

**Publisher**<http://jssidoi.org/esc/home>**SUSTAINABLE PRODUCTS AND THEIR PERCEPTION BY CZECH CONSUMERS*****Alena Srbová ¹, Eva Jaderná ²**¹ Department of Tourism and Marketing, Faculty of Corporate Strategy, Institute of Technology and Business
Okružní 517/10, 370 01 České Budějovice, Czech Republic² Department of Marketing and Management, ŠKODA AUTO University, Na Karmeli 1457, 293 01 Mladá Boleslav,
Czech RepublicE-mails: ¹ 31774@vste.cz; ² eva.jaderna@savs.cz

Received 11 December 2023; accepted 17 April 2024; published 30 June 2024

Abstract. This article aimed to determine whether Czech consumers buy more sustainable products in relation to their income level and the fact that they trust the certificates awarded to sustainable products. To achieve the goal, a quantitative data collection method was used, a questionnaire survey in which 997 respondents participated (quota sampling) and was implemented from June to September 2020. Subsequently, correlation analysis and Pearson's chi-square were used to process the primary data obtained. The correlation analysis method was used to determine whether a higher income means that consumers tend to buy sustainable products. The research results showed that the level of consumer income does not affect the preference for purchasing a sustainable product. Using the second Pearson chi-square method, it was found that consumers who believe in certificates buy more sustainable products, but the dependence appeared very weak, according to the result of the contingency coefficient. The research limits can be seen in the fact that only one research method was used for data collection: a questionnaire survey. For a better and deeper understanding of the consumption behaviour of Czech consumers in the case of buying/not buying sustainable products, qualitative methods of data collection, e.g., focus groups, and guided in-depth interviews.

Keywords: sustainability; eco-friendly product; fair-trade product; price; certification; supporting the sale**Reference** to this paper should be made as follows: Srbová, A., Jaderná, E. 2024. Sustainable products and their perception by Czech consumers. *Entrepreneurship and Sustainability Issues*, 11(4), 120-134. [http://doi.org/10.9770/jesi.2024.11.4\(8\)](http://doi.org/10.9770/jesi.2024.11.4(8))**JEL Classifications:** D91, M31**1. Introduction**

In general, sustainable development can be understood as the ability of the present generation to satisfy its own needs without endangering future generations in meeting its consumption (World Commission on Environment and Development, 1987).

* This paper is one of the outcomes of the research grant SGS/2019/01 Jaderná, Department of Marketing and Management at ŠKODA AUTO University, Mladá Boleslav, and one of the outcomes of the research IVSUPS005 Marketing communication management for building, maintaining and protecting identity and reputation in the Internet environment, Department of Tourism and Marketing at Institute of Technology and Business, České Budějovice.

Related to this is that we should think about how our consumption affects, for example, the environment. One thing that negatively impacts our environment is the excessive production of waste. 38,504 thousand tons of waste was produced in the Czech Republic in 2020, of which 1,781 thousand tons (4.63%) were hazardous, and 36,721 thousand tons (95.37%) were other waste. If we were to apply these data to one resident of the Czech Republic, then 3,598 kg of all waste would be accounted for. Of this, 166 kg was hazardous waste and 3,431 kg other waste (Ministry of the Environment of the Czech Republic, 2021a). As for municipal waste in 2020, it accounted for 14.9% (5,730,000 tons) of total waste production and 536 kg per inhabitant of the Czech Republic (Ministry of the Environment of the Czech Republic, 2021b).

Due to the excessive waste production in the Czech Republic, it is necessary to find ways to reduce waste production. One of the ways could be a change in consumer behaviour in such a way that consumers would focus more on the consumption of sustainable products.

According to Frans Timmermans, Executive Vice-President of the Green Deal for Europe, "It is time to put aside the 'take, make, break and throw away' model that is so damaging to the planet, our health, and the economy. With sustainable products, consumers will save energy, have broken products repaired instead of having to replace them and be able to make smart, environmentally conscious decisions when purchasing new products. This will restore the balance in relation to nature" (European Commission, 2022a). This idea is also presented in the Green Paper for Europe, which should ensure a longer life of products, achieved by being able to repair, recycle and use them again (European Commission, 2022b).

Textile products are one of the two groups of products that have a significant negative impact on the environment. Between 2000 and 2015, the production of textile products doubled, thanks to the "phenomenon of fast fashion" (faster change of new fashion styles, increasing offers of collections during the year, lower prices). The demand for clothing is accelerating, mainly driven by markets such as Asia and Africa. In 2050, clothing sales are expected to reach 160 million tons, more than three times that of nowadays. This would lead to an increase in adverse environmental impacts, precisely through the textile industry. This could be reflected in an increase in oil consumption to 300 million tons in 2050 and an increase in the share of CO₂ production to 26%. Between 2015 and 2050, the number of microplastics accumulated in the oceans could be more than 22 million tons, approximately two-thirds of the plastic-based fibres used annually to make clothing (Ellen Macarthur Foundation and Circular Fibers Initiative, 2017). The negative impacts of fast fashion are rooted in a linear model. The essence of this model is the low rate of use, reuse, repair, and recycling of textile fibres into new fibres. In addition, releasing microplastics from synthetic textiles and footwear at all stages of their life cycle also negatively influences the environment (European Commission, 2022c).

In the case of food, it is interesting to see how consumer choice regarding food can reduce greenhouse gas emissions. The current value of the average UK diet was found to contain 8.8kg of CO₂ per person per day. This number includes both food eaten and food wasted (after purchase). If meat were excluded from the diet, the amount of greenhouse gas emissions would be reduced by 35%, if lamb and beef were replaced by pork and chicken, it would be by 18%, and not consuming food grown in a greenhouse or transported by air brings a saving of 5% (Hoolohan et al., 2013).

If some products are environmentally friendly, they can be marked with the so-called eco-label after meeting specific rules and implementing the certification process. These labels are essential for informing consumers that the properties of the products are compatible with the environment. On the other hand, the many brands that consumers encounter can lead to different perceptions, understanding, and evaluations of the quality associated with each brand (Gavurova et al., 2018; Brécard, 2017).

In the case of companies, those that combine economic prosperity, social justice, and environmental quality are considered sustainable (Ahmad et al., 2022). One of the models that help companies identify, measure, and integrate social, environmental, and economic impacts into corporate strategy and managerial decisions to increase profitability successfully is the model of Epstein et al. (2017).

The activity of sustainable companies is characterized as a sum of procedures, policies, and strategies that are linked to the above-mentioned social side and benefits supporting the environment, which companies try to implement to serve the interests of multiple stakeholders at once (Mosca and Civera, 2017; Skare et al. 2024a,b). The fact that they include sustainability and social responsibility in their business strategies is a necessity for the survival of any company in the future (Buzzi, 2021; Wei et al., 2021).

Nowadays, companies in the field of their environmental policy are moving to a strategy in which they emphasize the recycling and reuse of products or revise their production and distribution strategies in such a way as to use natural resources as efficiently as possible (Krzywda et al., 2021; Yanginlar et al., 2022; Skare et al., 2023). Environmental innovation improves not only the competitive position of the firm, which is based on the knowledge and novel activities they offer, but it can also help increase social and environmental responsibility (Fernando et al., 2019).

Employees represent the social aspect of sustainable development. In this context, the debate about the ideal development of the quality of the working life of employees and the effort to support the quality of working life and a healthy lifestyle is being developed in recent times (Sanusi and Johl, 2022; Simionescu et al. 2021).

The fact that the given product was manufactured in accordance with the social aspect aimed at the employees can be declared on the products through brands such as Fairtrade.

The activities that the company implements within the framework of sustainable development and social responsibility have a significant and positive effect on the company's reputation, satisfaction, and trust of the company's customers, and that the company's reputation, trust, and customer satisfaction creates a relationship between the company's social responsibility and customer loyalty (Islam et al., 2021; Gavurova et al., 2022).

According to Lentjushenková et al. (2019), reputation is a basic element of intellectual capital and an important part of a company's value. Intellectual capital includes four parts, namely human capital, business processes, technology, and intangible assets. Based on the above, the research goal was determined to find out whether Czech consumers buy more sustainable products in relation to their income and the fact that they believe in the certificates awarded to sustainable products.

The results of research carried out by the ŠKODA AUTO University in 2019 and involving more than 1,000 respondents showed that the higher price of ecologically produced products is the reason for not purchasing them 10% of respondents. More than half of the respondents cannot clearly answer whether the reason for not purchasing environmentally friendly products is that the products produced in this way are expensive. With these two groups of respondents, it is interesting to find out whether the decision to buy or not to buy environmentally friendly products depends on the amount of their income. Therefore, the research question was set:

1. Does the level of income of consumers influence their preference for purchasing sustainable products?

The same research also showed that less than 4% of respondents purposefully buy products marked with a sustainability certificate, and more than a third of respondents buy them if the retail unit has them in its assortment. Based on these results, it would be appropriate to focus on how much consumers trust certificates guaranteeing sustainability in relation to the decision to purchase these products. Here, the second research question was asked:

2. The more consumers believe in sustainability certificates, the more they tend to buy them.

2. Theoretical background

The literary research is devoted to sustainable products, both environmentally friendly products (green products, eco-friendly products) and also fair-trade products (Fairtrade products). In addition, the literature review deals with the issue of insight into certificates for sustainable products.

The Industrial Revolution 4.0 currently underway means that companies face new opportunities and challenges related to identifying their roles in the emerging modern smart world (Lewandowska et al., 2023). Thanks to their unique characteristics, these so-called intelligent companies are better able to cope with technological innovations and social and cultural problems, as well as compete effectively and develop towards sustainability (Adamik and Sikora-Fernandez, 2022), which represents both the area of environmental protection and social area and economic prosperity.

In the case of the environment, some companies use so-called greenwashing. This is the behaviour of companies that use practices to deceive consumers through legal means of green marketing and production, but in reality, it is not so. The reason is that these companies are trying to become famous and increase their market share, sales, and positive perception of them by consumers. On the other hand, fortunately, it seems that consumers are increasingly aware of these unfair practices of greenwashing companies (Hameed et al., 2021; MacGregor Pelikánová and Sani, 2023)

Ideas promoting environmental protection are implemented in the marketing strategies of companies in the form of so-called green marketing. It uses the classic "4P" concept, with pro-environmental social responsibility (CSR) as a specific brand promotion tool. One of the elements of the 4Ps is price. The research, which was carried out among 220 Polish respondents, showed that the young generation between the ages of 18 and 34 pay attention to, e.g., recyclable packaging when purchasing, but on the other hand, the price of these products is a decisive factor for them in their purchasing decisions. In other words, the importance of the costs associated with purchasing environmentally friendly products exceeds the benefits of purchasing these products (Siuda, 2022).

In most cases, the price of green products is higher than that of traditional products, which means that these are premium prices. Pricing strategies used in green marketing are based on a balance and combination of consumers' price sensitivity and environmental conciseness. Consumers will be willing to pay a higher price if the perception of the added value of the product is manifested in better performance, function, design, visual appeal, etc. (Fan and Zeng, 2011), but also in the availability and quality of the products (Biswas, 2016). The willingness to pay a higher price for environmentally friendly products was confirmed, for example, in the case of a questionnaire survey, which was addressed to academic staff and students of Sanaa University. This survey showed that 133 out of 200 respondents are willing to pay more for environmentally friendly products (Al-Dubai and Develi, 2022).

This attitude of consumers to pay a higher price to buy more environmentally friendly products is sometimes called green consumerism (Ambec and De Donder, 2022; Dabija et al., 2022). According to the authors Kaviya and Priyadarshini (2022), this phenomenon is also explained by the fact that consumers, due to environmental concerns, look for environmentally friendly products that do not harm society.

The essence of the green consumer way of life was also investigated within the framework of research in which 705 consumers from Slovenia took part. This research showed that the consumer's affection for the environment and the perception of eco-products positively affects the intention of a green purchase (green purchase), which immediately positively and substantially affects the consumer's purchase of eco-products (Hojnik et al., 2020).

Furthermore, consumers' ethical actions focused on the environment, their moral principles, and green attitude" have a significant influence on consumer willingness to consume green products, which can subsequently have a substantial impact on current consumer green consumption (Akhtari et al., 2021; Gallardo Vázquez, 2023).

Another essential element is consumer trust, which influences consumers' decisions to purchase green products and is a crucial prerequisite for creating a market for these products (Nattaavuthisti and Thogersen, 2017). According to Ansar (2013), age and education positively affect whether consumers buy green products compared to socio-demographic variables.

From the point of view of marketers, in addition to price and advertising, product packaging influences whether the consumer decides to buy green products. In the case of the packaging of any products that are ecologically

friendly to the environment, the green colour is primarily associated. On the other hand, research by Samaraweera et al. (2021) found that consumers are, on the contrary, willing to pay more for a product with a white-toned label.

It could be said that consumer purchasing behaviour is considered green when consumers are willing to purchase sustainable products. These are those products where the processes involved in their creation are considered green, the supply chain tries to minimize carbon emissions, the packaging of the products is degradable, and the disposal of the products itself is ecological because it does not have to increase the amount of waste.

In the case of retailing companies, some consumers tend to choose those that focus on selling environmentally friendly products and various green strategies aimed at waste disposal and recyclable packaging, etc. (Dabija et al., 2017).

In connection with consumers' green purchasing behaviour, we can mention, for example, the LOHAS group, which pays attention to the environment and tries to ensure that its behaviour is in harmony with the environment. The term LOHAS is currently being used for both products and consumers that are environmentally friendly. For example, this group's consumers buy food in packaging that protects the environment more than other consumers (Matharu et al., 2020). According to Chirilli et al. (2022), the packaging is the main factor determining the overall impact of food products on the environment.

Various eco-labels are displayed on the packaging of products that claim to be environmentally friendly. And precisely, the eco-labelling of products and the promotion of environmentally friendly products are the basic prerequisites that can affect the consumer's purchasing behaviour (Sedky and AbdelRaheem, 2021). The eco-label itself is one of the essential tools of green marketing, which helps to distinguish between green (environmentally friendly products) and "non-green" products. A study by Sharma and Kushwaha (2019) shows that eco-labelling is an essential criterion for creating consumer trust and their intention to make a green purchase through the information and knowledge gained by consumers themselves.

Certificates, which are supposed to guarantee that the given product is ecologically friendly to nature, should affect the consciousness and the consumer's subconscious. Certificates thus become a kind of suggestive method (means of communication), resulting in the purchase of ecologically certified products (Chaikin, 2015). According to Majeed et al. (2022) state that among environmentally oriented consumers, there is a noticeable relationship between ecolabelling and the intention to purchase environmentally friendly products.

More and more consumers have recently chosen food products based on their local or traditional attributes and whether these products are sustainable and environmentally friendly. Specifically, the food industry has introduced several strategies to guarantee product quality and sustainability (quality systems and quality marks) (Jakubowska, 2021).

Furthermore, for a favourable consumer decision to purchase sustainable food, the producer's statements about sustainability and socially responsible agricultural methods must be included on the labels of agricultural products (dos Santos et al., 2021).

Fairtrade is a transnational voluntary labelling initiative that aims to improve producers' social, economic, and environmental conditions in developing countries (Mook and Overdevest, 2020). In other words, Fairtrade and other voluntary sustainability standards could improve the socio-economic well-being of small farmers in developing countries and help reduce the negative impacts of agricultural production on health and the environment (Sellare et al., 2020). Fairtrade brings income to farmers by setting a minimum price, an alternative form of distribution without intermediaries between commodities and the world market (Podhorsky, 2015)

According to Becchetti and Michetti (2008), Fair Trade is an innovative value chain that aims to provide primary producers with higher economic value and social benefits.

Fairtrade certificates (one of the most popular third-party certifications in the agri-food sector) (Reynolds, 2014) are often assumed to lead to poverty alleviation in developing countries. The main determinants of economic growth in poor areas (pro-poor economic growth, i.e., economic development that is directly addressed to the poor) are trade, investment in human capital, health, and financial development. Fairtrade food certification highly influences Some of these determinants (Bissinger, 2019).

Fairtrade was created as a reaction of consumers, society, and companies to the production conditions of imported food. Many studies have focused on investigating the welfare implications of smallholder farmers' participation in the Fairtrade system and consumers' willingness to pay for Fairtrade products (Van den Broeck et al., 2017).

Fairtrade can potentially increase market efficiency through linkages between farmers and altruistic consumers willing to pay a "premium" for certified sustainable products (Durevall, 2020). Research by Bissinger (2018) regarding the price comparison of fair-trade products and conventional products of producers shows that fair-trade prices are twice as high as the traditional equivalent.

Another research related to wine carried out by the authors Niklas et al. (2017) associated with the analysis of the price dispersion of this food in the United Kingdom, i.e., it investigated whether fair trade wines differed from "non-fair trade" wines. The analysis showed that fair trade wines show less price dispersion than their counterparts.

The research with 200 millennials from Turkey aimed to find out what influences their willingness to pay "premium prices" for fair trade products. The study did not show a significant relationship between knowledge of Fairtrade and the desire to buy these products. On the contrary, it was shown that the willingness to pay for Fairtrade products was positively influenced by trust in Fairtrade and enthusiasm (like) for these products (Aksoy and Özsömez, 2019).

Research by the authors Ruggeri et al. (2021), in which shoppers of a well-known Italian retail chain were involved, showed that the respondents positively evaluated the introduction of certification on products, as well as being willing to pay a "premium" price for certified products, and this willingness increased by being given additional information regarding the Fairtrade system.

The following data collection and data processing methods will be used to answer the above research questions.

For the first research question, a quantitative data collection method, namely a questionnaire survey, will be used. The correlation analysis method will be chosen to process the obtained primary data.

As with the first research question, the second research question will use a questionnaire survey for data collection. The method that will be used for data processing will be Pearson's chi-square goodness-of-fit test.

3. Research objective and methodology

A quantitative research method was chosen to answer both research questions: a questionnaire survey. This was implemented as part of the SGS Jaderná project at the ŠKODA AUTO University's Department of Marketing and Management in cooperation with the BehavioLabs research agency. Data collection took place from June to September 2020 via the Trendaro platform. A total of 997 respondents answered the questionnaire from the panel of respondents that the research agency has. The sample of respondents was representative, as quota sampling was used. This guarantees that the distribution of relative frequencies of auxiliary statistical characters in the sample set corresponds to their distribution in the base set.

After data collection, the data was transferred to Microsoft Excel and coded into statistically measurable quantities. Afterwards, the data were statistically evaluated using IBM SPSS Statistics.

The data processing method correlation analysis was used to answer the first research question. Correlation analysis deals with interdependencies, where the emphasis is primarily on the intensity of the mutual relationship rather than on examining quantities in the direction of cause and effect. The correlation coefficient can take on values from -1 to 1 . If its value is equal to -1 , then it is a perfect negative linear relationship. If the value of the correlation coefficient is equal to zero, then there is no linear relationship. Finally, if the value of the correlation coefficient is equal to 1 , then it is a perfectly pure linear relationship. In this context, it is also necessary to find out the so-called p-value to test the significance of the correlation coefficient. If this value is less than 0.05 , the correlation coefficient is statistically significant, and the investigated variables have a linear relationship.

Using the correlation coefficient makes it possible to determine the relationship between two properties.

Even if the correlation coefficient is closer to $+1$ or -1 , it indicates a positive ($+1$) or negative (-1) correlation between the matrices. A positive correlation means that as the values in one matrix increase, so do the values in the other matrix. A correlation coefficient that is closer to 0 indicates no or weak correlation. The test in MS Excel was used in the following way.

The correlation coefficient equation is:

$$\text{Correl}(X, Y) = \frac{\sum (x - \bar{x})(y - \bar{y})}{\sqrt{\sum (x - \bar{x})^2 \sum (y - \bar{y})^2}}$$

where x and y are the mean values of the sample.

The Pearson chi-square data processing method was used to evaluate the second research question through the CHISQ.TEST function in MS Excell, and also according to the calculation of the test criterion, the critical field, their comparison, and the Pearson contingency coefficient.

For both procedures, a contingency table of trust values in sustainability certificates and the purchase of sustainable products were first created in MS Excell. Then, hypotheses H_0 and H_1 were established.

The CHISQ.TEST function returns the value of the chi-square (χ^2) distribution for the given test criterion and the corresponding degrees of freedom. Using χ^2 tests, it is possible to determine whether the experiment confirms the predicted results.

When calculating this probability the CHISQ function, THE TEST FUNCTION, uses the χ^2 distribution with the appropriate number of degrees of freedom, df. If $r > 1$ and $c > 1$, then $df = (r - 1)(c - 1)$. If $r = 1$ and $c > 1$ then $df = c - 1$ or if $r > 1$ and $c = 1$ then $df = r - 1$. $r = c = 1$ is not allowed and #N/A is returned.

If the resulting value of the CHISQ.TEST function would be less than 5% , the hypothesis H_1 is confirmed.

In the case of the second procedure, the first step was to calculate the test criterion G using the formula:

$$G = \sum_{i=1}^r \sum_{j=1}^c \frac{(A_{ij} - E_{ij})^2}{E_{ij}}$$

where:

A_{ij} = current frequency in i -th row and j -th column

E_{ij} = expected frequency in i -th row and j -th column

r = number of rows

c = number of columns

This was followed by the determination of the critical field according to the formula:

$$W \equiv G; \{G \geq \chi^2_{1-\alpha} (r-1)(c-1)\}$$

where:

G = test criterion

χ^2 = significance level

r = number of rows

c = number of columns

If the critical field were not fulfilled (the value of the test criterion would not be greater than or equal to the chi-square at a significance level of 5%), then the established null hypothesis would not be rejected and vice versa.

Pearson's contingency coefficient was used to assess the strength of dependence:

$$C = \sqrt{\frac{G}{G + n}}$$

where:

G = test criterion

n = number of measurements

If the value of C is less than 0.3, then this is a weak dependence. If the value of C is greater than 0.3 but less than 0.8, then the dependence is moderate. In the case of a value of C higher than 0.8, this is a strong dependence.

4. Results

This chapter will present the results based on the above-mentioned methodology and related to individual research questions.

To answer the first research question, a question was first asked to the respondents as part of the survey, which had the task of finding out the knowledge of the respondents about the term sustainable product, in other words, what comes to mind first when the sustainability of the product is mentioned. Respondents had the option to choose one of the offered answers or to skip the question. This question was followed by a question that asked whether the respondents bought these products. Only one answer could be selected from the possible answers. The responses are recorded in Table 1. This table shows that more than half of the respondents (58%) answered that they sometimes buy them. 31% of respondents do not deal with it, and the rest directly search for them (11%).

Table 1. Buying preference for sustainable products by Czech consumers

Do you buy sustainable products?		
Yes, I am looking for them.	109	11 %
Sometimes.	582	58 %
I don't deal with it.	309	31 %

Source: own processing

From earlier investigations by researchers at the ŠKODA AUTO University (Jaderná, 2019) and studies from around the world, it is clear that the most significant reason consumers do not buy sustainable products is their higher price. Therefore, attention was focused on the level of income and its influence on the purchase of these products.

In this context, a correlation analysis was conducted to determine the interdependence of these two variables, i.e., whether higher income means consumers tend to buy sustainable products. The value of the correlation coefficient was 0.03. A correlation coefficient that is closer to 0 indicates no or weak correlation.

An important external stimulus for purchasing a sustainable product is the mark with a sustainability certificate, which is very important for Czech consumers. Research question #2 related to the dependence of the purchase of a sustainable product on the answer to the question: "Do you trust such certificates?". To this question, the respondents had the option to answer one of the following options, which were modified for easier interpretation within the Pearson chi-square test (indicated after the slash):

Yes, most of them guarantee the quality and origin of the product / yes

You can rely on the part of it / partly

No, most certificates say nothing / no

The second question from the questionnaire survey for the need to use Pearson's chi-square was the above question, which related to the purchase of sustainable products. The possible answers offered have been modified as follows:

Yes, I'm looking for them / yes

Sometimes yes / sometimes

I don't deal with it / no

The next step for testing needs was to add up the answers "yes" and "sometimes" to the question of whether consumers buy these products, followed by "yes" and "partly" to the question of whether consumers believe in sustainability certificates. The given values are shown in Table 2, to which the expected values for further testing have also been added.

Table 2. Actual and expected values

Actual values			
	Answer to question No. 1: yes + partly	Answer to question No. 1: No	
Answer to question No. 2: yes + sometimes	277	138	415
Answer to question No. 2: No	516	66	582
	793	204	997
Expected values			
	Answer to question No. 1: yes + partly	Answer to question No. 1: No	
Answer to question No. 2: yes + sometimes	357,557673019057	84,9147442232698	
Answer to question No. 2: No	501,442326980942	119,0852255767301	

Notes: Question No.1: Do you believe in certificates?

Question No.2: Do you buy these products?

Source: own processing

Subsequently, the following hypotheses were established:

H0: If consumers believe in sustainability certificates, they are less inclined to buy them.

H1: If consumers believe in sustainability certificates, they tend to buy them.

The test criterion was calculated with a value of 70.8. The critical area was determined based on the calculation of $\chi^2_{1-0,05} [(2-1)(2-1)]$, which was 3.84. Since $70.8 > 3.84$, it can be concluded that the null hypothesis is rejected.

To assess the strength of dependence, Pearson's contingency coefficient was used, the value of which was 0.066. Since $C < 0.3$, this is a weak dependence.

The calculation in MS Excel (CHISQ.TEST) gives the value $p = 3.79919E-18$, i.e. the dependence is also proven ($p < 0.05$).

5. Discussion

At the beginning of this article, two research questions were presented, which are based on the goal of the research, which had the task of finding out whether Czech consumers buy more sustainable products of their income level and also the fact that they believe in certificates awarded to sustainable products.

To answer the first research question, "Does the level of income of consumers affect their preference to purchase sustainable products?" the data processing method correlation analysis was used. The relationship was investigated to determine whether higher income means consumers tend to buy sustainable products. Since the calculated value of the correlation coefficient is close to 0, there is no weak correlation. It follows that the relationship between these variables cannot be confirmed. The answer to research question #1 is that the level of consumer income does not affect the preference to purchase a sustainable product.

To determine this research question was based on the fact that the prices of sustainable products are higher than those of conventional (traditional) products. One of the studies mentioned in the literature review found that the price of these products is an important factor in consumers' buying decisions. These were respondents aged 18-34 (Siuda, 2022), a young generation, and it is possible to assume that they do not yet have the same level of income as, for example, their parents. On the other hand, research involving students and academics found that more than 60% of respondents said they were willing to pay more for environmentally friendly products (Al-Dubai and Develi, 2022).

In any case, it is not possible to clearly state whether it is always true that the amount of consumer income does not influence the preference to purchase a sustainable product, as it turned out in the research we carried out in relation to the research mentioned in the literature review.

In the case of the second research question, "The more consumers believe in sustainability certificates, the more they tend to buy them," the Pearson chi-square test was used, and the following hypotheses were posed:

H0: If consumers believe in sustainability certificates, they are less inclined to buy them.

H1: If consumers believe in sustainability certificates, they tend to buy them.

Since the calculated value of the test criterion was higher than the critical field, it can be stated that the null hypothesis is rejected. In other words, it can be said that at the significance level of 5%, it was proven that consumer trust in sustainable product certificates and the tendency to purchase them depend together, and according to Pearson's contingency coefficient, this is a weak dependence.

Dependence was also demonstrated using a calculation in MS Excel (CHISQ.TEST).

When evaluating the second research question, it can be summarized that consumers who believe in certificates buy more sustainable products. However, the proven dependence is very weak, according to the result of the contingency coefficient.

This positive evaluation of the research question fully corresponds with the opinion that there is a noticeable relationship among environmentally oriented consumers between ecolabelling and the intention to purchase environmentally friendly products (Majeed et al. (2022).

In the case of the Fairtrade certificate, it can be stated that consumers positively evaluate when the certification is indicated on the products. Moreover, they will pay a "premium" price for such certified products (Ruggeri et al., 2021).

Based on the research and the research mentioned in the literature searches, the more consumers believe in sustainability certificates, the more they buy.

Conclusions

Today's society is increasingly thinking about what to do so that its behaviour, which satisfies its own needs, does not endanger the lives of future generations. It is thinking about, for example, how to achieve that it does not produce an unnecessarily excessive amount of waste, does not increase greenhouse emissions, strives to ensure suitable working conditions for employees mainly working in developing countries, etc. In this context, our company is increasingly leaning towards consuming sustainable products. But what leads her to prefer these products over conventional ones? What influences her when buying sustainable products? The answers to these questions will undoubtedly benefit retailers with these products in their assortment. Based on the above, the aim of this article was determined, namely, to determine whether Czech consumers buy more sustainable products based on their income level and whether they trust the certificates awarded to sustainable products.

The research results in part of this article showed that the given product received a certificate declaring sustainability and not the amount of the consumer's income, which is of fundamental importance for the consumer's decision to buy a sustainable product. From this research result, retailers can recommend that they be bold in having products marked with sustainability certificates in their assortment and, in this context, to use various marketing communication tools intended for consumers supporting sustainable products.

It can be about supporting the sale of sustainable products in the form of in-store, in the form of tastings and demonstrations, consumer competitions, sampling in the form of inserted advertising in magazines intended for consumers, as well as a suitable form of merchandising (modification of goods on shelves, fastening of banners, installation of posters, an appropriate type of presentation, etc.), by placing suitable POP and POS, means on the sales floor (shelf wobblers, plastic visuals of products, illuminated advertisements, merchandising accessories) and also by using event marketing. Another marketing communication tool that could be used is advertising for sustainable products, whether in the media or printed advertising. Furthermore, it could be personal selling in the form of face-to-face.

The limitation (limits) of the aforementioned research can be seen in the fact that only one quantitative data collection method was used, namely a questionnaire survey. For a closer understanding of consumers' opinions and attitudes towards sustainable products, the qualitative method of focus group data collection or guided in-depth interviews could be used as part of further research. The topic of these data collection methods could be, for example, what other incentives/motives besides certificates can lead Czech consumers to buy these products. It can be their belief that these products' production leads to sustainable development, or it will result from their lifestyle supporting sustainable development, positive experiences, and the availability of these products, etc. In addition, it is also possible to find out how attitudes have changed after the coronavirus pandemic and consumers' opinions on whether they will buy and consume sustainable products.

References

- Adamik, A., & Sikora-Fernandez, D. (2021). Smart Organizations as a Source of Competitiveness and Sustainable Development in the Age of Industry 4.0: Integration of Micro and Macro Perspective. *Energies*, 14(6), 1572. <https://doi.org/10.3390/en14061572>
- Ahmad, M., Ahmed, Z., Gavurova, B., & Oláh, J. (2022). Financial risk, renewable energy technology budgets, and environmental sustainability: is going green possible? *Frontiers in Environmental Science*, 10. <https://doi.org/10.3389/fenvs.2022.909190>
- Akhatar, R., Sultana, S., Masud, M. M., Jafrin, N., & Al-Mamum, A. (2021). Consumers' environmental ethics, willingness, and green consumerism between lower and higher income groups. *Resources, Conservation and Recycling*, 2021, 168, 105274. <https://doi.org/10.1016/j.resconrec.2020.105274>

- Aksoy, H., & Özsömez, C. (2019). How Millennials Knowledge, Trust, and Product Involvement Affect the Willingness to Pay a Premium Price for Fairtrade Products? *Asian Journal of Business Research*, 9(2), 95-112. <https://doi.org/10.14707/ajbr.190062>
- Ambec, S., & De Donder, P. (2022). Environmental policy with green consumerism. *Journal of Environmental Economics and Management*, 111, 102584. <https://doi.org/10.1016/j.jeem.2021.102584>
- Ansar, N. (2013). Impact of Green Marketing on Consumer Purchase Intention. *Mediterranean Journal of Social Sciences*, 4(11), 650-655. Retrieved November 22, 2023 from <https://www.richtmann.org/journal/index.php/mjss/article/view/1352>
- Al-Dubai, O., & Develi, E. I. (2022). Green Marketing and Its Impact on Consumer Buying Behavior. *Journal of International Trade, Logistics and Law*, 8(1), 162-170. Retrieved November 15, 2023 from http://www.jital.org/index.php/jital/article/view/282/pdf_153
- Becchetti, L., & Michetti, M. (2008). When Consumption Generate Social Capital: Creating Room for Manoeuvre for Pro-Poor Policies. *African Journal of Business & Management*, 4(14), 2903-2914. Retrieved November 1, 2023, from <https://ssrn.com/abstract=1157909>
- Bissinger, K. (2018). Price Fairness: Two-Stage Comparison of Conventional and Fairtrade Prices. *Journal of International Consumer Marketing*, 31(2), 86-97. <https://doi.org/10.1080/08961530.2018.1482525>
- Bissinger, K. (2019). Fairtrade and Economic Pro-Poor Growth: A Literature Review. *Journal of Poverty*, 23(6), 521-542. <https://doi.org/10.1080/10875549.2019.1616036>
- Biswas, A. (2016). A Study of Consumers' Willingness to Pay for Green Products. *Journal of Advanced Management Science*, 4(3), 211-215. <https://doi.org/10.12720/joams.4.3.211-215>
- Brécard, D. (2017). Consumer misperception of eco-labels, green market structure and welfare. *Journal of Regulatory Economics*, 51, 340-364. <https://doi.org/10.1007/s11149-017-9328-8>
- Buzzi, T. (2021). The State of CSR Strategic Communication and Company Reputation in the Fashion Industry: The Consumer's Perspective after Covid-19 Pandemic. *Economia Aziendale Online*, 12(3), 351-362. <http://dx.doi.org/10.13132/2038-5498/12.3.351-362>
- Dabija, D. C., Câmpian, V., Pop, A.-R., & Băbuț, R. (2022). Generating loyalty towards fast fashion stores: a cross-generational approach based on store attributes and socio-environmental responsibility. *Oeconomia Copernicana*, 13(3), 891-934. <https://doi.org/10.24136/oc.2022.026>
- Dabija, D.-C., Chebeș, J., & Lancarić, D. (2017). Cross-cultural Investigation of Consumer Generations Attitudes Towards Purchase of Environmentally Friendly Products in Apparel Retail. *Studies in Business & Economics*, 12(3), 27-42. <https://doi.org/10.1515/sbe-2017-0034>
- Dos Santos, R.B., Torrisi, N.M., & Pantoni, R.P. (2021). Third Party Certification of Agri-Food Supply Chain Using Smart Contracts and Blockchain Tokens. *Sensors*, 21(16), 5307. <https://doi.org/10.3390/s21165307>
- Durevall, D. (2020). Fairtrade and Market Efficiency: Fairtrade-Labeled Coffee in the Swedish Coffee Market. *Economies*, 8(2), 1-17. <https://doi.org/10.3390/economies8020030>
- Chaikin, O. (2015). Ecologically certified products promotion alternative management methods. *Management Theory and Studies for Rural Business and Infrastructure Development*, 37(2), 179-188. <https://doi.org/10.15544/mts.2015.16>
- Chirilli, C., Molino, M., & Torri, L. (2022). Consumers' Awareness, Behavior and Expectations for Food Packaging Environmental Sustainability: Influence of Socio-Demographic Characteristics. *Foods*, 11, 2388. <https://doi.org/10.3390/foods11162388>
- Ellen Macarthur Foundation & Circular Fibres Initiative (2017). *A New Textiles Economy: Redesigning Fashion's Future*. Retrieved October 8, 2022, from <https://emf.thirdlight.com/link/2axvc7eob8zx-za4ule/@/preview/1?o>
- Epstein, M.J., Buhovac, A.R., Elkington, J., & Leonard, H.B.D. (2017). Making Sustainability Work: Best Practices in Managing and Measuring Corporate Social, Environmental, and Economic Impacts (pp. 18-42). London: Routledge. <https://doi.org/10.4324/9781351276443>
- European Commission (2022a). *Green Deal: New proposals to make sustainable products the norm and boost Europe's resource independence*. Brussels: European Commission. Retrieved October 8, 2022, from https://ec.europa.eu/commission/presscorner/detail/en/ip_22_2013
- European Commission (2022b). *A European Green Deal*. Brussels: European Commission. Retrieved October 8, 2022, from https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal_en

European Commission (2022c). *Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: EU Strategy for Sustainable and Circular Textiles*. Brussels: European Commission. Retrieved November 22, 2022 from https://eur-lex.europa.eu/resource.html?uri=cellar:9d2e47d1-b0f3-11ec-83e1-01aa75ed71a1.0001.02/DOC_1&format=PDF

Fan, H., & Zeng, L. (2011). *Implementation of green marketing strategy in China: A study of the green food industry*. Retrieved November 1, 2023, from <http://www.diva-portal.org/smash/get/diva2:422184/FULLTEXT01.pdf>

Fernando, Y., Jabbour, Ch., J., Ch., & Wah, W.-X. (2019). Pursuing green growth in technology firms through the connections between environmental innovation and sustainable business performance: Does service capability matter? *Resources, Conservation and Recycling*, 141, 8-20. <https://doi.org/10.1016/j.resconrec.2018.09.031>

Gallardo Vázquez, D. (2023). Attributes influencing responsible tourism consumer choices: Sustainable local food and drink, health-related services, and entertainment. *Oeconomia Copernicana*, 14(2), 645–686. <https://doi.org/10.24136/oc.2023.018>

Gavurova, B., Bacik, R., Fedorko, R., & Nastisin, L. (2018). The customer's brand experience in the light of selected performance indicators in the social media environment. *Journal of Competitiveness*, 10(2), 72-84. <https://doi.org/10.7441/joc.2018.02.05>

Gavurova, B., Schonfeld, J., Bilan, Y., & Dudas, T. (2022). Study of the Differences in the Perception of the Use of the Principles of Corporate Social Responsibility in Micro, Small and Medium-Sized Enterprises in the V4 Countries. *Journal of Competitiveness*, 14(2), 23–40. <https://doi.org/10.7441/joc.2022.02.02>

Hameed, I., Hyder, Z. Imran, M., & Shafiq, K. (2021). Greenwash and green purchase behavior: an environmentally sustainable perspective. *Environment, Development & Sustainability*, 23(9), 13113-13134. <https://doi.org/10.1007/s10668-020-01202-1>

Hojnik, J., Ruzzier, M., & Manolova, T.S. (2020). Sustainable development: Predictors of green consumerism in Slovenia. *Corporate Social Responsibility & Environmental Management*, 27(4), 1695-1708. <https://doi.org/10.1002/csr.1917>

Hoolohan, C., Berners-Lee, M., McKinstry-West, J., & Hewitt, C.N. (2013). Mitigating the greenhouse gas emissions embodied in food through realistic consumer choices. *Energy Policy*, 63, 1065-1074. <https://doi.org/10.1016/j.enpol.2013.09.046>

Jaderná, E. (2019). *Grant research SGS/2019/01 Jaderná*, Department of Marketing and Management, ŠKODA AUTO University.

Jakubowska, D. (2021). Market differentiation potential of traditional food quality labels: Consumer and producer expectation. *Entrepreneurship and sustainability issues*, 9(1), 239-250. [https://doi.org/10.9770/jesi.2021.9.1\(14\)](https://doi.org/10.9770/jesi.2021.9.1(14))

Kaviya, S., & Priyadarshini, R.G. (2022). Green Consumerism: Consumer Purchase Intention and Behavior towards Gree Products in FMCG Secto. *Abhigyan*, 40(1), 1-10. Retrieved October 28, 2022, from <https://www.fsm.ac.in/images/cms/abhigyan-content-401-fore-website.pdf>

Krzywda, J., Krzywda, D., & Androniceanu, A. (2021). Managing the energy transition through discourse. The case of Poland. *Energies*, 14(20), Article no. 6471. <https://doi.org/10.3390/en1420647>

Lentjushenkova, O., Zarina, V., & Titko, J. (2019). Disclosure of intellectual capital in financial reports: case of Latvia. *Oeconomia Copernicana*, 10(2), 341-357. <https://doi.org/10.24136/oc.2019.017>

Lewandowska, A., Berniak-Woźny, J., & Ahmad, N. (2023). Competitiveness and innovation of small and medium enter-prises under Industry 4.0 and 5.0 challenges: A comprehensive bibliometric analysis. *Equilibrium. Quarterly Journal of Economics and Economic Policy*, 18(4), 1045-1074. <https://doi.org/10.24136/eq.2023.033>

MacGregor Pelikánová, R., & Sani, M. (2023). Luxury, slow and fast fashion: A case study on the (un)sustainable creating of shared values. *Equilibrium. Quarterly Journal of Economics and Economic Policy*, 18(3), 813-851. <https://doi.org/10.24136/eq.2023.026>

Majeed, M.U., Aslam, S., Murtaza, S.A., Attila, S., & Molnár, E. Green (2022). Marketing Approaches and Their Impact on Green Purchase Intentions: Mediating Role of Green Brand Image and Consumer Beliefs towards the Environment. *Sustainability*, 14, 11703. <https://doi.org/10.3390/su141811703>

Matharu, M., Jain, R., & Kamboj, S. (2020). Understanding the impact of lifestyle on sustainable consumption behavior: a sharing economy perspective. *Management of Environmental Quality: An International Journal*, 32(1), 20-40. <https://doi.org/10.1108/MEQ-02-2020-0036>

Ministry of the Environment of the Czech Republic (Ministerstvo životního prostředí České republiky) (2021a). *System of OH indicators - reporting year 2020 (final data) (Soustava indikátorů OH - ohlašovací rok 2020 (finální data)*. Prague: Ministry of the Environment of the Czech Republic. Retrieved October 14, 2022, from [https://www.mzp.cz/C1257458002F0DC7/cz/odpady_podrubrika/\\$FILE/OODP-Soustava_indikaturu_2020_zverejmeno-20211029.pdf](https://www.mzp.cz/C1257458002F0DC7/cz/odpady_podrubrika/$FILE/OODP-Soustava_indikaturu_2020_zverejmeno-20211029.pdf)

Ministry of the Environment of the Czech Republic (Ministerstvo životního prostředí České republiky) (2021b). *Production and waste management in 2020 (Produkce a nakládání s odpady v roce 2020)*. Prague: Ministry of the Environment of the Czech Republic. Retrieved October 14, 2022, from [https://www.mzp.cz/C1257458002F0DC7/cz/odpady_podrubrika/\\$FILE/OODP-Produkce_a_nakladani_2020-20211029.pdf](https://www.mzp.cz/C1257458002F0DC7/cz/odpady_podrubrika/$FILE/OODP-Produkce_a_nakladani_2020-20211029.pdf)

Mosca, F., & Civera, C. (2017). The Evolution of CSR: An Integrated Approach. *Emerging Issues in Management*, 1, 16-35. Retrieved October 24, 2022, from <https://symphonia.unicusano.it/article/view/2017.1.03mosca.civera/11658>

Mook, A., & Overdeest, C. (2020). Fairtrade credentialism: towards understanding certifier producer organizations' perceptions of Fairtrade as a credential. *Globalizations*, 17(1), 110-125. <https://doi.org/10.1080/14747731.2019.1638113>

Nattaavuthisti, K., & Thøgersen, J. (2017). The Importance of Consumer Trust for the Emergence of a Market for Green Products: The Case of Organic Food. *Journal of Business Ethics*, 140(2), 323-337. <https://doi.org/10.1007/s10551-015-2690-5>

Niklas, B., Storchmann, K., & Vink, K. (2017). Fairtrade Wine Price Dispersion in the United Kingdom. *Journal of Wine Economics*, 12(4), 446-456. <https://doi.org/10.1017/jwe.2017.48>

Podhorsky, A. (2015). A positive analysis of Fairtrade certification. *Journal of Development Economics*, 116, 169-185. <https://doi.org/10.1016/j.jdevco.2015.03.008>

Reynolds, L.T. (2014). Fairtrade, certification, and Labor: global and local tensions in improving conditions for agricultural. *Agriculture and Human Values*, 31(3), 499-511. <https://doi.org/10.1007/s10460-014-9506-6>

Ruggeri, G., Corsi, S., & Nayga, R. M. (2021). Eliciting willingness to pay for fairtrade products with information. *Food Quality and Preference*, 87, 104066. <https://doi.org/10.1016/j.foodqual.2020.104066>

Samaraweera, M., Sims, J.D., & Homsey, D.M. (2021). Will a green color and nature images make consumers pay more for a green product? *Journal of Consumer Marketing*, 3(3), 305-312. <https://doi.org/10.1108/JCM-04-2020-3771>

Sanusi, F.A., & Juhl, S.K. (2022). Sustainable internal corporate social responsibility and solving the puzzles of performance sustainability among medium size manufacturing companies: An empirical approach. *Heliyon*, 8(8), 1-12. <https://doi.org/10.1016/j.heliyon.2022.e10038>

Sedky, D., & AbdelRaheem, M., A. (2022). Studying green marketing in emerging economies. *Business Strategy and Development*, 5(1), 59-68. <https://doi.org/10.1002/bsd2.183>

Sellare, J., Meemken, E.-M., & Qaim, M. (2020). Fairtrade, Agrochemical Input Use, and Effects on Human Health and the Environment. *Ecological Economics*, 176, 106718. <https://doi.org/10.1016/j.ecolecon.2020.106718>

Simionescu, M., Szeles, M.R., Gavurova, B., & Mentel, U. (2021). The impact of quality of governance, renewable energy and foreign direct investment on sustainable development in CEE countries. *Frontiers in Environmental Science*, 9, 765927. <https://doi.org/10.3389/fenvs.2021.765927>

Sharma, N.K., & Kushwaha, G.S. (2019). Eco-labels: A Tool for Green Marketing or Just a Blind Mirror for Consumers. *Electronic Green Journal*, 1(42), 1-23. <https://doi.org/10.5070/G314233710>

Siuda, D. (2022). The Role of Sustainable Consumption and Green Marketing in Consumers' Purchase Decisions in the SMART Era. *Problemy Zarządzania*, 20(96), 215-235. <https://doi.org/10.7172/1644-9584.96.11>

Skare, M., Gavurova, B., & Rigelsky, M. (2023). Innovation activity and the outcomes of B2C, B2B, and B2G E-Commerce in EU countries. *Journal of Business Research*, 163, 113874. <https://doi.org/10.1016/j.jbusres.2023.113874>

Skare, M., Gavurova, B., & Rigelsky, M. (2024a). Quantification of the impact of innovations in industry and infrastructure for sustainable circular economy production and consumption. *Journal of Innovation & Knowledge*, 9(1), 100456. <https://doi.org/10.1016/j.jik.2023.100456>

Škare, M., Gavurova, B., & Porada-Rochon, M. (2024b). Digitalization and carbon footprint: Building a path to a sustainable economic growth. *Technological Forecasting and Social Change*, 199, 123045. <https://doi.org/10.1016/j.techfore.2023.123045>

Yangınlar, G., Fidan, Y., & Küllük, S. (2022). Green Supply Chain Management as a Determinant of Corporate Social Responsibility and Corporate Reputation. *Turkish Journal of Business Ethics*, 15(1), 84-108. <https://doi.org/10.12711/tjbe/m2771>

Van den Broeck, G., Vlaeminck, P., Raymaekers, K., Vande Velde, K., Vranken, L., & Maertens, M. (2017). Rice farmers' preferences for fairtrade contracting in Benin: Evidence from a discrete choice experiment. *Journal of Cleaner Production*, 165, 846-854. <https://doi.org/10.1016/j.jclepro.2017.07.128>

Wei, H., Fuqiang, Zh., Yu, Zh., & Tracy, L. (2021). Green Human Resource Practice and Team Innovation Performance: Roles of Team Boundary-Spanning Behaviour and Responsible Leadership. *Transformations in Business & Economics*, Vol. 20, No 3C (54C), pp.585-604.

World Commission on Environment and Development. (1987). *Report of the World Commission on Environment and Development: Our Common Future*. New York: United Nations. Retrieved October 11, 2022. from <https://sustainabledevelopment.un.org/content/documents/5987our-common-future.pdf>, <https://archive.org/details/ourcommonfuture00worl>

Funding: This paper is one of the outcomes of the research grant SGS/2019/01 Jaderná, Department of Marketing and Management at SKODA AUTO University, Mladá Boleslav, and one of the outcomes of the research IVSUPS005 Marketing communication management for building, maintaining and protecting identity and reputation in the Internet environment, Department of Tourism and Marketing at Institute of Technology and Business, České Budějovice.

Author Contributions: Conceptualization: *Alena Srbová, Eva Jaderná*; methodology: *Alena Srbová, Eva Jaderná*; data analysis: *Eva Jaderná, Alena Srbová*, writing—original draft preparation: *Alena Srbová*, writing; review and editing: *Alena Srbová, Eva Jaderná*; visualization: *Alena Srbová, Eva Jaderná*. All authors have read and agreed to the published version of the manuscript.

Alena SRBOVÁ is a lecturer at the Department of Tourism and Marketing, Institute of Technology and Business in České Budějovice. Research interests: retail chains, retail marketing, private labels, consumer, consumer protection, consumer behaviour.

ORCID ID: <https://orcid.org/0000-0002-7657-5463>

Eva JADERNÁ is a deputy head of Department of Marketing and Management at SKODA AUTO University in Mladá Boleslav. Research interests: sustainability, sustainable supply chain, corporate social responsibility, consumer behaviour, B2B marketing

ORCID ID: <https://orcid.org/0000-0001-8576-6379>

Copyright © 2024 by author(s) and VsI Entrepreneurship and Sustainability Center
This work is licensed under the Creative Commons Attribution International License (CC BY).

<http://creativecommons.org/licenses/by/4.0/>



Open Access