

Article

Influence of Pro-Environmental Attitudes on the Choice between Tangible and Virtual Product Forms

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Abstract: The development of modern technology has contributed to changes in consumer shopping trends. Increasingly, there is a departure from traditional to digital sales channels and similar trends are also being observed for different categories of products—e.g., books or movies. The most important reasons behind such a shift includes purchase convenience, storage ease, or a supposed lower environmental impact. The purpose of this research was to verify whether the pro-environmental attitudes represented by consumers are a moderating variable in the choice between the traditional and digital form of a product. In order to do this, a survey questionnaire was first developed and then a representative sample of 1000 Polish respondents were surveyed. The research procedure included an exploratory factor analysis used for extracting consumers' pro-environmental attitudes, as well as an indicator of propensity to choose either digital or traditional products; Ward's hierarchical analysis and the k-means method for grouping participants into clusters based on such attitudes and then evaluating the willingness to choose a particular product in each cluster; differences between clusters (Mann–Whitney's U and Kruskal–Wallis H tests); as well as a correlation between those attitudes and the preferred product form. The research proved that there were consumer groups taking similar actions related to environmental issues, as well as tending to choose a particular product form. The conducted analyses revealed that isolated, pro-environmental attitudes were positively correlated with a willingness to choose a digital product, although such a relationship is weak. Additionally, it was proven that groups with general pro-environmental orientation are more willing to buy products in traditional form, whereas digital forms were visibly more popular in groups with more neutral or negative approaches towards the environment.



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1. Introduction

Consumers are facing numerous decisions related to choosing to buy a particular product almost every day. Until recently, all purchases by consumers were made only in the traditional store space [1]. The development of modern technology has led to a change in market consumer behaviour based on a departure from traditional to virtual forms of shopping [2–4]. However, these changes have not extended to all product categories. Some material goods, such as cars, for example, due to their specificity, are still purchased by consumers in traditional channels [5]. Nevertheless, widespread technology development has contributed to transferring the shopping zone to the virtual space.

It is assumed that the consumer shopping experience has changed under the influence of the rapid technology development offered by online stores [6–8]. Increased technological innovation development [5] and the COVID-19 pandemic [9] have led to a reduction in the purchase of physical products through traditional channels. Moreover, the increasing implementation of sustainability goals by companies has led consumers to pay attention to how physical products are produced [10]. Digital products have proven to be the ideal solution to match the dynamic changes in consumer attitudes, as they are often considered

to be more convenient, more environmental-friendly and a less expensive alternative to conventional goods. Therefore, they have become a viable alternative to traditional products wherever possible.

In addition, it was recognised that broadly understood environmental attitudes might have a crucial impact on the choice of digital products. The reason is that these goods' production is not linked to a resource-intensive production process [11], no transportation is necessary, and sales-related infrastructure is considerably less energy-consuming. The purchasing process for digital products is greatly simplified, and customers making purchases are not required to travel to shops to buy goods [12]. These factors are related to the reduction of exhaust emissions into the atmosphere.

Additionally, linked to the issue of the choice of book form is the consumer's attitude towards the use of paper. In recent years, there has been a lot of discussion about paper production itself. Critics claim that paper production leads to massive deforestation and contributes significantly to greenhouse gas emissions [13]. Recycling has become the answer to protecting the environment from the burden of paper production. Nevertheless, the impact of energy consumption in production is still a key issue in that process. Converting waste paper into paper and board requires energy, which typically comes from fossil fuels, such as oil and coal [14]. Despite the increasing environmental friendliness of the paper used to make books, among other things, consumers are still inclined to choose digital products. This is related to the fact that digital media seem to be more sustainable. Electronic products, such as phones and laptops, are used (and reused) over a long period of time, making them a kind of renewable resource [15].

Recent years have also shown a change in consumers' online shopping tendencies. It has become interesting to note that they have started to pay attention to the way the products they buy are packaged [16,17], as well as delivered to their recipients [18]. This issue is also relevant for the choice of book form. If the consumer is inclined towards the traditional form, while at the same time being oriented towards environmental considerations, an issue arises with regard to the way in which the parcel is packaged [19]. The fact that the product is housed in plastic or paper packaging may speak in favour of choosing a digital form of the product.

Despite the discussed, significantly lower environmental impacts of digital products, there is a lack of studies assessing the importance of this factor on the final consumer decision. An analysis of the literature showed that there are many studies addressing the issue of consumer behaviour in relation to purchasing green products. However, in each of the available studies, there is a lack of specific information regarding the pro-environmental attitudes adopted as a factor in the choice of product form. There are a number of studies dealing with issues related to organic purchasing taking into account different types of factors. Researchers have often placed decision-makers faced with making a choice in specific situations. These situations became tangible factors in product choice [20,21]. A general review of the attributes of ecological products and their direct impact on consumer decisions was made by Bangsa and Schlegelmilch [22]. In the study, product attributes were divided into two parts—dependent on social sustainability and environmental sustainability. In turn, Liobikienė and Bernatoniene identified factors influencing consumers' green purchasing behaviour in relation to product classification. In addition, factors indicative of green behaviour were categorised into internal factors, external factors, and social factors [23].

When analyzing consumer behaviour in relation to the choice between traditional and digital forms of a product, it is impossible not to refer to the theoretical framework potentially underlying the mechanisms of their actions. The theory of planned behaviour, developed by Ajzen and Fishbein, which assumes that individual consumer behaviour depends on two main factors—individual attitudes and social norms [24]—is noteworthy in this context. TPB directly justifies the need to evaluate different categories of attitudes as a factor in shaping the indicated behaviour concerning the choice between the two forms of products. At the same time, various types of social norms—especially with regard to

sustainable consumption and care for the environment, which are also clearly evident in modern society—are not insignificant, but were outside the scope of this study.

In 2021, a study based on the theory of planned behaviour was carried out on a sample of Chinese students regarding the determinants of e-book choice. In the study analyzed, the following factors were taken into account: perceived usefulness of use, as well as perceived ease of use in relation to information technology; and users' behavioural intentions, which indicated acceptance (or not) of information technology. The study showed that usability and the need to read are key factors in the use of e-books. Usability refers to a convenient keyword search, portability, and reading at any time. E-books are considered to make it easier to search and read large amounts of data. In addition, it has been proven that printed books often do not contain abstracts and the content is only indicated by the cover. It seems that students are more accepting of e-books and have specific reading goals, which increases reading frequency [25].

The theory of planned behaviour fit perfectly as a base for the theoretical framework of the study carried out. Nevertheless, it should be noted that the choice between traditional and digital forms of product, taking into account ecological attitudes, is a rather specific study, and the literature in this area is particularly scarce. So far, only a small number of researchers have decided to indicate what factors moderate the choice between traditional and digital forms of a product.

In view of the above, there were two reasons for exploring this topic and thus filling the research gap. The first was the assumption that digital products are less harmful to the environment, which is linked to the need to verify whether this influences a greater willingness to choose them among consumers interested in environmental protection, as well as whether people less concerned about the environment prefer traditional products. A second consideration was that there were a large number of studies available on the factors that determine the choice of only organic products. What was lacking, however, was an examination of whether environmental orientation was correlated with the choice between traditional, less environmentally friendly, and digital forms of production.

The above-mentioned considerations contributed to the main objective pursued in the research, which was to determine whether the choice between digital and traditional product forms is determined by the consumer's environmental attitudes—i.e., to determine whether consumers more willing to care about the environment tend to purchase products in digital form, which seems to be perceived as having a significantly less negative impact on the natural environment and its resources. In addition, the following research questions were posed to further verify the issue described:

1. Are environmental attitudes a factor in the choice between product forms?
2. Are consumers choosing the virtual form of the product environmentally friendly?
3. Are there any groups of consumers with a negative attitude towards the environment among consumers choosing the digital product form?

A specific example of electronic versions of products is e-books. Accordingly, it was decided to focus the consideration on the book market example, since the book is an exemplary and classic product that exists in two forms simultaneously. In the early 20th century, a number of research was conducted to identify consumer preferences towards electronic alternatives to printed books and magazines. Numerous authors [26–28] have shown that consumers are more willing to use digital versions of products. Among other things, this is related to their greater functionality. Unfortunately, the aforementioned papers lack a single assessment of the environmental issues' importance, despite the fact that there is an increase in environmental awareness among today's consumers.

The study presented in this paper was conducted on a representative group of Polish consumers. Over recent years in Poland, the widespread promotion of the principles and objectives of sustainable development and sustainable consumption have been observed—Polish society became increasingly aware of environmental issues; there is also a growing trend towards protecting the environment and conserving natural resources. On the other hand, Polish consumers have a direct and unrestricted access to both forms of products

whose prices are relatively comparable, so it can be assumed that they are a reliable and relevant source of information that can be used in the analysis, and the results obtained can be generalised to other, digitally advanced societies without much reservation.

Interestingly, there was no specific study related to the Polish market that included information on factors moderating the choice between a traditional and a digital form of products. As far as the issue of ecology is concerned, Polish researchers have carried out a number of studies addressing the issue of purchasing wholesome food. In this area, it is indicated that this purchasing trend is indeed a derivative of an increased environmental awareness and pro-ecological attitudes [see more [29–31]].

2. Digitisation of the Product and Factors Shaping Product Choice

2.1. Conventional and Digital Form of the Product

In recent years, changes in consumer preferences regarding choices between physical and digital forms of consumer goods have been observed [32]. Additionally, consumers are increasingly willing to engage with the environmental protection [33], and consequently pay more attention to the products they choose [34]. Due to an increasing environmental awareness, consumers have become more willing to choose online shopping [35]. It is interesting to observe that with the increased interest in online transactions, digital products have also become popular.

A digital good is one that is sold or delivered electronically [36,37]. From the user's perspective, a digital good is a specific form of information—a file—embedded within the physical medium [38]. Five characteristics can be found in the literature distinguishing virtual goods from physical products. These are: nonrival, infinitely expandable, discrete, aspatial, and recombinant [39]. Nambisan has divided digital goods by the technologies they contain. According to their classification, 'total' digital goods and 'partial' digital goods have been distinguished [40]. Examples of total digital goods are innovative platforms created by corporations [41]. In the case of partial digital goods, it is modern technologies that complement existing physical products [42]. Wiczerzycki, however, distinguished between two basic types of digital goods—pure digital goods and converted digital goods [43]. Pure digital goods are those where the digital form is the primary form, while converted goods are those whose digital form is the secondary form, these products were originally physical products. An example of converted digital goods are e-books.

Books are a convenient object of research because they are a unique digital product. A product with the same content, cover design, as well as illustrations and other graphics, can simultaneously appear on the market in both forms. Therefore, the choice of a particular good is not dictated by the mere availability or unavailability of the preferred form of the product, but by other factors. These factors may depend on specific consumer demographics, but also on consumer preferences. Preferences, in turn, very often depend on an individual's habits. The fact that an individual chooses one or the other form of this type of product because of its pro-environmental attitudes, given the coexistence of the product in both forms, is therefore a relevant and cognitively interesting area of exploration.

The first digital versions of books on the market appeared in 1971 with the development of Project Gutenberg. At that time, experts expected that they would completely replace paper books [44]. Despite the long existence of e-books, there is still no single, concrete definition [45–47]. The ambiguity comes from the necessity to separate the digital text from the device that is used to browse it [44]. The first term indicates that an e-book is a text or book that can be read in digital format on computers, smartphones, tablets or other reading devices [48–50].

Öngöz and Baki defined the term “e-book” as text designed to be read on digital devices while allowing the viewer to interact with the text using visuals, sound, and links [44]. However, for the purposes of this paper, Vassiliou and Rowley's definition was adopted, which indicates that an e-book is a digital object with text and/or other content that is created by integrating a paper book with features that can be delivered in an electronic environment [51]. The common part of the quoted definitions is that the concept

of an e-book is directly connected with the use of innovative technological tools designed for browsing and reading books.

Nonetheless, it is possible that e-books' appearance has made consumers' daily lives simpler. Another convenience directly related to advances in digital books was the introduction of e-readers in the 1990s. Since the introduction of these more advanced e-readers, the use of e-books has increased worldwide, and user awareness and perception have evolved accordingly [52]. The reason is that digital books offer consumers a number of benefits. These include: easy browsing, keyword searches, hyperlinks and references to specific sources, and the fact that information contained in e-books can be easily cut, pasted or saved for later use [51].

Despite the many advantages of choosing electronic versions of books, the frequency of traditional book purchases has not decreased [53]. Printed books continue to be more popular than digital books [54]. There are several reasons for this phenomenon:

- readers find enjoyment in the tactile experience of the book as they physically browse through it [55];
- readers focus their attention more on the story of the book when they physically hold it in their hands [56];
- readers choose traditional books as it helps them to concentrate on reading [57].

The reasons why e-books are finding it difficult to overtake traditional books in sales are not just related to consumer habits. The availability of digital content remains a key challenge [58]. In addition, there are a number of problems associated with the devices on which readers view e-books. Many users have already encountered difficulties installing dedicated software, downloading content, or even reading e-books [59]. Along with technological progress, the recognized technical defects have been reduced. Nevertheless, consumers are still reluctant to choose e-books.

2.2. Factors and Attitudes behind Product form Choice

Despite the articulated advantages and disadvantages of using both e-books and traditional books, it should be noted that both products remain identical in terms of content [60]. The differences between the traditional and digital forms of books arise at the function level and the ways in which readers use them. The functionality and product usage are a result of the determinants directly behind choosing between one form of product and another.

The literature analysis has shown that it is difficult to present a range of factors that determine the consumer's choice between a traditional product and a digital product. For traditional books, the moderators of choice are the socio-demographic characteristics of the readers and factors related to the characteristics of the books [61]. The main determinants of e-book choice are assumed to be those directly related to today's consumers' ability to use technology in their daily lives, general online consumer behaviour, as well as the online services' quality [62].

Poon also attempted to isolate factors moderating e-book choice [63]. The choice determinants were defined by Poon using the Technology Acceptance Model (TAM) and adding four additional variables: skilful use of IT innovation, social impact, perceived costs, and environmental awareness. The result of the conducted research was to provide crucial information from the e-book distributors' perspective relating to the formulation of pricing strategies to attract more customers and thus increase revenues.

The available studies analyze a number of factors encouraging, as well as discouraging, the choice of digital products over traditional products. One factor that appeals to consumers' choice of a digital product is the possibility to return the product. Digital products can be returned (usually within a time period specified by the supplier) without any physical or time effort and at no cost. Unlike physical goods, digital products can often be returned even after they have been used up—e.g., an informative article read or an audiobook listened to [64].

At the stage of analyzing the factors that motivate consumers to choose a digital or traditional form of a product, it is also important to raise the issue of the values attributed to products. It is interesting to note that decision-makers choose digital products specifically because of the values offered by this particular form. The key dimensions of those values are emotional and social [65]. This is because consumers seek to express their social image through the purchase of digital products, as well as making online communication more pleasant. Another element that goes into the consumer's perceived value of a product is the price. The bargains used by retailers in stationary shops prove to be deceptive for customers. The tactics adopted regarding price reductions and other promotional campaigns sometimes mislead consumers [66], while in a virtual environment, the consumer has more time and information at his disposal to facilitate an informed decision and he also remains free of a considerable amount of pressure from the potential seller. In addition, digital products offered by retailers tend to be cheaper, enabling consumers to save money these days [67]. Consumers are therefore increasingly opting out of buying traditional products.

Finally, it would also be potentially worthwhile to consider the disincentives to digital as well as the incentives to choose a physical product. Interestingly, the research in this area is not very extensive, but nevertheless it is conceivable that factors—such as the possibility to use the product without the utilization of electronic devices, the possibility to rent or give away the product, or the symbolic and social values of owning a collection of products—may be relevant in this case.

2.3. Environmental Attitudes and Product Form Choice

Given that digital products might be considered to be more environmentally friendly both in terms of their production processes, as well as in terms of their distribution [68], the issue of pro-environmental orientation and its role when consumers make a choice between traditional and digital forms of a product becomes interesting. With the development of information and communication technology in the context of achieving environmental sustainability, it was assumed that e-books fit perfectly as an implementation example of this issue. It is important to indicate at this stage that the consumers' choice of digital books contributes to lower toxic emissions that enter the environment. This is because the production process for e-books does not involve a complex technological process requiring significant energy input and chemical compounds that are not indifferent to the environment. Environmental sustainability in production itself involves stabilizing the balance between production activities and their impact on the environment [69]. Only the question of combining attitudes towards the environment as a fundamental determinant of contemporary consumer choices remains to be explored.

Having analyzed the aforementioned papers, a noticeable research gap was observed in consumer pro-environmental behaviour and their choices between traditional and digital product forms. The existing literature had not found results directly indicating a link between pro-environmental attitudes and the choice of a particular product form. Cited research mainly focused on ecological issues in relation to e-books or traditional books. No literature had been found that identifies consumers' pro-environmental attitudes as a moderating factor in the choice between traditional and digital forms of a product—if one is available, which is precisely the case within the book market.

In the literature, there were only a few studies that include in their assumptions the attitude factor towards ecology and the consumer's environmental awareness [70,71] as directly moderating consumer choices between product forms. One of Bansal's main goals in his research concerned the role of environmental awareness and consumer personality in terms of e-book use. The result was to prove that environmental awareness reduces the preference for using traditional books over digital substitutes [72]. Such a conclusion gave a reason to believe that not only environmentally conscious consumers, but also those with a wider range of pro-environmental attitudes, will prefer digital product forms. Therefore, it is possible to hypothesise that:

H1. *Consumers who choose the digital product form demonstrate pro-environmental attitudes.*

On the other hand, it was also necessary to verify the reverse hypothesis, assuming that digital products might also be chosen just as readily by customers with negative attitudes toward the environment. The justification for such an assumption is supported, first of all, by the fact that a digital product may also provide other values, not related to environmental protection, but sought by such a group of consumers, concerning, for example, price or convenience of use [73]. In addition, it can also be proven that there are groups of potential buyers who do purchase digital products, but on the other hand exhibit numerous environmentally burdensome behaviours. Therefore, it was possible to assume that:

H2. *There is a group of consumers who prefer the digital product form and at the same time have a negative attitude towards the environment.*

In 2011, a paper was prepared with the aim of analyzing the environmental impact of e-books and articulating the important determinants that define this impact. In addition, a comparison was made between traditional books and paper books from a life cycle perspective; nevertheless, the ecological aspect of the products being compared has not been fully resolved [74]. Given that the choice of a digital product can be seen as a form of environmental protection, while pro-environmental attitudes themselves are divided into those relating to the perception of the human impact on the environment as such, as well as the willingness to take specific action to protect it [75], one can put forward a hypothesis that:

H3. *Consumers willing to take action on environmental protection tend to choose the digital form of the product.*

Observation of consumers' attitudes toward books has led to the conclusion that, in this regard, two groups may be distinguished. The first included customers who perceive books just as consumer goods. The second cluster, on the other hand, includes true enthusiasts of paper books, who consider them valuable objects [76]. Interestingly, consumers with book collections are not always book lovers. There is a trend in the community to buy literature in order to simply accumulate it—and it is defined as bibliomania [77]. In addition, there is a belief among consumers that owning a large number of printed books makes a person wise [78]. Therefore, it should be assumed that the possession of paper books might be a kind of source of prestige, recognition, social position, as well as well-being for consumers. These values may be, under certain circumstances, much stronger than the demonstrated pro-environmental attitudes of consumers [79,80], which may lead to a situation in which a customer with a positive attitude to environmental protection, motivated by the desire to acquire these values, will likely choose a product variant that is potentially less environmentally friendly [81,82]. Therefore, the following hypothesis should be evaluated:

H4. *Consumers positively inclined toward the environment do not have a specific preference for choosing the product form.*

3. Materials and Methods

The analytical procedure to answer the research questions and verify the formulated research hypotheses consisted of the following steps:

1. Using an exploratory factor analysis in order to extract hidden variables representing consumers' environmental attitudes;
2. Grouping consumers with a similar attitude combination—cluster analysis conducted on the factors identified in the previous step, leading to the identification of respondents' groups with similar attitudes towards the environment;
3. Isolating variables representing consumers' propensity to choose a product—exploratory factor analysis;

4. Preference indication towards the product form choice in the gender and age perspective of respondents—non-parametric Mann–Whitney U test and Kruskal–Wallis ANOVA;
5. Assessing the propensity to choose a particular product form by groups (clusters) with different combinations of environmental attitudes;
6. Evaluating correlations between particular environmental attitudes and willingness to choose either digital or traditional product form.

3.1. Survey Questionnaire Construction

In order to collect the data necessary to answer the questions formulated earlier, a survey questionnaire was developed, which consisted of filtering questions—a set of questions about: traditional and digital book purchase frequency; propensity to choose one form of product or the other; related to environmental attitudes and demographic questions.

The proposed variables are presented in Table 1.

Table 1. Variables in the survey questionnaire.

No.	Proposed Statement	Source
1.	Purchasing frequency of both product forms: • The fact of purchasing books • Frequency of purchasing traditional books • Frequency of purchasing e-books	[83]
2.	Propensity to buy both product forms: • Ch1: Choice of printed book or e-book at the same price • Ch2: Choice between having a collection of printed books or e-books • Ch3: Choice of printed book or e-book by the same author • Ch4: Evaluation of printed book and e-book with consideration of the economic factor	
3.	Set of questions indicating specific environmental attitudes: • MD_1: If things continue in the present direction, we will soon experience a major environmental disaster • MD_2: When people interfere with nature, it often has disastrous consequences • MD_3: People are seriously abusing the environment • MD_4: The idea that the balance in nature is terribly delicate and easily disturbed is too pessimistic • MD_5: I do not believe that the environment has been seriously exploited by people • MD_6: People who claim that the relentless exploitation of nature has brought us to the brink of ecological collapse are wrong • MD_7: I do not bother saving water or other natural resources • MD_8: In my daily life, I am simply not interested in saving water and/or energy • MD_9: I always turn off the light when I no longer need it • MD_10: On a daily basis, I try to find ways to save water and energy • MD_11: I am not the type of person who tries to protect natural resources • MD_12: As far as possible, I try to save natural resources • MD_13: The idea that nature is valuable in itself is naive and wrong • MD_14: Nature is valuable in itself • MD_15: I do not think that environmental protection is an important issue • MD_16: Despite our special abilities, people are still subject to the laws of nature • MD_17: It makes me sad when I see forests being cut down for cultivation • MD_18: I am not sad to see the environment being destroyed	[75]
4.	Set of demographic questions: • Age • Gender • Education	

The survey questionnaire began with a filter question designed to determine whether respondents had purchased a book in any form in the last year. The choice of the time interval was not accidental, because it was easier for the respondents to respond to the subsequent researched issues in relation to a brief period of one year. This was a closed-ended question warranting two response options, ‘yes’ and ‘no’. If the respondent chose ‘no’, further answers were given according to their existing preference, which was explained in the instructions. Another question was to examine the purchase frequency of a particular product form (traditional book or e-book) also in relation to the time interval, which was one year. Respondents gave their answers on a four-point ordinal scale.

To determine the consumers’ propensity to choose a particular product form with the type of book preferred, a set of four variables was used. These included: the willingness to choose a particular product form offered at the same price, the willingness to have a collection of a particular product form, the willingness to choose a particular product form created by the same author, and the perception of a particular product form as more or less expensive than the other.

The penultimate part of the questionnaire related to environmental attitudes. In this case, the existing Environmental Attitudes Inventory scale, developed by Milfont and Duckitt, was used [75]. For the purposes of the ongoing survey, the following measurement scales were used: 6—environmental risks, 8—consumers’ personal protective behaviour, and 11—eco-centric concern. Six issues were selected from each scale (EAI-S abbreviated version). Respondents were asked to evaluate those variables on a 10-point scale.

3.2. Research Sample

A commercially acquired survey sample was used to implement the study. Responsible for its selection was the Polish research agency, BioStat, which conducted the survey on a random, nationally representative sample of 1000 adult Poles who use the Internet on a regular basis. All respondents were residents of Poland, while a prerequisite for the participation in the study was to use the Internet at least once a week. The selected research sample included respondents from different voivodeships and different sizes of places of residence in appropriate proportions. At the same time, the gender and age structure of the respondents reflected the structure of the general population. The survey was conducted in the first quarter of 2022. Respondents were participants in the “Badanie Opinii” (“Opinion research”—research agency’s product name) online panel, where the survey questionnaire was implemented. Stratified random sampling with weights related to age and gender was used to match and represent the relevant characteristics of the general population. The structure of the research sample is shown in Tables 2–4.

Table 2. Sample structure—gender.

Gender	Quantity
Female	520
Male	480
Total	1000

Table 3. Sample structure—age.

Age	Quantity
18 to 24	114
25 to 34	218
35 to 44	261
45 to 54	169
55 to 64	143
65 and over	95
Total	1000

Table 4. Sample structure—education.

Age	Quantity
Primary school	33
Secondary school	542
Bachelor's degree	134
Master's degree	291
Total	1000

3.3. Analysis Procedure

After the data collection, an exploratory factor analysis was used to isolate the pro-environmental attitudes demonstrated by consumers [84]. The extraction method chosen was the principal axis method. In order to obtain the clearest factor structure, it was decided to use a factor rotation. The rotation method chosen was the Varimax rotation [85], and it enabled decisions to be made about the factors included in the next step.

The optimal number of factors was chosen based on the interpretation of the scree plot, which suggested distinguishing three factors. In addition, based on an analysis of the eigenvalues, it was noted that the first factor explained 39.3% of the variance, the second 18.9%, and the third 9.6%. This was equivalent to determining the three pro-environmental attitudes represented by consumers. Statements with both positive and negative loading values greater than 0.6 were included in the analysis. A summary of the factor loading values for significant variables in the three factors is presented in the Table 5:

Table 5. Factor loadings values for significant variables—pro-environmental attitudes.

Variable	Factor 1 (ATT1)	Factor 2 (ATT2)	Factor 3 (ATT3)
MD_7			
MD_8			
MD_11	−0.848		
MD_13	−0.844		
MD_15	−0.738		
MD_16	−0.704		
MD_1	−0.746	0.729	
MD_2	−0.678	0.810	
MD_3		0.821	
MD_9			0.654
MD_10			0.805
MD_12			0.687

As can be observed, the extracted factors are consistent in terms of the assigned variables, and thus their interpretation is possible. The first factor is loaded with variables indicating the declared negative attitude towards environmental protection and the perceived lack of importance of activities in this area. Loading values in this case are negative, so it should be assumed that high values of this variable represent a positive, general attitude towards environmental protection (ATT1). In turn, the second factor is loaded with variables representing perceptions of the negative impact that civilization has on nature and its future consequences. The high loading values show that respondents recognize the direct threat from society on nature (ATT2). The last extracted factor is formed by variables describing the respondent's own specific pro-environmental behavior. In this case, the loading values are positive, so it should be assumed that with a high value of that factor, they are more willing to take actions that express their concern for the environment (ATT3).

In the next analysis step, consumers representing similar environmental attitudes expressed by the factors extracted in the first analysis step were grouped together. For this purpose, a cluster analysis, conducted using the k-means method, was applied, using which four clusters were distinguished. The number of clusters was estimated by analyzing the dendrogram generated using Ward's hierarchical analysis [86] and then confirmed

using commonly used indices. The average values of the factors representing the attitudes surveyed, calculated separately for each cluster, are shown in the Table 6.

Table 6. Average values for the identified pro-environmental attitudes per each cluster.

Represented Pro-Environmental Attitude	Cluster 1	Cluster 2	Cluster 3	Cluster 4
Positive attitude towards environmental protection and taking initiatives in this area (ATT1)	−0.245	−1.614	0.640	0.383
Conviction about the negative impact of civilisation on nature (ATT2)	−0.450	0.339	0.698	−0.963
Willingness to take real action to protect natural resources (ATT3)	−1.052	0.288	0.305	0.729
Size (% of the sample)	28.3%	15.1%	37.4%	19.2%
Gender				
Male	48.93%	42.38%	53.36%	42.71%
Female	51.07%	57.62%	46.64%	57.29%
Education level				
Primary school	2.12%	3.97%	3.74%	3.65%
Secondary school	57.24%	51.66%	53.48%	53.13%
Bachelor's degree	15.19%	14.57%	11.23%	14.06%
Master's degree	25.44%	29.80%	31.55%	29.17%

Analysis of the average values presented enabled the following four groups of consumers to be characterised:

- Cluster 1—consumers showing hardly any daily interest in the environment surrounding them, showing an aversion to conservation actions and simultaneously disregarding their legitimacy. In this cluster, a comparable fraction of men and women can be observed, and it should also be noted that there are relatively more respondents with a low level of education (secondary school) within this cluster. This is in line with research showing a correlation between the propensity to care for the environment and the level of education of the consumer.
- Cluster 2—consumers who are negatively inclined towards environmental action and protection while lacking a definite stance on the overall impact of civilization on the surrounding nature. In addition, respondents in this cluster are also neutral towards specific actions being taken in relation to environmental protection. There are significantly more women in this cluster, and the relatively higher education level of respondents may also be indicated.
- Cluster 3—represented by respondents who have a strong interest in protecting the environment through their activities, consumers who regularly undertake actions to protect the surrounding planet on a daily basis and who also contribute to conserving natural resources; there are relatively more men in this cluster, it is also the group with the highest percentage of the highest level of education.
- Cluster 4—consumers who take action to protect the environment on a daily basis, but without much conviction of it being a social issue to which everyone should be committed. This cluster shows a similar demographic structure to cluster two, with a slightly lower level of education.

The aim of the next step in the data analysis was to determine the propensity for choosing a particular—virtual or physical—form of the product. The propensity in the questionnaire was characterized by four variables. In order to obtain specific attitudes,

factor analysis was used with a similar procedure to step one. The factor loadings values obtained after the analysis are presented in Table 7.

Table 7. Factor loadings values for significant variables—propensity to choose product form.

Variable	Factor 1 (WILL1)	Factor 2 (WILL2)
Ch1	0.933	
Ch2	0.922	
Ch3	0.947	
Ch4		0.822

The values presented in the table above indicated that two propensity dimensions for choosing a product form should be included in further analysis. However, after a thorough interpretation of the statements characterizing the relationship described, it was decided to analyze only the first factor (WILL1). This mechanism was used because factor one was loaded by variables relating to consumers' direct preferences for having a particular product form, and additionally explained 73.6% of the variation in the input variables. Considering the variables used, high values of this factor should be interpreted as a preference for a digital product, while negative values should be interpreted as an inclination toward a traditional product. The second extracted factor (WILL2) is loaded mainly by a single variable, representing only the price perception of a particular form of good, and explains an additional 19.0% of variance. Therefore, in the following steps, the second factor was not taken into consideration.

In the final analysis step, consumers with similar propensities to choose a product form were grouped together. In this case, it was decided to designate three groups according to the intensity of consumer preferences in this regard. The intensity degree was determined by analyzing the distribution of the factor expressing the choice of a particular product form, obtained in the previous step (WILL1). To effectively assign specific respondents to the appropriate category, a conditional function was used. The first group included respondents who unanimously chose e-books (14.80% of the sample). The second group included people with unspecified preferences—i.e., those for whom the form of the book they read and/or possess is irrelevant (15.50% of the sample). Meanwhile, the last group included respondents who strongly preferred paper books (69.70% of the sample).

3.4. Product Form Preference in the Perspective of Consumer Gender and Age

The evaluation of product form preference dependence on environmental attitudes was preceded by an analysis of the product purchase frequency—a paper book in any form—as well as the purchase frequency of paper and digital books separately. The summaries were prepared based on respondents' demographics—by respondents' gender, age, and education, respectively. The collected results are shown in Tables 8 and 9.

Based on these data, preliminary interpretations of response distributions were prepared with gender, age, and education level as moderating factors in the product form choice. Considering the respondents' gender, it was established that paper books were more popular than e-books in the last year—paper books were indicated by women and men, respectively, with 151 and 101 indications each for the “more often” answer, while e-books were indicated by 59 women and 53 men, respectively.

As for the second criterion analyzed, age range, there is little difference in consumer buying behavior for paper books. Respondents both young (age range 18–24) and older (age range 55–54 and 65 and more) were least likely to purchase a paper book in the past year. Regarding the answers given for books in digital formats, the described groups of respondents were also the least likely to make purchases. This correlation is surprising and suggests that both young and older people do not read books. However, this fact may result from the attractiveness and popularity of other forms of entertainment in the described groups. In addition, when considering the respondents' answers when separated by age groups, it can be noted that e-books have not been willingly purchased in the last year—the highest number of indications for the “not once” option.

Table 8. Frequency of paper books purchased in the last year.

Respondents' answers in general				
Scale values	Not once	Once	2 to 3 times	Often
Number of responses	22.5%	17.5%	34.8%	25.2%
Respondents' answers by gender				
Scale values	Not once	Once	2 to 3 times	Often
Women's responses	18.7%	18.7%	33.6%	29%
Men's responses	26.7%	16.3%	36%	21%
Respondents' answers by age				
Scale values	Not once	Once	2 to 3 times	Often
Age range 18–24	17.5%	23.7%	32.5%	26.3%
Age range 25–34	16.5%	20.6%	34.4%	28.5%
Age range 35–44	17.6%	14.6%	39.5%	28.3%
Age range 45–54	26.6%	18.9%	31.4%	23.1%
Age range 55–64	34.3%	12.6%	34.3%	18.8%
Age range 65 years and more	30.5%	15.8%	32.6%	21.1%
Respondents' answers by level of education				
Scale values	Not once	Once	2 to 3 times	Often
Primary school	45.45%	27.27%	12.12%	15.16%
Secondary school	25.83%	18.45%	36.34%	19.38%
Bachelor's degree	17.91%	17.92%	33.58%	30.59%
Master's degree	15.8%	14.45%	35.75%	34.7%

Table 9. Frequency of e-book purchase in the last year.

Respondents' answers in general				
Scale values	Not once	Once	2 to 3 times	Often
Number of responses	60.7%	14.7%	13.4%	11.2%
Respondents' answers by gender				
Scale values	Not once	Once	2 to 3 times	Often
Women's responses	61.3%	15.2%	12.1%	11.4%
Men's responses	60%	14.2%	14.8%	11%
Respondents' answers by age				
Scale values	Not once	Once	2 to 3 times	Often
Age range 18–24	61.4%	21.9%	8.8%	7.9%
Age range 25–34	50.5%	20.2%	17.9%	11.4%
Age range 35–44	50.6%	13%	18.2%	18.2%
Age range 45–54	70.4%	10.6%	11.2%	7.8%
Age range 55–64	76.9%	7.7%	7.7%	7.7%
Age range 65 years and more	68.4%	15.8%	8.4%	7.4%
Respondents' answers by level of education				
Scale values	Not once	Once	2 to 3 times	Often
Primary school	78.79%	6.06%	6.06%	9.09%
Secondary school	65.12%	14.94%	11.44%	8.5%
Bachelor's degree	53.73%	17.16%	14.93%	14.18%
Master's degree	53.6%	14.09%	17.18%	15.13%

The last variable analyzed was the educational level of the respondents. Considering the purchase of books in traditional form, a significant relationship can be observed between the frequency of purchase and the level of education—as the level of education increases, the propensity to buy also increases significantly, but on the other hand, it usually does not reach the maximum frequency included in the scale. A clear differentiation can also be observed between respondents with and without higher education who buy books

significantly less often. In view of the fact that respondents did not indicate what type of books were purchased, the conclusion is that these might have been goods needed for further educational purposes.

In the case of e-books, differences between groups can also be observed. It can be pointed out that respondents with primary education practically never purchase this form of product, while the propensity to purchase e-books increases with the level of education. Nevertheless, still more than half of the respondents from every group have never purchased this form of product.

The data collected also made it possible to compare differences in the purchase frequency of a given product form between respondents according to the grouping variable, which was gender (Mann–Whitney U test), as well as within groups according to the grouping variable, which was age interval (non-parametric Kruskal–Wallis ANOVA). Conducting a non-parametric Mann–Whitney U test for two independent groups according to the grouping variable, which was gender, showed that there were differences in consumer behavior for paper books ($p = 0.003$). Women choose to buy paper books more often than men. This fact is not surprising, as generally women are consumers whose main form of entertainment is reading books. It is assumed that men choose to perform other tasks in their free time [87]. As for electronic books, the conducted test did not prove a significant difference between consumer groups ($p = 0.66$).

Data analysis obtained after conducting a non-parametric Kruskal–Wallis ANOVA test for multiple independent groups according to the age grouping variable proved that, in the case of paper books, there are no significant differences in preferences between different age consumers ($p = 0.223$). Concerning electronic books, there are some disparities in consumer behavior ($p < 0.001$). A post-hoc test was used to determine which groups' consumer preferences differed. The results obtained indicated that statistically significant differences appear between young and older consumers. However, this fact is not surprising, since, despite technological advances, older people are not eager to overcome barriers associated with the widespread use of the Internet, including online shopping [88].

A non-parametric Kruskal–Wallis ANOVA test for multiple independent groups was also carried out for education level as a grouping variable. Analysis of the data for paper books showed that there were differences in the frequency of acquisition between representatives of the different groups studied ($p < 0.001$). Post-hoc tests showed that the only groups for which no difference could be said to exist were those with bachelor's and master's degree. Considering the purchase of e-books, it is also reasonable to assume that groups with different educational backgrounds show a different frequency of purchase of the product ($p = 0.0005$). Nevertheless, the only difference obtained in the post-hoc test is between those with secondary education and a master's degree.

4. Results

4.1. Consumer Choices and Represented Pro-Environmental Attitudes

The procedure described above enabled the separation of four consumer clusters according to the criterion of the represented pro-environmental attitudes. Additionally, in order to characterize specific consumer choices, each participant of the research was classified according to their preferences of the form of the product. Three consumer groups were established in this case. The activities conducted in this way allowed for the verification of two of the four stated hypotheses.

The first hypothesis that was verified assumed that consumers who chose digital products demonstrated pro-environmental attitudes (H1). In order to verify it, separate clusters of respondents, based on their environmental attitudes, were used. The grouping variable was consumer preference of the product form. The obtained results are presented in Table 10.

Table 10. Product form preferences in environmental attitudes-based clusters.

	Consumers Preferring Digital Product Form	Consumers with Unspecified Preferences	Consumers Preferring Traditional Product Form
Consumers not interested in the environment (cluster 1)	20.14%	22.97%	56.89%
Consumers who are negative in relation to environmental activities, while lacking a specific attitude about the overall impact of civilization on the surrounding environment (cluster 2)	29.14%	20.53%	50.33%
Consumers displaying a strong interest in the environment (cluster 3)	8.29%	7.49%	84.22%
Consumers who take action to protect the environment on a daily basis (cluster 4)	8.33%	16.15%	75.52%
Complete sample	14.80%	15.50%	69.70%
Education level			
Primary school	2.03%	3.87%	3.44%
Secondary school	52.03%	58.06%	53.80%
Bachelor's degree	14.19%	12.90%	13.34%
Master's degree	31.76%	25.16%	29.41%

The data presented in the table above shows that the largest fraction of consumers who prefer the digital product form can be observed in clusters with the low interest in environmental issues—i.e., in cluster 1 (20.14% members of the cluster) and in cluster 2 (29.14%). Hypothesis H1 assumed that consumers who choose digital product form demonstrated pro-environmental attitudes, while given the data presented, in both analyzed clusters which group consumers showing a strong interest in the environment (cluster 3 and 4), only 8.29% and 8.33% members of the cluster prefers the digital product form. In both these groups there is a strong tendency to choose product in traditional form instead. Additionally, considering only a group of participants who chose digital products (148 cases), it can be noticed that most of them (101 cases, 68.24%) were in the first two clusters, which were negative or neutral towards the environment. Accordingly, the analyzed hypothesis was not supported by the data.

Hypothesis H2, stating that there was a group of consumers who prefer the digital product form and, at the same time, have a negative attitude towards the environment, was then tested. To verify it, product form preferences of a groups of consumers with negative attitudes toward the environment (cluster 1 and cluster 2) were evaluated. The data in Table 9 indicates that in the cluster consisting of consumers underestimating environmental issues (cluster 1), there is a strong fraction of participants willing to choose the digital form of the product (20.14% of the cluster), and such a fraction is even more visible in the group negatively inclined towards environmental action and protection while lacking a definite stance on the overall impact of civilization on the surrounding nature (cluster 2)—29.14%. Based on the data collected, it is possible to confirm H2 and assume that even in a group of consumers who are sceptical towards environmental issues, there is a significant fraction of those who prefer the digital form of the product.

In order to further evaluate the differences between groups, the differences in the indicator of the product preference (WILL1) were verified using the Kruskal–Wallis test, which proved that the median of the propensity to choose the product form is not identical in each group ($p < 0.0001$). Post-hoc tests, additionally, revealed that there was a statistically significant difference between cluster 1 and cluster 3 ($p < 0.0001$), cluster 1 and cluster 4 ($p < 0.0001$), as well as cluster 2 and cluster 3 ($p < 0.0001$) and cluster 2 and cluster 4 ($p < 0.0001$), while there was no difference between cluster 1 and 2, as well as cluster 3 and 4. Given that the first two clusters represent a negative, while the last two a positive approach towards the environment, it can be stated that customers with different attitudes in fact differ in terms of willingness to choose either digital or conventional form of the product; but, surprisingly, those who were more willing to conserve the environment, were also more interested in the traditional form of the product.

4.2. Particular Attitudes towards Environmental Protection and Propensity to Choose a Product

In the second step of data analysis, hypothesis H3 (“Consumers, willing to take action on environmental protection tend to choose the digital form of the product”) and H4 (“Consumers, positively inclined toward the environment, do not have a specific preference for choosing the product form”) were verified. These assumptions referred to the finding of the relationship between the three extracted pro-environmental attitudes (ATT1, ATT2, ATT3) and the propensity to choose the product form (WILL1). Spearman’s rank order correlation coefficient was used to test the validity of both hypotheses, and the results are presented in Table 11.

Table 11. The correlations between the distinguished pro-environmental attitudes and the respondents’ preferences towards the product form choice—in groups stratified by age.

Pro-Environmental Attitude	Correlation Coeff.						
	Entire Sample	Age 18–24	Age 25–34	Age 35–44	Age 45–54	Age 55–64	Age 65+
Positive attitude towards environmental protection and taking actions in this field (ATT1)	0.288 *	0.215 *	0.396 *	0.319 *	0.203 *	0.210 *	0.321 *
Conviction about the negative impact of civilization on nature (ATT2)	0.115 *	0.078	0.210 *	0.146 *	0.044	0.083	−0.032
Willingness to take real action to protect natural resources (ATT3)	0.179 *	0.109	0.170 *	0.212 *	0.191 *	0.103	0.268 *

* statistically significant, $p < 0.05$.

The third hypothesis, the validity of which was tested, referred to the fact that consumers willing to take action on environmental protection tend to choose the digital form of the product. The level of correlation between the third isolated pro-environmental attitude (ATT3) and preference toward the product form choice (WILL1) was checked. The calculated coefficient was statistically significant; it was a positive correlation, and the value of the calculated parameter was 0.179. This means that as consumer interest in environmental protection increases, the propensity to choose digital books increases, although the relationship is rather weak. Therefore, the hypothesis that has been put forward (H3) should be accepted as valid.

Analysis of the data obtained when the sample was divided into groups based on age and level of education shows that such a relationship varies, with greater intensity observed among those in the 25–54 age range and in the oldest group of respondents. Similar conclusions are provided by the assessment of the relationship between the propensity to

take real action and the choice of a digital product, which assumes the greatest strength in the group of people with a bachelor's degree, and the least, interestingly, in the group of the least and best educated.

The fourth hypothesis assumed that “Consumers, with a positive attitude toward the environment, do not have a specific preference for a product”. The variables that were verified were the three pro-environmental attitudes identified in the first analysis step (ATT1, ATT2, ATT3), as well as the preference towards the product form choice expressed by the identified factor (WILL1). From the perspective of the statement analyzed, the attitude relating to the demonstration of a positive attitude by consumers towards environmental protection and taking actions in this field was important (ATT1). In this case, the correlation result reached a value of 0.288, indicating that as the environmental concern increases, the propensity to choose a digital product also increases, although the relationship is, again, fairly weak in terms of strength. Nevertheless, the hypothesis should be considered valid.

An analysis of the sample when separating respondents by age and education again reveals patterns similar to those discussed previously (Table 12). Considering age, the youngest respondents showed the smallest relationship between the choice of a digital product and a positive attitude towards the environment, perhaps due to the fact that a digital product is a natural form of product for them, regardless of attitudes. The relationship was strongest among those aged 25–34 and seemed to decrease as they grow, again with the exception of the oldest respondents, in whom it is again evident. In the case of education, the strength of the relationship varied from group to group and is therefore difficult to interpret unequivocally, perhaps influenced by other variables specific to the respondent category.

Table 12. The correlations between the distinguished pro-environmental attitudes and the respondents' preferences towards the product form choice—in groups stratified by education level.

Pro-Environmental Attitude	Correlation Coeff.				
	Entire Sample	Primary School	Secondary School	Bachelor's Degree	Master's Degree
Positive attitude towards environmental protection and taking actions in this field (ATT1)	0.288 *	0.407 *	0.234 *	0.405 *	0.319 *
Conviction about the negative impact of civilization on nature (ATT2)	0.115 *	−0.155	0.128 *	0.141	0.113
Willingness to take real action to protect natural resources (ATT3)	0.179 *	0.173	0.152 *	0.436 *	0.106

* Statistically significant, $p < 0.05$.

5. Discussion

This research focused on establishing whether the environmental attitudes represented by consumers determine the choice between digital and traditional product forms. The book market was analyzed because the book is the only product that, nowadays, exists in both forms simultaneously. The data collected showed that there were consumer groups representing specific approaches to environmental protection. In this case, three main attitudes were characterized. Moreover, it was possible to identify consumer groups with a similar set of represented attitudes. In this regard, four clusters of respondents were characterized whose preferences, in terms of product form choice, were further analyzed.

Investigating the propensity to choose a traditional or digital product form was also a major objective of the conducted conclusions. The variables developed in this area showed the existence of a single factor characterising a specific preference for owning a particular

product form. The designated factor explained up to 73.6% of the variation in the analyzed variables representing the choice of one or the other investigated product form. Regarding the determination of the propensity to choose the product form, it was also decided to categorize consumers. Three respondent groups were identified—those with a preference for traditional books only, those with a preference for e-books only, as well as those with unspecified preferences.

In addition, the data collected made it possible to indicate the propensity of consumers towards the product choice form in the demographic data perspective. The respondents' ages and gender were analyzed. In terms of gender, no statistically significant differences were found for e-books ($p = 0.660$). In contrast, the evaluation of the data on paper books had shown that there are differences in consumer behaviour ($p = 0.003$). The survey confirmed the expected conclusion that women are more likely to purchase paper books. The opposite situation was shown by the analyses conducted in relation to the respondent's age. In the case of paper books, no significant differences were found between consumers representing the adopted age ranges ($p = 0.223$). Interpretation of the results representing e-books showed a disparity between consumer behaviour $p < 0.001$. Particular discrepancies were observed in the groups represented by young and older respondents. Young consumers are far more likely to choose electronic books over paper books [89].

Four research hypotheses were set in order to clarify the response to the research question. Two assumptions concentrated on verifying the relationship between the propensity to choose a digital product form in specific consumer clusters, based on environmental attitudes. The data collected in this regard led to two interesting conclusions. The majority of respondents in the surveyed population that were inclined to choose a digital product form displayed no interest in the environment. However, this may be linked to the consumer's failure to recognise the climate change effects and thus focus on their current problems [90]. In addition, the lack of a connection between digital product choice and environmental friendliness was confirmed by another proven hypothesis. Only 8.30% of respondents showing concern for the environment (cluster 3 and 4) opted for e-books instead of traditional forms. Thus, the very popularity of e-books among consumers was not a direct result of interest in the surrounding environment. Digital books are popular for other reasons connected, among others, to easier information searching [25], as well as easier storage and widespread accessibility [91], while willingness to buy, own or collect books in the traditional form may be a value stronger than reducing related environment impact. It should be pointed out, that this group consisted of individuals with whose age structure distribution indicated people who were slightly younger than the age structure of the sample would suggest; at the same time, there were people with a lower proportion of master's degrees and a higher proportion of bachelor's degrees.

Two further hypotheses related to verifying the correlation between the product form preference and the pro-environmental behaviour of the respondents. Regarding a positive attitude towards environmental protection, they were in a statistically significant, yet very low correlation with a preference for product form, with a Spearman correlation coefficient value of 0.288. This fact may be due to the personal convictions of individuals linked to the desire to have a home library while showing respect for environmental protection. This respect can be demonstrated by consumers in other ways, for example, by choosing product brands that espouse values relating to sustainability in their marketing communications [92]. Perhaps there was also a separate factor that determines both the attitude to the environment and the choice of digital form, such as, for example, openness to innovation or consumer conservatism.

The conducted research also proved that there is a statistically significant, but again fairly low, correlation between consumers' propensity to take specific actions that relate to environmental protection and a willingness to choose a digital product. The obtained correlation result, in this case, reached a value of 0.179. This finding is not surprising, but within it, there are dependencies of sorts that could be explored in the future:

1. What specific environmental actions are most often taken by those choosing the digital product form;
2. Whether the correlation between the choice of a digital product form and the taking of actions contributing to environmental protection is evident in groups of consumers with specific incomes.

6. Conclusions and Limitations

The research conducted focused on the link between Polish consumers' pro-environmental behaviour and their choices between traditional and digital product forms. The research reports analyzed to date have only been concerned with indicating the relationship between Polish consumers' represented environmental attitudes and purchases of ecological products [for more see [93–95]]. Therefore, the main research purpose was to determine whether the pro-environmental attitudes represented by Polish consumers are a factor shaping the choice between traditional and digital product forms.

The size of the compiled research tool made it possible to clarify answers to questions about the validity of the link between the pro-environmental attitudes represented by Polish consumers as a factor shaping the choice between digital and traditional product forms. Multiple analyses have shown that there is an observable, yet fairly low correlation between isolated, positive attitudes toward environmental protection and the choice of digital product form, therefore, it can be assumed that Polish consumers who demonstrate particular concerns about the surrounding environment are more likely to choose digital products than Polish consumers who are indifferent to environmental issues.

The fact that pro-environmentally oriented Polish consumers often choose digital books may be also related to the trend prevailing in the country. A general increase in the tendency to buy ecological products emerged during the COVID-19 pandemic, when Poles started to pay more attention to what kind of products they buy. This issue should be linked to the timing of the research. The data analyzed in this study come from the first quarter of 2022, thus from a time when Polish consumers, according to recent reports, started to make more conscious, ecological purchases [96]. As digital products—in this case, e-books—are considered to generate a smaller carbon footprint, it can be assumed that they are preferred by consumers who show concern for the environment. In addition, in the first quarter of 2022, Poland was recovering from the COVID-19 pandemic. Consumers' reluctance to choose the traditional form of the product—i.e., a paper book—during this period may have been linked to the fear of human contact and possible infection with the disease. Hence, it can be assumed that decision-makers were more willing to choose eBooks.

As far as the tendency to choose traditional books by consumers with no interest in ecology is concerned, this result should be taken as entirely coincidental. This was related to other factors by which respondents choose to own paper books. An analysis of the available reports showed that consumers remember content better, concentrate more easily, and get more pleasure from reading if they use a paper book. In addition, students perform better academically when they learn from a text printed on paper [97,98].

Nevertheless, this conclusion was not supported by an analysis of the groups distinguished on the basis of the combination of environmental attitudes held. In this case, it was noted that groups combining Polish respondents with negative or neutral attitudes towards the environment are, to some extent, more likely to purchase a digital product than groups with more positive attitudes. The reason behind this observation was not entirely clear, and it was possible to hypothesize, in this case, that there was an additional, latent factor (or set of factors) moderating or mediating the relationship between environmental attitudes and the propensity to choose a product form. Such a factor may be related to, among other things, the additional values associated with the traditional form of the product, which may be sought by groups with a positive attitude towards the environment, like prestige, image-related preferences, easier sharing, or to particular demographic characteristics of the individual, which, to some extent, is confirmed by an analysis of the correlation of pro-environmental attitudes with the propensity to choose a digital product conducted

separately in successive age groups. Besides, the traditional form may be considered of higher quality or may provide an additional functionality sought by elderly or more educated consumers.

The rationale for the differences between the groups may also stem from the personalities of potential Polish customers. It can be expected that individuals with a more self-centric personality will care less about the environment and simultaneously choose e-books as a more convenient and easy form of accessing the product. The level of education was also significant, since, as the preliminary data, but also previous studies, show, both the propensity to behave in a pro-environmental manner and to consume digital goods may be dependent on it [99,100]. Finally, perhaps the observed differences were the result of a perceived price of a particular solution. If a negative or neutral attitude towards the environment protection was derived from a desire to save money, it can be assumed that such consumers will be more inclined to choose a digital product, which is often perceived as cheaper.

The presented research had several theoretical and practical implications. First of all, the study provided a different perspective on the issue of consumer decision-making in relation to product form choice. Furthermore, the focus was on whether pro-environmental orientations are a moderating factor in the choice of product form by contemporary decision-makers. Thanks to such assumptions and statistical analyses, it should be assumed that pro-environmental attitudes are an important factor to be taken into account when carrying out research in the field of consumers' market behaviour. Future research assumptions should also include mediating variables linked to additional product values that may negate the environmental friendliness of a particular product. In this case, it could be the image values of the traditional form of the product attributed to it by individual consumers or other additional functions offered by digital products, which are not necessarily rated as environmentally friendly.

The main practical implication it relates to is creating advertising messages that reach potential customers. In today's post-pandemic reality, consumers are driven by price and functionality when choosing products. Therefore, presenting digital products as environmentally friendly may not be attractive to the modern consumer. This raises the question of whether it is worth highlighting the environmental credentials of digital products with little certainty that they are actually perceived as such by decision-makers. At the same time, it is not clear if other values offered by the product do not outweigh its environmental friendliness, or lack thereof.

In addition, it is worth mentioning that older consumers were more likely to choose to buy traditional books. Future surveys would need to verify whether consumer age is a moderating variable for the lack of preference towards choosing a particular product form while representing concern for the surrounding environment. It is also worth pointing out that the product form choice may be related to the context of the product, especially if the product is locally produced or made from sustainable materials. Nevertheless, in the discussed research, such factors were of marginal importance; as is in the case of the book market, such considerations are not communicated to potential customers and are, therefore, unlikely to be taken into account by them.

The results obtained in the course of the analyses carried out indicated the need for further research into the perception of modern consumers of the product in the future. In this case, it would again be necessary to focus on its two forms—digital and traditional. It would be interesting to know whether, contrary to the widespread fashion for eco-friendliness, digital products that can also be purchased in traditional form are considered by consumers to be more environmentally friendly. In this case, other potentially moderating variables should be taken into account—such as price, functionality, and design. At the end, it has to be mentioned that the research was conducted on a group of Polish consumers and the sample was representative for that group. Therefore, the results and conclusion should be generalized to other populations with caution. Strength and structure of pro-environmental attitudes may be dependent on the cultural, historical, and social context of the particular

group of consumers, hence may differ in different countries or regions. Additionally, the perception of a given product form, in terms of its environmental impact, may also differ; therefore, the relationship between attitudes and choice, although expected, may assume a variety of shapes.

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Institutional Review Board Statement: The study was conducted in accordance with the Declaration of Helsinki. Ethical review and approval were waived for this study due to the fact that the study was non-interventional (questionnaire research), while participant recruitment and data collection were carried out by an external, specialized, commercial research institution operating in accordance with national and European legal standards, as well as with “ICC/ESOMAR International Code on Market, Opinion and Social Research and Data Analytics”. The survey only included respondents who voluntarily self-registered for the research panel and were remunerated for their participation. All participants were informed that anonymity was assured, why the research was being conducted, how their data would be used, and that there were no risks associated with their participation in the study.

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

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