidence $\alpha = 0.9$, $\mu_{\alpha/2} = 1.645$, and the expected level of precision is $d \leq 0.08$ which indicates $\pm 8\%$ error margin, which can be considered as a relatively acceptable level of trustworthiness for an estimate. Taking into consideration the size of the target general population, $N = 223$, then the required $n \geq 72$. Thus, this research analyzed a randomly drawn sample of $n = 74$ from 223 firms operating in Poland's HECG sector, see Appendix B (Table A2). The sample's structure characteristics are provided in Supplementary Materials available online (Tables S1–S5).

Taking the above assumptions and the main objectives of the study, a questionnaire was designed and sent to 74 randomly selected companies representing the HECG sector in Poland. The questionnaire asked 17 questions to diagnose the status of the three areas considered in the framework of sustainability of the marketing mix. The questionnaire

template is attached to this study as Appendix A (Table A1). The complete database of answers for the survey questions is also included in this article, see Appendix B (Table A2). As the objective of the survey's questions was to diagnose the status of examined areas of sustainable marketing mix development, the chosen application for this purpose was a gradient-method-based measure, i.e., the reference value ratio, which indicates the distance of the status from its exemplary value.

The ratio construction is presented as follows: Taking as given that evaluated object V_i is denoted by the vector $V_i = (v_{i1}, v_{i2}, v_{i3}, \dots, v_{in})$ where $v, i, n \in N$. The exemplar, i.e., the object denoted by variables that are assumed, is described by the vector $\hat{V}_i = (\hat{v}_{i1}, \hat{v}_{i2}, \hat{v}_{i3}, \dots, \hat{v}_{in})$ where $\hat{v}, i, n \in N$; and the anti-exemplar, i.e., the object denoted by variables that are considered undesired, is described by vector $\tilde{V}_i = (\tilde{v}_{i1}, \tilde{v}_{i2}, \tilde{v}_{i3}, \dots, \tilde{v}_{in})$ where $\tilde{v}, i, n \in N$. Hence, the reference value ratio ($reVR_{ik}$) can be defined as presented by Formula (3).

$$reVR_{ik} = 1 - (\hat{v}_{ik} - v_{ik}) / (\hat{v}_{ik} - \tilde{v}_{ik}) \quad (3)$$

where $k \in \{1, 2, 3, \dots, n\}$, the numerator $\hat{v}_{ik} - v_{ik}$ determines the Euclidean distance between an element of the object under study and its model value, and the denominator $\hat{v}_{ik} - \tilde{v}_{ik}$ denotes the Euclidean distance between the expected value of an element and its undesired value. In this study $v_{ik} \in \{0, 1, 2, 3, 4, 5, 6\}$, $\hat{v}_{ik} = 6$, and $\tilde{v}_{ik} = 0$, hence for the calculations here $reVR_{ik}$ can be also easily computed from the following Formula (4).

$$reVR_{ik} = v_{ik} / \hat{v}_{ik} \quad (4)$$

Noticeably, $reVR_{ik} \in [0, 1]$, and the closer it approaches to one, the higher the development status of the assessed element. For this study, mean reference value ratios were applied (Formula (5)). The step-by-step computations are described when survey results are presented later in this section.

$$MreVR_i = \sum_{k=1}^n v_{ik} / n \cdot \hat{v}_{ik} \quad (5)$$

where n is the total of answers gathered in this survey ($n = 74$).

Three fundamental areas of sustainable marketing mix development were scrutinized from the status perspective. Each area of sustainable marketing mix development was considered from a different perspective, and each was represented by specific questions posed to the respondents. The survey comprised of $i = 17$ questions in total. A panel of nine experts developed the questions and assessed each question for its overall contribution to the problem. Details of this process are provided in the section on methodology and research results later in this paper. The experts who answered the questions were appointed based on their experience with nine successful companies in Poland (their characteristics are available online as Table S6).

4.1. Survey Results

Questionnaire answers (see Appendix A, Table A1) were coded using the seven-point version of Likert's scale [49] which provides accurate levels of judgment. Tables 1–3 present the results of the survey for the three researched areas, together with single question evaluations reflected by their $MreVR_i$, i.e., mean reference value ratios. The characteristics of the responses in Tables 1–3 are shown as alternating shaded and unshaded squares. Four numbers are shown in each square. The upper left corner of each box shows the number of specific responses to that question (Q_i) that are associated with the study area. The upper right corner of each box indicates the percentage of specific responses to that question out of the total number of responses, i.e., $n = 74$. In the lower left corner of each box is the code for the specific answer in this study $v_{ik} \in \{0, 1, 2, 3, 4, 5, 6\}$. In the lower right corner of each box is the product of the answer code and the answer number for that code in that question. In this way, it is very easy to compute the value of $MreVR_i$ which in Tables 1–3

denotes the quotient of such products' sum and the maximal value of that sum for each analyzed question, i.e., $n \cdot \hat{v}_{ik} = 74 \times 6 = 444$.

Table 1. Awareness of sustainable marketing mix development.

Q_i^*	Answer Characteristics														$MreVR_i$
Q_1	0	0%	2	2.7%	7	9.5%	2	2.7%	29	39.2%	23	31.1%	11	14.9%	319/444
	0	0	1	2	2	14	3	6	4	116	5	115	6	66	≈ 0.72
Q_2	2	2.7%	12	16.2%	11	14.9%	2	2.7%	23	31.1%	22	29.7%	2	2.7%	254/444
	0	0	1	12	2	22	3	6	4	92	5	110	6	12	≈ 0.57
Q_3	0	0%	2	2.7%	2	2.7%	2	2.7%	18	24.3%	33	44.6%	17	23%	351/444
	0	0	1	2	2	4	3	6	4	72	5	165	6	102	≈ 0.79

* Questions are numbered consecutively, as in Appendix A, which also contains their details.

Table 2. Prospects for sustainable marketing mix development.

Q_i^*	Answer Characteristics														$MreVR_i$
Q_4	1	1.4%	12	16.2%	11	14.9%	2	2.7%	27	36.5%	18	24.3%	3	4.1%	256/444
	0	0	1	12	2	22	3	6	4	108	5	90	6	18	≈ 0.58
Q_5	1	1.4%	8	10.8%	10	13.5%	3	4.1%	24	32.4%	21	28.4%	7	9.5%	280/444
	0	0	1	8	2	20	3	9	4	96	5	105	6	42	≈ 0.63
Q_6	33	44.6%	28	37.8%	9	12.2%	2	2.7%	1	1.4%	1	1.4%	0	0%	61/444
	0	0	1	28	2	18	3	6	4	4	5	5	6	0	≈ 0.14
Q_7	9	12.2%	34	45.9%	20	27%	0	0%	9	12.2%	2	2.7%	0	0%	120/444
	0	0	1	34	2	40	3	0	4	36	5	10	6	0	≈ 0.27
Q_8	3	4.1%	17	23%	29	39.2%	5	6.8%	17	23%	2	2.7%	1	1.4%	174/444
	0	0	1	17	2	58	3	15	4	68	5	10	6	6	≈ 0.39

* Questions are numbered consecutively, as in Appendix A, which also contains their details.

Table 3. Barriers to sustainable marketing mix development.

Q_i^*	Answer Characteristics														$MreVR_i$
Q_9	1	1.4%	13	17.6%	39	52.6%	12	16.2%	8	10.8%	1	1.4%	0	0%	164/444
	0	0	1	13	2	78	3	36	4	32	5	5	6	0	≈ 0.37
Q_{10}	0	0%	0	0%	1	1.4%	2	2.7%	5	6.8%	38	51.3%	28	37.8%	386/444
	0	0	1	0	2	2	3	6	4	20	5	190	6	168	≈ 0.87
Q_{11}	0	0%	0	0%	1	1.4%	2	2.7%	6	8.1%	56	75.7%	9	12.2%	366/444
	0	0	1	0	2	2	3	6	4	24	5	280	6	54	≈ 0.82
Q_{12}	1	1.4%	3	4.1%	7	9.5%	4	5.4%	42	56.6%	14	18.9%	3	4.1%	285/444
	0	0	1	3	2	14	3	12	4	168	5	70	6	18	≈ 0.64

* Questions are numbered consecutively as in Appendix A which also contains their details.

4.2. Examination Results

Because the untrained human brain is unable to analyze many different and sometimes conflicting factors simultaneously or synthesize the results to reach a reasonable conclusion, methods have been developed to facilitate this process. The preponderance of scientific and experimental evidence, for example from psychology, including the famous Miller study, suggests that humans are unable to process more than exactly seven (± 2) things at a time. Considering this and knowing that the 12 questions used in this study explored three areas of sustainable marketing portfolio development, we decided to use a technique that empowers people in this context.

The different testing techniques consisted of examining and studying the selected phenomena in terms of different attributes or studying the selected phenomena with other similar phenomena, linking them by comparison, and then synthesizing the results of these comparisons to draw conclusions. The second technique directly reveals the idea under investigation involving an assessment (relative or absolute) of the phenomenon. Because people are better able to make relative judgments than absolute ones [63–65], a pairwise comparison method was used to facilitate the relative assessment process.

The method dates to the early 20th century and was originally used by Thurstone [63], although its first scientific use can be found in Fechner [66]. However, it is thought to be older, as the idea probably originated with Ramon Lull, who lived in the late 13th century.

Nevertheless, it is generally accepted [67] that its popularity stemmed from an influential treatise by the Marquis de Condorcet [68]. He used this method in elections, where voters rank candidates according to their preferences. It has been studied and perfected in many papers since, e.g., [69]. However, its very recent development [8] deserves special attention, especially as, to our knowledge, it has so far only been effectively applied to real problem solution once [29].

The objective of the methodology was to assess the importance of each survey question and to determine a weighted average *MreVR* for each sustainability research area of the marketing portfolio. The importance of specific questions was determined using the *QSP Multi-Criteria Decision Support Software* [7] recommended for non-heuristic methods that contribute to pioneering pairwise comparisons, i.e., pairwise comparison techniques with verifiable accuracy and reliability [8] which will not be discussed herein. The importance of twelve questions was examined from the perspective of their influence on each diagnosed area of sustainable marketing mix development. The importance of the questions was derived from pairwise comparisons developed by a group of experts whose characteristics are presented in supplementary files. Preferences for the entire group of experts which were applied in the process were based on the experts' individual judgments which later were geometrically averaged [70] and processed with *QSP Software* [7]. The outcome of the process is presented below (see Tables 4–12 and Figures 2–4).

Table 4. Alternatives' weights and mean errors.

Rank	Alternative (Question)	Weight $\pm$ Absolute [Relative] Error = Actual Weight
1	Q ₁	0.611 ± 0.028 [$\pm 4.58\%$] = [0.583–0.639]
2	Q ₂	0.265 ± 0.012 [$\pm 4.53\%$] = [0.253–0.277]
3	Q ₃	0.123 ± 0.006 [$\pm 4.88\%$] = [0.118–0.129]

Table 5. Ranking probabilities of compared alternatives.

Compared Alternatives	Q ₁ > Q ₂	Q ₂ > Q ₃
Ranking probability	100.0%	100.0%

Table 6. Relative reciprocal weights for compared alternatives.

	Q ₁	Q ₂	Q ₃
Q ₁	1.000	2.410	4.730
Q ₂	0.415	1.000	2.250
Q ₃	0.211	0.444	1.000

Table 7. Alternatives' weights and mean errors.

Rank	Alternative (Question)	Weight $\pm$ Absolute [Relative] Error = Actual Weight
1	Q ₄	0.289 ± 0.007 [$\pm 2.42\%$] = [0.281–0.296]
2	Q ₅	0.252 ± 0.005 [$\pm 1.98\%$] = [0.247–0.257]
3	Q ₇	0.218 ± 0.004 [$\pm 1.83\%$] = [0.214–0.222]
4	Q ₆	0.129 ± 0.002 [$\pm 1.55\%$] = [0.127–0.131]
5	Q ₈	0.113 ± 0.002 [$\pm 1.77\%$] = [0.111–0.114]

Table 8. Ranking probabilities of compared alternatives.

Compared Alternatives	Q ₄ > Q ₅	Q ₅ > Q ₇	Q ₇ > Q ₆	Q ₆ > Q ₈
Ranking probability	100.0%	100.0%	100.0%	100.0%

Table 9. Relative reciprocal weights for compared alternatives.

	Q ₄	Q ₅	Q ₆	Q ₇	Q ₈
Q ₄	1.000	1.171	2.301	1.281	2.518
Q ₅	0.854	1.000	1.922	1.171	2.301
Q ₆	0.435	0.520	1.000	0.596	1.145
Q ₇	0.781	0.854	1.678	1.000	1.922
Q ₈	0.397	0.435	0.873	0.520	1.000

Table 10. Alternatives' weights and mean errors.

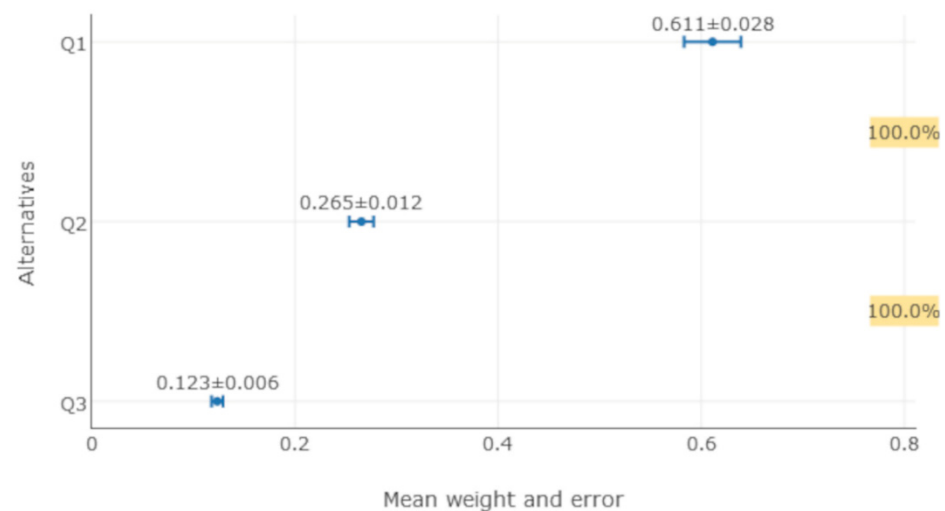
Rank	Alternative (Question)	Weight $\pm$ Absolute [Relative] Error = Actual Weight
1	Q ₁₂	0.499 ± 0.014 [$\pm 2.81\%$] = [0.485–0.513]
2	Q ₉	0.193 ± 0.011 [$\pm 5.70\%$] = [0.182–0.204]
3	Q ₁₁	0.170 ± 0.010 [$\pm 5.88\%$] = [0.160–0.180]
4	Q ₁₀	0.138 ± 0.006 [$\pm 4.35\%$] = [0.132–0.144]

Table 11. Ranking probabilities of compared alternatives.

Compared Alternatives	Q ₁₂ > Q ₉	Q ₉ > Q ₁₁	Q ₁₁ > Q ₁₀
Ranking probability	100.0%	100.0%	100.0%

Table 12. Relative reciprocal weights for compared alternatives.

	Q ₉	Q ₁₀	Q ₁₁	Q ₁₂
Q ₉	1.000	1.340	1.225	0.371
Q ₁₀	0.746	1.000	0.763	0.283
Q ₁₁	0.816	1.311	1.000	0.347
Q ₁₂	2.695	3.534	2.882	1.000

**Figure 2.** Alternatives (questions' importance) comparison results with their mean weights, absolute errors, and ranking probabilities of compared alternatives Q1–Q3.

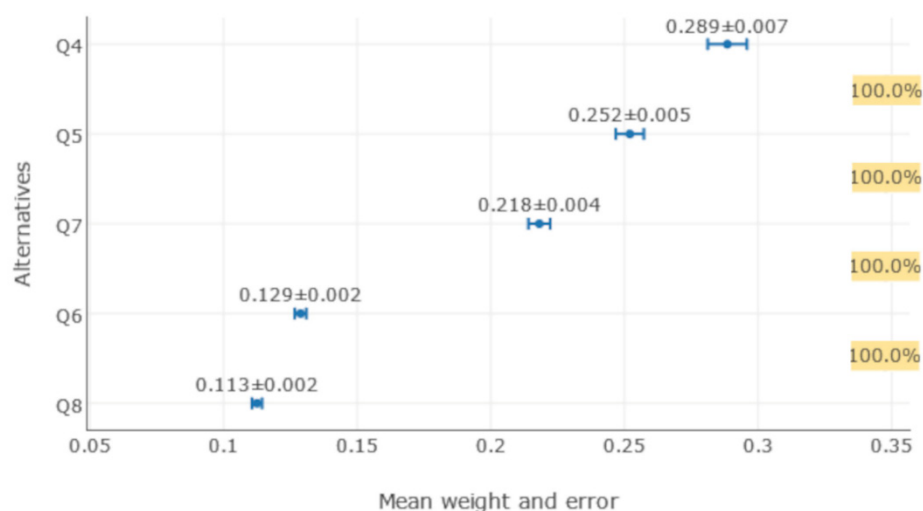


Figure 3. Alternatives (questions' importance) comparison results with their mean weights, absolute errors, and ranking probabilities of compared alternatives Q4–Q8.

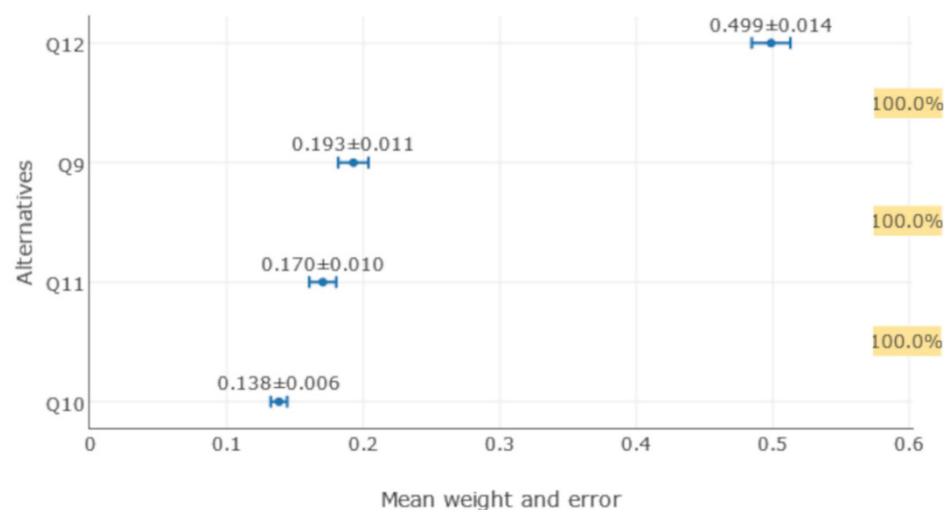


Figure 4. Alternatives (questions' importance) comparison results with their mean weights, absolute errors, and ranking probabilities of compared alternatives Q9–Q12.

By application of a non-heuristic approach to a pairwise comparison technique with verifiable accuracy and reliability, the evaluation of each survey question's importance became possible. In consequence, $wMreVR^{(AW)}$, $wMreVR^{(PR)}$, and $wMreVR^{(CN)}$ could also be computed with a determined level of accuracy. The following tables provide the details of the entire analysis (see Tables 13–15).

It should be noted that all the above calculated ratios are burdened with estimation errors, but for $d \leq 0.08$, which the survey assumes, and the known errors for particular $wMreVR$, i.e., $wRE^{(AW)} = 4.6\%$, $wRE^{(PR)} = 1.997\%$, $wRE^{(CN)} = 4.1\%$, it becomes possible to designate estimation intervals for every $wMreVR$ obtained in this research. Thus, the following estimation intervals for $wMreVR$, designated by cumulative relative estimation errors (CRE), can be presented:

$$\begin{aligned}
 0.60991 &\leq wMreVR^{(AW)} \leq 0.77835; CRE^{wMreVR^{(AW)}} = \pm 12.968\%, \\
 0.40669 &\leq wMreVR^{(PR)} \leq 0.49350; CRE^{wMreVR^{(PR)}} \approx \pm 10.157\%, \\
 0.57726 &\leq wMreVR^{(CN)} \leq 0.72966; CRE^{wMreVR^{(CN)}} = \pm 12.428\%,
 \end{aligned} \tag{6}$$

which denote intensities of three diagnosed areas of sustainable marketing mix development, i.e., its awareness, its prospects, and its constraints.

Table 13. Input for $wMreVR^{(AW)}$ calculation.

Q_i^*	$MreVR_i$	Weights (w_i) and Error Values			$wMreVR_i$ [2] $\times$ [3]
		w_i	$^{(H)} RE_i[\pm]$	$^{(S)} wRE_i[\pm]$	
[1]	[2]	[3]	[4]	[3] $\times$ [4]	[6]
Q_1	0.72	0.612	4.58%	2.8%	0.441
Q_2	0.57	0.265	4.53%	1.2%	0.151
Q_3	0.79	0.123	4.88%	0.6%	0.097
SUM:		1.0	SUM:	4.6%	0.689
$wMreVR^{(AW)} = 0.689$				$^{(S)} wRE = 4.6\%$	

Where: $^{(H)} RE_i$ denotes a relative error of i th question's weight [w_i]; $^{(S)} wRE_i$ denotes a weighted relative error of i th question's weight [w_i]; $^{(S)} wRE$ denotes a weighted mean relative error for all questions' weights, and Q_i^* denotes a question's number which relates to question numbers in Appendix A that also contains their details.

Table 14. Input for $wMreVR^{(PR)}$ calculation.

Q_i^*	$MreVR_i$	Weights (w_i) and Error Values			$wMreVR_i$ [2] $\times$ [3]
		w_i	$^{(H)} RE_i[\pm]$	$^{(S)} wRE_i[\pm]$	
[1]	[2]	[3]	[4]	[3] $\times$ [4]	[6]
Q_4	0.58	0.289	2.42%	0.699%	0.168
Q_5	0.63	0.252	1.98%	0.499%	0.159
Q_6	0.14	0.129	1.55%	0.2%	0.018
Q_7	0.27	0.218	1.83%	0.399%	0.059
Q_8	0.39	0.113	1.77%	0.2%	0.044
SUM:		1.0	SUM:	1.997%	0.448
$wMreVR^{(PR)} = 0.448$				$^{(S)} wRE = 1.997\%$	

Where: $^{(H)} RE_i$ denotes a relative error of i th question's weight [w_i]; $^{(S)} wRE_i$ denotes a weighted relative error of i th question's weight [w_i]; $^{(S)} wRE$ denotes a weighted mean relative error for all questions' weights, and Q_i^* denotes a question's number which relates to question numbers in Appendix A that also contains their details.

Table 15. Input for $wMreVR^{(CN)}$ calculation.

Q_i^*	$MreVR_i$	Weights (w_i) and Error Values			$wMreVR_i$ [2] $\times$ [3]
		w_i	$^{(H)} RE_i[\pm]$	$^{(S)} wRE_i[\pm]$	
[1]	[2]	[3]	[4]	[3] $\times$ [4]	[6]
Q_9	0.37	0.193	5.7%	1.1%	0.071
Q_{10}	0.87	0.138	4.35%	0.6%	0.120
Q_{11}	0.82	0.170	5.88%	1.0%	0.139
Q_{12}	0.64	0.499	2.81%	1.4%	0.319
SUM:		1.0	SUM:	4.1%	0.649
$wMreVR^{(CN)} = 0.649$				$^{(S)} wRE = 4.1\%$	

Where: $^{(H)} RE_i$ denotes a relative error of i th question's weight [w_i]; $^{(S)} wRE_i$ denotes a weighted relative error of i th question's weight [w_i]; $^{(S)} wRE$ denotes a weighted mean relative error for all questions' weights, and Q_i^* denotes a question's number which relates to question numbers in Appendix A that also contains their details.

5. Discussion

The main environmental hazards arising from the production of HECG include the high consumption of water and associated wastewater discharge during production, the generation of product waste, especially organic waste, the emission of harmful sub-gases into the atmosphere (including dust, gases and odors), energy consumption and noise emissions from machinery. The consumption of HECG also affects human health [29,71].

The concept of sustainable development is the basis of guidelines for creating a sustainable marketing mix of products in the confectionery industry. The implementation of the sustainable marketing mix concept for HECG creates opportunities for organization development as the product becomes more attractive in consequence of its augmentation considering environmental and social impacts. However, changing the traditional marketing mix to the concept of a sustainable marketing mix involves overcoming existing barriers in all four elements of the marketing mix.

The first element of all mental and social changes is concept awareness. Without concept awareness there are no changes in perspective, which sustains the status quo. Thus, the first part of this research was devoted to the examination of the level of this awareness among respondents. It was found that it was relatively high and could be expressed by $wMreVR^{(AW)} = 0.689$; according to this estimation procedure the value should not be lower than 0.60991 on a scale from 0 to 1, indicating a quite high level according to the observed result.

The next step of the examination considered the product as the first element of the sustainable marketing mix. Creating sustainable products requires companies in the HECG sector to pay attention to future trends, change the traditional perception of economic activity into systemic and environmental activities, and develop new production techniques using environmentally friendly raw materials [71]. A major barrier to achieving a sustainable confectionery product is guaranteeing benefits to buyers on three levels [22]:

- providing practical benefits to customers such as: product quality, value and convenience of purchase,
- guaranteeing a beneficial effect on society and the environment of the production and consumption of products,
- creating a belief that buyers of confectionery products belong to a larger group of the community that identifies itself with pro-ecological and pro-social values.

Among the numerous barriers in the conduct of sustainable marketing mix by enterprises of the HECG sector in Poland, forgetting about the fundamental, traditional goals of marketing should also be added. Sustainable production, distribution and promotion are just some of the many goals of sustainable marketing activities of confectionery companies in Poland. A common mistake is to focus too much on the goals of sustainable development, forgetting the basic principle of providing benefits to customers from purchasing a product [72]. If the fundamental benefits associated with a product are properly delivered to buyers, sustainability features are an added advantage and can represent a competitive advantage. On the other hand, if a product does not fulfill its essential functions, the sustainable characteristics of that product are not a sufficient reason to buy such products [5].

The second element of the marketing mix is the price. The main barrier to sustainable pricing for confectionery products is an emphasis on price as opposed to cost. Manufacturers devote too much attention to pricing products by considering only the economic costs of manufacturing the product, ignoring the social and environmental costs incurred, which are not taken into account. Another barrier to creating sustainable product prices is the externalization of social and environmental costs. Managers should answer the following questions [23,24]:

- does the product price reflect all costs?
- does the price include the cost of raw material extraction, transportation, delivery, production costs, costs of contributing to climate change?
- under what conditions do employees work?
- what about the disposal costs of the product at the end of the product life cycle?
- who will pay for it?

One might suggest that product prices do not include all these costs and the current system is unable to value additional social and environmental costs [23,24,73].

The distribution of confectionery products is the third element of the marketing mix in which there are barriers to the application of sustainable solutions for the distribution of products to the target recipient. The way supply chains work to enable product procurement accounts for a significant part of the negative environmental and social impact [74]. The main problems related to distribution are the generation of waste and packaging, disposal of waste, noise and exhaust emissions, delivery vans traffic, and the use of fossil fuels [23,24]. The listed factors are the main barriers to the implementation of sustainable product distribution. A significant barrier to the distribution of sustainable products in Poland's food market is that larger retailers require additional fees from producers for introducing and selling their products. Food businesses, including manufacturers of confectionery products, face the dilemma of so-called shelf fees.

When considering the barriers and difficulties in implementing a sustainable marketing mix, it should also be noted that problems occur in the transmission of marketing messages regarding the sustainable nature of products and the organization itself. A significant problem in designing communication is that the issue of environmental protection is intangible, ethereal, and often incomprehensible to consumers. Furthermore, the effects of improving the quality of the environment are slow, long-lasting and invisible, i.e., they are not immediate and do not bring prompt benefits to the customer. Communicating the true essence of sustainability to recipients is, therefore, a considerable challenge for marketing communication specialists [25]. As Peattie [73] points out, communicating successfully is not simply a question of putting out positive messages regarding eco-performance but involves becoming involved in a multiparty dialogue about business and the environment. Marketing services not only create content for specific groups of recipients, but also build an appropriate relationship with the consumer. This type of communication is oriented towards achieving two goals: educating buyers about environmental protection and creating and maintaining the environmental credibility of both the product and the company itself [25].

A threat, and thus a significant barrier to implementation of sustainable marketing activities in confectionery enterprises, is the lack of a sense of the boundaries in conveying true and false statements when producing marketing communication about sustainable products. Enterprises should avoid green washing and other so-called "green lies" [75,76]. Marketing messages saturated with an excessive amount of information about the sustainability of confectionery products may present products as more sustainable than they really are. Creating a false image of products and the company itself creates serious risks for the organization, making it an unreliable institution in the eyes of the public.

Considering all aspects of constraints intensity for sustainable marketing mix development, this examination enabled the inference that its level for Poland's HECG is quite high. It can be expressed by $wMreVR^{(CN)} = 0.649$, for which the estimation interval is $0.57726 \leq wMreVR^{(CN)} \leq 0.72966$, indicating that the intensity level is higher than 0.57726 and can be interpreted as a high level of barriers for sustainable marketing mix development in Poland's HECG sector.

In addition to the issue of limitations in the development of sustainable marketing mix of the HECG sector in Poland, this examination also allows prospects for sustainable marketing mix development and benefits to be presented, reflecting application of the authors' research methodology to this examination area. Developing new confectionery products that are more environmentally and socially sustainable can expand the markets that are served and open new ones. The search for new sales markets is in the interest of manufacturing companies and creates opportunities for gaining a competitive advantage. The reorientation of customer-oriented production activities and sales towards more sustainable activity, considering social, environmental and economic impacts, is widely valued by people and is favorably perceived by various pro-social and pro-environmental organizations [77]. By virtue of this, the company can gain additional benefits in the form of a positive image and the view of an organization as friendly to society and the environment [29,71]. Considering all aspects of prospects intensity for sustainable marketing mix

development, this examination enables the inference that its level for the Poland's HECG is moderate. It can be expressed by $wMreVR^{(PR)} = 0.448$, for which the estimation interval can be presented i.e., $0.40669 \leq wMreVR^{(PR)} \leq 0.49350$, which guaranties the intensity level to be not higher than 0.4935, which can be interpreted as a moderate perspective for sustainable marketing mix development in Poland's HECG sector. However, for the better understanding of sustainable marketing mix development perspectives for Poland's HECG sector, sales determinants of the sustainable marketing mix development for this sector were also studied (Table 16).

Table 16. Sales determinants of sustainable marketing mix development.

Q_i^*	Answer Characteristics														$MreVR_i$	$RQ_i^{\&}$
Q_{13}	0	0%	1	1.4%	1	1.4%	0	0%	8	10.8%	45	60.8%	19	25.7%	374/444	1
	0	0	1	1	2	2	3	0	4	32	5	225	6	114	≈ 0.84	
Q_{14}	0	0%	0	0%	1	1.4%	0	0%	19	25.7%	44	59.5%	10	13.5%	358/444	3
	0	0	1	0	2	2	3	0	4	76	5	220	6	60	≈ 0.81	
Q_{15}	1	1.4%	4	5.4%	11	14.9%	4	5.4%	38	51.4%	16	21.6%	0	0%	270/444	4
	0	0	1	4	2	22	3	12	4	152	5	80	6	0	≈ 0.61	
Q_{16}	0	0%	1	1.4%	1	1.4%	1	1.4%	8	10.8%	54	73%	9	12.2%	362/444	2
	0	0	1	1	2	2	3	3	4	32	5	270	6	54	≈ 0.82	
Q_{17}	2	2.7%	7	9.5%	12	16.2%	3	4.1%	33	44.6%	16	21.6%	1	1.4%	258/444	5
	0	0	1	7	2	24	3	9	4	132	5	80	6	6	≈ 0.58	

* Questions are numbered consecutively as in Appendix A which also contains their details. $RQ_i^{\&}$ denotes the rank of $MreVR_i$.

The results indicated that the price of sustainable products constitutes the highest ranked determinant of sustainable marketing mix development. Next are the activities of competitive firms concerning sustainable HECG, and then, consecutively, purchasing preferences of consumers, the level of customer awareness about the features of sustainable HECG, and the degree of popularity of sustainable HECG on the market. Taking all these additional findings into account, a moderate perspective for sustainable marketing mix development in Poland's HECG sector is anticipated.

The study found that the implications of science do not translate into management decisions in the organizations in question. The reason for the lack of impact of science on managers' decisions is that they are primarily guided by the financial performance of the company. Among managers, the most important goal is financial, accompanied by the desire to increase sales profits and market share. Respect for the environment in business activities and consideration of social aspects is not the primary goal for managers. This is the main barrier in the development of sustainable business activities of companies from the HECG sector in Poland.

6. Recommendations—Policy and Future Research

Conducting economic activity by enterprises of the confectionery industry based on the principles of sustainable development requires the organizations to pursue many undertakings aimed at changing the company policy into a pro-environmental and pro-social one. Marketing mix, as one of the main areas of marketing, is a rich set of instruments with the help of which the company can achieve its financial goals. The realization of the set tasks will be more effective through the combination of economic, environmental and social objectives putting the confectionery enterprise on the path of sustainable business activity.

Changing the conventional marketing mix to a sustainable marketing mix requires developing procedures to deal with each of the four components of the marketing mix. The authors of this paper have developed a procedure for implementing a sustainable marketing mix in confectionery enterprises.

The procedure for implementing a sustainable marketing mix presented in Figure 5 consists of four phases corresponding to the four components of the marketing mix. Each of the presented phases contains consecutive steps of the procedure. The starting point is the sustainable confectionery product, which forms the first phase of the procedure.

COMPONENT 1	COMPONENT 2	COMPONENT 3	COMPONENT 4
Sustainable Confectionery Product	Sustainable Price of Confectionery Product	Sustainable Distribution	Sustainable Promotion Mix
PHASE 1			
Designing sustainable confectionery products	Consideration of economic costs	Creating sustainable infrastructure	Selecting the components of a sustainable promotion mix
PHASE 2			
Sustainable packaging design	Consideration of external environmental costs	Ensuring sustainable transport	Utilization of resources, places, people in sustainable promotion processes
PHASE 3			
Production of sustainable confectionery products	Consideration of external social costs	Creation of feedback channels	Selection of forms for sustainable promotion
PHASE 4			
Application solutions		Sustainable retailing (hiring environmentally and socially conscious retail sellers)	Formulating content for sustainable promotional messages

Figure 5. Procedure for implementing sustainable marketing mix of confectionery products.

In this respect, the company should seek to:

- design sustainable confectionery products,
- design sustainable packaging for confectionery products,
- produce sustainable confectionery products considering environmental and social impacts,
- emphasize confectionery product performance solutions in terms of consumer needs and desires, consumption safety, and environmental and social impacts.

The second important phase is the sustainable pricing of the confectionery product. A product perceived as sustainable has not only been produced in accordance with the principles of sustainable development but has also been priced taking into account all the costs that have been incurred in its production. Taking into consideration only the economic costs directly related to the production of the product is not the correct procedure for setting the price of the product. The company should determine and consider additionally the external environmental and social costs of producing the product. Sustainable pricing therefore includes the following types of costs:

- economic costs,
- external environmental costs,
- external social costs.

Sustainable distribution of confectionery products is the third phase of the procedure. It involves taking comprehensive sustainability measures to transport the products to their destination. For example, replacing an outdated transport fleet with a new one or reducing the number of middlemen involved in distribution processes does not determine the sustainability of product distribution. Sustainable distribution of confectionery products involves a much broader range of activities, including:

- creating sustainable infrastructure,
- ensuring sustainable transport,
- establishing back channels,
- running sustainable retail sales and employing informed retailers.

The proposed procedure for implementing a sustainable marketing mix includes the fourth phase, the sustainable promotion mix. A confectionery company, while implementing promotional activities, should undertake the following:

- identify and select the components of the sustainable promotion mix by means of which the company will realize promotional activities,
- use adequate means, places and people in the process of sustainable promotion,
- select appropriate forms of sustainable promotion,
- properly formulate the content of sustainable promotional messages.

An important issue in implementing a sustainable promotion mix is to use all elements of the promotion mix in combination as much as possible and to synchronize the means, forms and content of the message. Such an approach is aimed at reinforcing sustainable promotional messages, which will result in achieving a greater, stronger effect than the selective use of individual promotional instruments, means, forms and content.

To achieve the expected results for business activities carried out by confectionery industry enterprises in the area of sustainable marketing mix, they should be carried out in a specific and thoughtful way. The procedure just presented has been built based on a hierarchical arrangement of marketing mix elements and the concept of sustainable development. The thematic phases and the individual stages of the procedure that occur within them constitute an orderly and chronological structure. The authors' procedure defines the principles and means of rational business conduct in the area of marketing mix based on sustainable development fundamentals. Due to its universal nature, the presented procedure can provide support and assistance for manufacturing companies wishing to implement a sustainable marketing mix in their organizations operating in other industries.

The results of the research undertaken can support food industry enterprises and other production organizations wishing to implement actions based on the concept of sustainable development in their companies. The article is addressed to managers responsible for marketing undertakings in their organizations, including primarily brand managers and managers dealing with logistics and transport of food products. Moreover, both literature research and empirical studies contribute theoretical and cognitive knowledge of the area in question, which may be helpful for researchers who deal with the issue of sustainable development in further exploration of this area of science.

Recapitulating, considering the study findings about awareness, limitations and perspectives for the development of a sustainable marketing mix in the enterprises operating in Poland's confectionery sector, it can be concluded that there are many more problems and difficulties in implementing sustainable marketing mix programs than there are prospects for the development of this concept.

However, despite the presence of many barriers, enterprises should, despite this, ensure that they implement a sustainable concept for the marketing mix, not only in the interests of the natural environment itself, but also for the development opportunities for future generations that it entails.

The research undertaken raises important issues concerning the degradation of the environment by industrial enterprises, including those engaged in HECG production, which can affect deterioration of the quality and standard of living of societies.

7. Conclusions

The subject of the research touches upon important and significant issues from the point of view of environmental protection and the quality of life of societies. The literature review and the results of empirical research indicate the need for further exploration and intensification of research in the area of sustainable development of food industry enterprises, including HECG companies, i.e., confectionery manufacturers. Research into this problem highlights the necessity of balancing the economic goals of enterprises with environmental and social goals. We suggest that the triad of goals should occupy a central place in the strategy of managing business activities in food industry enterprises.

Awareness of the existence of barriers occurring during the business activity of enterprises among managers of organizations creates opportunities for the introduction of a balanced concept of marketing mix in the analyzed enterprises. Identification of problems and taking action to eliminate them is a fundamental step on the way to sustainable business activities of the enterprise.

The barriers to the development of sustainable marketing mix in confectionery enterprises include financial, technological and organizational limitations, the risk of incurring additional costs, and lack of interest in the idea of sustainable development among consumers. The highlighted limitations will be easier to overcome by medium and large confectionery enterprises having the power to influence target recipients and an established market position. However, small production organizations can implement the principles of sustainable development of the marketing mix much faster than is the case for larger entities. This results from flexibility and ease of reorganization of decision-making and production processes.

The social impact of this paper is concerned with changing the behavior of customers and their attitudes in making purchases of food products, including confectionery products. The widespread consumerism of societies, mainly in developed and developing countries, creates increased demand for the supply of food products, which in turn contributes to increased production at the expense of the environment and societies. One of the most important barriers to implementing the concept of sustainable development is the problem of consumerism in modern societies.

Apart from environmental issues and excessive consumption, the negative influence of consuming sweets should also be noted. HECG contain sugar, salt, trans-fatty acids and various additives in the form of food dyes, flavor enhancers and chemical preservatives. Uncontrolled consumption of HECG containing these ingredients contributes to the development of various diseases such as diabetes, tooth decay and obesity. Reading the article should make social groups reflect on their shopping habits, which should be planned and thoughtful, and on the consequences of excessive consumption of HECG in terms of public health.

The contribution of the article to the enrichment of knowledge in the area of sustainable marketing mix development of manufacturing companies is to draw attention to the difficulties and barriers that occur in manufacturing companies, in this case from the HECG sector, wishing to act in accordance with the principles of sustainable development. In addition to highlighting existing problems, the authors of the article have identified and indicated specific barriers to the development of the concept of sustainable marketing mix. From our research, it emerged that the main problems include:

- financial, technological and organizational limitations of enterprises,
- risk of incurring additional costs,
- lack of interest in the concept of sustainable development among buyers.

Hence, the barrier is not the personnel employed in the analyzed enterprises. Another contribution is an attempt to determine the prospects for the development of the concept of sustainable marketing mix in HECG sector in Poland. The research conducted shows that:

- enterprises intend to abandon or limit the production of products that negatively affect the health of consumers and the environment,
- enterprises intend to limit the negative impact of product distribution on the environment and people
- enterprises intend in their promotional activities to use balanced means, form and contents of communication for promotional messages.

The analyzed enterprises do not intend to include the costs concerning environmental protection and improvement of the quality of life of societies in the prices of their products.

Supplementary Materials: The following are available online at <https://www.mdpi.com/article/10.3390/en14248437/s1>. Table S1: Legal forms of examined companies, Table S2: Number of employees, Table S3: Position of the respondent, Table S4: Respondents' professional experience in years, Table S5: Provinces where the businesses operate, Table S6: Experts' characteristics.

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Institutional Review Board Statement: This study does not involve any medical research involving people, including research on identifiable human material or data, thus the WMA Declaration of Helsinki—Ethical Principles for Medical Research Involving Human Subjects, does not apply. The survey questionnaire was anonymous as was the data analysis.

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study. The consent was declared remotely and obtained in electronic form together with the survey output which was recorded.

Data Availability Statement: All data supporting reported results are included in this manuscript and its supplementary files as attachments or online resources.

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Appendix A

Table A1. The questionnaire template.

No.	Questions	Responses Codes
1.	I am sensitive to social problems associated with deterioration of natural environment	0,1,2,3,4,5,6
2.	I know the concept of sustainable marketing mix development	0,1,2,3,4,5,6
3.	I would like to obtain more information about sustainable development	0,1,2,3,4,5,6
4.	The company intends to actively counteract social consequences of natural environment degradation including its public involvement in the issues concerned environmental protection	0,1,2,3,4,5,6
5.	The company intends to abandon or limit the production of products which have a negative impact on the environment and consumers health	0,1,2,3,4,5,6
6.	The company intends to include in its product prices the real environmental and social costs associated with the confectionery products production	0,1,2,3,4,5,6
7.	The company intends to reduce the negative impact of the confectionery products distribution to society and natural environment	0,1,2,3,4,5,6
8.	The company intends to use balanced media, forms of communication, and the content of promotional messages	0,1,2,3,4,5,6

Table A1. The questionnaire template.

No.	Questions	Responses Codes
9.	The company's personnel indifference to environmental and social problems is a barrier for sustainable marketing mix development of the confectionery products	0,1,2,3,4,5,6
10.	The company's financial, technological and organizational limitations are a barrier for sustainable marketing mix development of the confectionery products	0,1,2,3,4,5,6
11.	The risk of incurring additional costs by the company is a barrier for sustainable marketing mix development of the confectionery products	0,1,2,3,4,5,6
12.	The company consumers' lack of interest in the sustainable development concept is a barrier for sustainable marketing mix development of the confectionery products	0,1,2,3,4,5,6
13.	Sales results are determined by prices of sustainable confectionery products	0,1,2,3,4,5,6
14.	Sales results are determined by purchasing preferences of consumers	0,1,2,3,4,5,6
15.	Sales results are determined by the level of customer awareness about the features of sustainable confectionery products	0,1,2,3,4,5,6
16.	Sales results are determined by activities of competitive firms concerning sustainable confectionery products	0,1,2,3,4,5,6
17.	Sales results are determined by the degree of popularity of sustainable confectionery products on the market	0,1,2,3,4,5,6
Responses options with codes: (0)—definitely no, (1)—no, (2)—rather no, (3)—no opinion, (4)—rather yes, (5)—yes, (6)—definitely yes		
PARTICULARS		
Legal form of the business		☐ Public limited company ☐ Limited liability company ☐ Limited joint-stock partnership ☐ Limited partnership ☐ Limited liability partnership ☐ General partnership ☐ Civil law partnership ☐ Sole proprietorship
Number of employees		
Name of the province where the business operates		☐ Lower Silesia ☐ Kuyavian-Pomeranian ☐ Lublin ☐ Lubusz ☐ Lodz ☐ Lesser Poland ☐ Mazovian ☐ Opole ☐ Subcarpathian ☐ Podlasie ☐ Pomeranian ☐ Silesian ☐ Holy Cross ☐ Varmia-Mazuria ☐ Greater Poland ☐ West-Pomeranian
The company's representative		
Professional position		☐ Managerial ☐ Non managerial

Appendix B

Table A2. Questions answers database.

No.	Q ₁	Q ₂	Q ₃	Q ₄	Q ₅	Q ₆	Q ₇	Q ₈	Q ₉	Q ₁₀	Q ₁₁	Q ₁₂	Q ₁₃	Q ₁₄	Q ₁₅	Q ₁₆	Q ₁₇
1	5	6	7	5	5	1	2	1	4	6	6	5	7	6	3	6	2
2	4	4	4	4	4	5	5	4	4	4	4	4	6	6	4	5	5
3	5	2	5	3	4	2	2	2	3	6	6	7	5	6	2	5	1
4	6	3	7	2	4	3	2	3	4	5	6	2	6	6	4	4	5
5	4	3	3	2	7	4	2	5	3	6	7	4	7	6	2	2	7
6	6	7	4	3	7	4	3	4	2	5	5	4	5	7	4	5	5
7	7	5	7	6	7	3	3	2	2	7	6	1	6	7	6	7	6
8	5	2	6	5	5	1	1	5	3	6	6	3	6	7	5	7	6
9	6	2	5	3	3	1	2	3	3	7	6	5	7	6	5	6	5
10	5	1	5	2	2	1	1	2	4	5	5	4	5	5	4	5	4
11	6	2	5	5	3	1	2	1	3	6	6	5	6	6	6	6	6
12	5	2	5	3	3	1	2	2	3	6	6	5	5	6	6	6	5
13	7	4	6	5	7	3	3	2	3	7	6	2	6	7	6	7	6
14	6	6	6	5	5	2	2	2	3	7	7	6	6	5	5	7	5
15	5	5	6	4	5	1	2	2	3	7	6	5	7	7	3	6	5
16	5	3	6	3	2	2	3	4	5	6	6	5	6	5	5	6	5
17	7	5	6	3	2	1	3	3	4	6	7	5	6	6	5	5	5
18	5	5	5	6	7	6	6	1	4	4	4	6	7	6	6	5	4
19	3	2	3	2	2	1	2	2	5	6	6	6	6	5	5	6	5
20	5	2	5	2	3	1	3	5	4	7	7	5	6	6	6	6	6
21	5	2	5	2	3	1	2	2	4	6	6	5	6	6	5	6	5
22	7	6	7	6	6	3	5	3	3	6	6	5	6	7	6	6	6
23	6	5	6	6	5	2	5	3	3	6	7	3	6	6	6	6	6
24	6	5	6	5	5	3	3	3	2	6	6	5	6	6	5	6	6
25	6	3	6	3	5	2	3	3	3	6	6	6	5	6	5	6	5
26	6	3	6	5	5	2	3	5	3	5	6	5	6	6	5	6	5
27	5	3	6	5	5	2	2	3	3	6	6	5	6	6	6	6	6
28	5	6	6	5	6	3	3	3	2	7	6	3	6	6	5	6	5
29	7	6	7	6	7	3	5	3	2	6	6	2	6	6	6	6	6
30	7	6	6	5	6	3	3	3	2	6	6	6	6	5	5	6	5
31	5	5	6	6	6	1	3	2	3	7	6	5	6	5	5	6	5
32	5	5	6	3	3	2	2	3	5	6	6	5	6	5	5	6	5
33	5	5	7	5	5	1	3	3	3	7	6	5	7	7	5	7	5
34	5	5	7	5	5	2	2	3	3	6	6	6	6	5	5	7	6
35	5	6	7	6	6	1	3	5	2	7	6	3	6	6	6	6	6
36	7	5	6	6	6	2	2	3	2	7	6	5	6	6	6	6	6
37	3	3	5	2	2	1	1	2	4	6	6	5	6	6	5	6	3
38	5	3	5	3	5	1	1	2	3	6	6	6	7	5	3	6	3
39	2	1	2	7	7	3	3	6	4	3	3	5	3	5	2	5	2
40	7	6	7	6	6	2	5	3	2	7	7	5	7	7	6	7	6
41	7	5	7	6	6	2	3	5	2	6	6	3	6	6	5	6	5
42	6	6	7	6	6	1	2	3	2	7	6	5	6	5	5	6	5
43	6	6	6	5	5	1	2	3	3	7	6	5	7	6	5	6	5
44	3	2	5	2	3	2	2	2	4	6	5	5	6	6	3	6	2
45	6	6	6	6	5	2	2	3	3	7	6	5	7	6	3	6	3
46	5	5	7	5	5	2	2	2	3	6	6	5	6	6	3	6	3
47	6	5	6	6	6	2	2	3	3	6	6	5	6	6	5	6	5
48	6	6	6	7	6	2	5	5	2	6	6	5	7	6	5	6	5
49	6	6	6	6	6	2	5	5	3	6	5	6	6	6	5	6	5
50	5	6	5	5	5	2	2	5	3	6	6	5	7	6	5	6	5

Table A2. Cont.

No.	Q ₁	Q ₂	Q ₃	Q ₄	Q ₅	Q ₆	Q ₇	Q ₈	Q ₉	Q ₁₀	Q ₁₁	Q ₁₂	Q ₁₃	Q ₁₄	Q ₁₅	Q ₁₆	Q ₁₇
51	5	3	6	5	5	1	3	5	3	7	6	6	6	6	5	6	4
52	7	6	7	3	3	2	2	4	5	6	6	6	7	6	5	6	2
53	5	6	6	7	6	2	3	5	3	7	6	5	6	6	6	6	3
54	3	5	6	5	5	1	2	3	3	6	6	5	7	6	5	6	6
55	6	5	6	5	6	1	3	5	3	6	6	5	5	5	5	6	5
56	5	6	6	5	5	2	2	3	5	7	6	5	7	6	5	6	5
57	6	5	7	5	6	1	2	3	3	6	5	6	7	7	3	6	5
58	7	3	7	5	6	1	2	2	3	6	6	5	7	7	6	6	6
59	3	3	5	2	2	1	1	2	6	6	6	6	5	5	2	6	2
60	6	6	7	5	5	2	2	5	3	6	6	5	7	5	5	6	5
61	6	5	6	6	5	1	1	2	3	7	7	6	6	5	5	7	5
62	5	5	6	5	5	1	2	5	4	6	6	6	6	5	5	6	5
63	3	2	5	2	3	2	2	4	5	7	7	7	6	6	5	6	5
64	6	6	5	2	3	1	1	3	5	6	6	5	6	5	3	6	3
65	5	5	6	5	5	1	2	3	3	7	7	5	6	6	5	6	5
66	5	2	5	5	2	2	2	5	3	7	6	5	5	5	3	6	3
67	5	6	6	6	5	1	2	5	3	7	6	5	6	6	5	6	3
68	5	5	5	3	2	1	1	5	3	7	6	5	6	5	3	6	2
69	2	7	2	1	1	2	1	7	1	5	5	7	2	3	1	3	1
70	6	6	7	6	6	2	6	3	2	7	6	3	7	6	5	6	3
71	6	5	6	5	6	1	5	3	3	7	6	5	6	6	5	7	3
72	6	5	6	6	6	2	5	3	3	7	6	5	6	6	6	6	3
73	5	2	5	5	6	1	3	3	5	6	6	3	6	6	3	5	3
74	3	6	6	2	6	1	2	6	3	7	6	5	6	6	5	6	2

References

1. Trojanowski, T. Sustainable Environmental Management in an Energy Company: A Case Study. *Eur. Res. Stud. J.* **2021**, *XXIV*, 89–101. [\[CrossRef\]](#)
2. Govindan, K. Sustainable Consumption and Production in the Food Supply Chain: A Conceptual Framework. *Int. J. Prod. Econ.* **2018**, *195*, 419–431. [\[CrossRef\]](#)
3. Schaltegger, S.; Hansen, E.G.; Lüdeke-Freund, F. Business Models for Sustainability: Origins, Present Research, and Future Avenues. *Organ. Environ.* **2016**, *29*, 3–10. [\[CrossRef\]](#)
4. Wirtz, B.W.; Pistoia, A.; Ullrich, S.; Göttel, V. Business Models: Origin, Development and Future Research Perspectives. *Long Range Plan.* **2016**, *49*, 36–54. [\[CrossRef\]](#)
5. Fjeldstad, Ø.D.; Snow, C.C. Business Models and Organization Design. *Long Range Plan.* **2018**, *51*, 32–39. [\[CrossRef\]](#)
6. Geissdoerfer, M.; Vladimirova, D.; Evans, S. Sustainable Business Model Innovation: A Review. *J. Clean. Prod.* **2018**, *198*, 401–416. [\[CrossRef\]](#)
7. Expert Tool. Available online: <http://qsp.decisiontool.net/> (accessed on 27 February 2020).
8. Tomashevskii, I.; Tomashevskii, D. A Non-Heuristic Multicriteria Decision-Making Method with Verifiable Accuracy and Reliability. *J. Oper. Res. Soc.* **2021**, *72*, 78–92. [\[CrossRef\]](#)
9. Zabihi, H.; Alizadeh, M.; Kibet Langat, P.; Karami, M.; Shahabi, H.; Ahmad, A.; Nor Said, M.; Lee, S. GIS Multi-Criteria Analysis by Ordered Weighted Averaging (OWA): Toward an Integrated Citrus Management Strategy. *Sustainability* **2019**, *11*, 1009. [\[CrossRef\]](#)
10. Hao, M.; Ganeshaiah, K.N.; Zhang, C.; Zhao, X.; von Gadow, K. Discriminating among Forest Communities Based on Taxonomic, Phylogenetic and Trait Distances. *For. Ecol. Manag.* **2019**, *440*, 40–47. [\[CrossRef\]](#)
11. Zhang, Y.; Li, J.; Zhou, Z. Exploring Expedient Protected Area for Ecosystem Services: Decision-Making Method with a New Algorithm. *Sustainability* **2019**, *11*, 5599. [\[CrossRef\]](#)
12. Chen, C.-H. A Novel Multi-Criteria Decision-Making Model for Building Material Supplier Selection Based on Entropy-AHP Weighted TOPSIS. *Entropy* **2020**, *22*, 259. [\[CrossRef\]](#) [\[PubMed\]](#)
13. Hashim, M.; Nazam, M.; Abrar, M.; Hussain, Z.; Nazim, M.; Shabbir, R. Unlocking the Sustainable Production Indicators: A Novel TESCO Based Fuzzy AHP Approach. *Cogent Bus. Manag.* **2021**, *8*, 1870807. [\[CrossRef\]](#)
14. Nazam, M.; Hashim, M.; Ahmad Baig, S.; Abrar, M.; Ur Rehman, H.; Nazim, M.; Raza, A. Categorizing the Barriers in Adopting Sustainable Supply Chain Initiatives: A Way-Forward towards Business Excellence. *Cogent Bus. Manag.* **2020**, *7*, 1825042. [\[CrossRef\]](#)
15. Fan, T.; Xue, D.Q. Sustainable Development of Cultural Industry in Shaanxi Province of Northwest China: A SWOT and AHP Analysis. *Sustainability* **2018**, *10*, 2830. [\[CrossRef\]](#)

16. UN Secretary-General; World Commission on Environment and Development. Report of the World Commission on Environment and Development. 1987. Available online: <https://digitallibrary.un.org/record/139811?ln=en> (accessed on 10 December 2021).
17. Christen, M.; Schmidt, S. A Formal Framework for Conceptions of Sustainability—A Theoretical Contribution to the Discourse in Sustainable Development. *Sustain. Dev.* **2012**, *20*, 400–410. [\[CrossRef\]](#)
18. Bocken, N.M.P.; Rana, P.; Short, S.W. Value Mapping for Sustainable Business Thinking. *J. Ind. Prod. Eng.* **2015**, *32*, 67–81. [\[CrossRef\]](#)
19. Pomeroy, A.; Johnson, L.W. Advertising Corporate Social Responsibility Initiatives to Communicate Corporate Image. *Corp. Commun. Int. J.* **2009**, *14*, 420–439. [\[CrossRef\]](#)
20. Pomeroy, A.; Johnson, L.W. Building Sustainability into Services Marketing: Expanding Decision-Making from a Mix to a Matrix. *Sustainability* **2018**, *10*, 2992. [\[CrossRef\]](#)
21. Emery, B. *Sustainable Marketing; Always Learning*; Pearson: Harlow, UK, 2012; ISBN 978-0-273-72328-8.
22. Martin, D.; Schouten, J. *Sustainable Marketing*; Prentice Hall: Upper Saddle River, NJ, USA, 2012; ISBN 978-0-13-611707-0.
23. Belz, F.-M.; Peattie, K. *Sustainability Marketing a Global Perspective*; John Wiley and Sons: Hoboken, NJ, USA, 2010; ISBN 978-0-470-51922-6.
24. Peattie, K.; Belz, F.-M. Sustainability Marketing—An Innovative Conception of Marketing. *Mark. Rev. St. Gallen* **2010**, *27*, 8–15. [\[CrossRef\]](#)
25. Fuller, D.A. *Sustainable Marketing: Managerial-Ecological Issues*; SAGE: Thousand Oaks, CA, USA, 1999; ISBN 978-0-7619-1219-4.
26. Kadirov, D. Sustainability of Marketing Systems: Systeming Interpretation of Hybrid Car Manufacturer and Consumer Communications. Ph.D. Thesis, University of Waikato, Hamilton, New Zealand, 2008.
27. Leitner, K.E. *Balanced Sustainability Marketing How a Fish Processor Deals with the Shortage of a Natural Resource*; Südwestdeutscher Verlag für Hochschulschriften: Saarbrücken, Germany, 2012; ISBN 978-3-8381-1498-9.
28. Rudawska, E. *The Sustainable Marketing Concept in European SMEs Insights from the Food and Drink Industry*; 2018; ISBN 978-1-78754-038-5. Available online: <https://www.emerald.com/insight/publication/doi/10.1108/9781787540385> (accessed on 10 December 2021).
29. Kazibudzki, P.T.; Trojanowski, T.W. Examination of Marketing Mix Performance in Relation to Sustainable Development of the Poland's Confectionery Industry. *PLoS ONE* **2020**, *15*, e0240893. [\[CrossRef\]](#)
30. Galati, F.; Bigliardi, B.; Petroni, A.; Pinna, C.; Rossi, M.; Terzi, S. Sustainable Product Lifecycle: The Role of ICT. *Sustainability* **2019**, *11*, 7003. [\[CrossRef\]](#)
31. Hauschild, M.; Jeswiet, J.; Alting, L. From Life Cycle Assessment to Sustainable Production: Status and Perspectives. *CIRP Ann.* **2005**, *54*, 1–21. [\[CrossRef\]](#)
32. Zou, G.L.; Chau, K.W. Determinants and Sustainability of House Prices: The Case of Shanghai, China. *Sustainability* **2015**, *7*, 4524–4548. [\[CrossRef\]](#)
33. Liu, S.; Xu, J.; Shi, X.; Li, G.; Liu, D. Sustainable Distribution Organization Based on the Supply–Demand Coordination in Large Chinese Cities. *Sustainability* **2018**, *10*, 3042. [\[CrossRef\]](#)
34. Todorovic, V.; Maslaric, M.; Bojic, S.; Jokic, M.; Mircetic, D.; Nikolicic, S. Solutions for More Sustainable Distribution in the Short Food Supply Chains. *Sustainability* **2018**, *10*, 3481. [\[CrossRef\]](#)
35. Chung, J. Effect of Quality Uncertainty, Regulatory Focus, and Promotional Strategies on Perceived Savings for Sustainable Marketing. *Sustainability* **2020**, *12*, 5653. [\[CrossRef\]](#)
36. Muñoz-Pascual, L.; Curado, C.; Galende, J. The Triple Bottom Line on Sustainable Product Innovation Performance in SMEs: A Mixed Methods Approach. *Sustainability* **2019**, *11*, 1689. [\[CrossRef\]](#)
37. Glavas, A.; Mish, J. Resources and Capabilities of Triple Bottom Line Firms: Going Over Old or Breaking New Ground? *J. Bus. Ethics* **2015**, *127*, 623–642. [\[CrossRef\]](#)
38. Kennedy, E.B.; Marting, T.A. Biomimicry: Streamlining the Front End of Innovation for Environmentally Sustainable Products. *Res.-Technol. Manag.* **2016**, *59*, 40–48. [\[CrossRef\]](#)
39. Hall, J.; Wagner, M. Integrating Sustainability into Firms' Processes: Performance Effects and the Moderating Role of Business Models and Innovation. *Bus. Strategy Environ.* **2012**, *21*, 183–196. [\[CrossRef\]](#)
40. Burlingame, B. Grand Challenges in Nutrition and Environmental Sustainability. *Front. Nutr.* **2014**, *1*, 3. [\[CrossRef\]](#)
41. Allen, M.J.; Yen, W.M. *Introduction to Measurement Theory*; Waveland Press, 1979. Available online: <https://www.waveland.com/browse.php?t=367> (accessed on 10 December 2021).
42. Bolarinwa, O.A. Principles and Methods of Validity and Reliability Testing of Questionnaires Used in Social and Health Science Researches. *Niger. Postgrad. Med. J.* **2015**, *22*, 195–201. [\[CrossRef\]](#)
43. Popovic, D. Modelling the Marketing of High-Tech Start-Ups. *J. Target. Meas. Anal. Mark.* **2006**, *14*, 260–276. [\[CrossRef\]](#)
44. Litwin, M. *How to Measure Survey Reliability and Validity*; Sage Publications, Inc.: Thousand Oaks, CA, USA, 2020. [\[CrossRef\]](#)
45. Allen, I.E.; Seaman, C.A. Likert Scales and Data Analyses. *Qual. Prog.* **2007**, *40*, 64–65.
46. Carré, F.; Girard, M.C. Quantitative Mapping of Soil Types Based on Regression Kriging of Taxonomic Distances with Landform and Land Cover Attributes. *Geoderma* **2002**, *110*, 241–263. [\[CrossRef\]](#)
47. Izsak, C.; Price, A.R.G. Measuring B-Diversity Using a Taxonomic Similarity Index, and Its Relation to Spatial Scale. *Mar. Ecol. Prog. Ser.* **2001**, *215*, 69–77. [\[CrossRef\]](#)
48. Jarzyna, M.A.; Jetz, W. Taxonomic and Functional Diversity Change Is Scale Dependent. *Nat. Commun.* **2018**, *9*, 2565. [\[CrossRef\]](#)

49. Likert, R. A Technique for the Measurement of Attitudes. *Arch. Psychol.* **1932**, *22*, 5–55.
50. Brown, J.D. *Using Surveys in Language Programs*; Cambridge University Press: Cambridge, UK, 2001.
51. Jamieson, S. Likert Scales: How to (Ab)Use Them. *Med. Educ.* **2004**, *38*, 1217–1218. [\[CrossRef\]](#)
52. Wu, H.; Leung, S.-O. Can Likert Scales Be Treated as Interval Scales?—A Simulation Study. *J. Soc. Serv. Res.* **2017**, *43*, 527–532. [\[CrossRef\]](#)
53. Martin, J. *Design of Man-Computer Dialogues*; Prentice-Hall Series in Automatic Computation; Prentice-Hall: Englewood Cliffs, NJ, USA, 1973; ISBN 978-0-13-201251-5.
54. Miller, G.A. The Magical Number Seven plus or Minus Two: Some Limits on Our Capacity for Processing Information. *Psychol. Rev.* **1956**, *63*, 81–97. [\[CrossRef\]](#)
55. Dyer, R.F.; Forman, E.H. *An Analytic Approach to Marketing Decisions*; Prentice-Hall: Englewood Cliffs, NJ, USA, 1991; ISBN 978-0-13-558826-0.
56. Dyer, J.S. Remarks on the Analytic Hierarchy Process. *Manag. Sci.* **1990**, *36*, 249–258. [\[CrossRef\]](#)
57. Forman, E.H.; Gass, S.I. The Analytic Hierarchy Process: An Exposition. *Oper. Res.* **2001**, *49*, 469–486. [\[CrossRef\]](#)
58. Kazibudzki, P.T. On the Statistical Discrepancy and Affinity of Priority Vector Heuristics in Pairwise-Comparison-Based Methods. *Entropy* **2021**, *23*, 1150. [\[CrossRef\]](#) [\[PubMed\]](#)
59. Starczewski, T. Remarks on the Impact of the Adopted Scale on the Priority Estimation Quality. *J. Appl. Math. Comput. Mech.* **2017**, *16*, 105–116. [\[CrossRef\]](#)
60. Starczewski, T. Remarks about Geometric Scale in the Analytic Hierarchy Process. *J. Appl. Math. Comput. Mech.* **2018**, *17*, 71–82. [\[CrossRef\]](#)
61. Grzybowski, A.Z.; Starczewski, T. Simulation Analysis of Prioritization Errors in the AHP and Their Relationship with an Adopted Judgement Scale. In Proceedings of the Proceedings of The World Congress on Engineering and Computer Science, San Francisco, CA, USA, 23 October 2018; p. 5.
62. Franek, J.; Kresta, A. Judgment Scales and Consistency Measure in AHP. *Procedia Econ. Financ.* **2014**, *12*, 164–173. [\[CrossRef\]](#)
63. Thurstone, L.L. A Law of Comparative Judgment. *Psychol. Rev.* **1927**, *34*, 273–286. [\[CrossRef\]](#)
64. Saaty, T.L. *Decision Making for Leaders: The Analytic Hierarchy Process for Decisions in a Complex World*; RWS Publ.: Pittsburgh, PA, USA, 2001; ISBN 978-0-9620317-8-6.
65. Saaty, T.L. Relative Measurement and Its Generalization in Decision Making Why Pairwise Comparisons Are Central in Mathematics for the Measurement of Intangible Factors the Analytic Hierarchy/Network Process. *RACSAM-Rev. Real Acad. Cienc. Exactas Fis. Nat. Ser. Mat.* **2008**, *102*, 251–318. [\[CrossRef\]](#)
66. Fechner, G.T. *Elemente der Psychophysik*; Breitkopf und Härtel: Leipzig, Germany, 1860.
67. Tomashevskii, I.L. Eigenvector Ranking Method as a Measuring Tool: Formulas for Errors. *Eur. J. Oper. Res.* **2015**, *240*, 774–780. [\[CrossRef\]](#)
68. Condorcet, J.-A.-N. *Essai sur L'Application de L'Analyse à la Probabilité des Décisions Rendues à la Pluralité des voix ([Reprod.])*/par M. le Marquis de Condorcet. 1785. Available online: https://www.academia.edu/19554669/Essai_sur_l_application_de_l_analyse_%C3%A0_la_probabilit%C3%A9_des_d%C3%A9cisions_rendues_%C3%A0_la_pluralit%C3%A9_des_voix_par_M_le_marquis_de_Condorcet_1785?auto=download (accessed on 10 December 2021).
69. Orbán-Mihálykó, É.; Mihálykó, C.; Koltay, L. A Generalization of the Thurstone Method for Multiple Choice and Incomplete Paired Comparisons. *Cent. Eur. J. Oper. Res.* **2019**, *27*, 133–159. [\[CrossRef\]](#)
70. Kazibudzki, P.T.; Krupka, J. Pairwise Judgments Consistency Impact on Quality of Multi-Criteria Group Decision-Making with AHP[S1]. *EM Ekon. Manag.* **2019**, *22*, 195–212. [\[CrossRef\]](#)
71. Trojanowski, T. Sustainable Management of Production Activities in Polish Enterprises of the Food Industry. *Manag. Theory Stud. Rural Bus. Infrastruct. Dev.* **2020**, *42*, 80–88. [\[CrossRef\]](#)
72. Gullstrand Edbring, E.; Lehner, M.; Mont, O. Exploring Consumer Attitudes to Alternative Models of Consumption: Motivations and Barriers. *J. Clean. Prod.* **2016**, *123*, 5–15. [\[CrossRef\]](#)
73. Peattie, K. *Environmental Marketing Management: Meeting the Green Challenge*; Pearson Education Print on Demand Edition: Pitman, London, 2010; ISBN 978-0-273-60279-8. Available online: <https://www.worldcat.org/title/environmental-marketing-management-meeting-the-green-challenge/oclc/32896191> (accessed on 10 December 2021).
74. Lueg, K.; Lueg, R. Detecting Green-Washing or Substantial Organizational Communication: A Model for Testing Two-Way Interaction Between Risk and Sustainability Reporting. *Sustainability* **2020**, *12*, 2520. [\[CrossRef\]](#)
75. Pimonenko, T.; Bilan, Y.; Horák, J.; Starchenko, L.; Gajda, W. Green Brand of Companies and Greenwashing under Sustainable Development Goals. *Sustainability* **2020**, *12*, 1679. [\[CrossRef\]](#)
76. Segura, M.; Maroto, C.; Segura, B. Quantifying the Sustainability of Products and Suppliers in Food Distribution Companies. *Sustainability* **2019**, *11*, 5875. [\[CrossRef\]](#)
77. Heffner, K.; Klemens, B.; Solga, B. Challenges of Regional Development in the Context of Population Ageing. Analysis Based on the Example of Opolskie Voivodeship. *Sustainability* **2019**, *11*, 5207. [\[CrossRef\]](#)