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Generation Z fashion shopping behaviour during and after the COVID-19 pandemic: the effect of sustainable consumption

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ABSTRACT

COVID-19 made significant changes in the fashion retail markets in European countries because stores were closed due to government restrictions. The study aims to examine the fashion shopping behaviour of Generation Z consumers before and during the first wave of COVID-19 and its influence on the future development of fashion shopping behaviour. Based on the literature review and knowledge gap identified, the authors developed hypotheses to examine the relationship between Fashion & Style (FAS), Sustainability (SUS), and Circular Fashion Economy (CFE) and their impact on shopping behaviour after the first wave of the COVID-19 pandemic. The authors analysed the results of the measurement model ($n = 589$) and the direct and indirect mediating effect of the latent variables on the shopping frequency before (BEFORE) the pandemic and on the shopping frequency during the pandemic (DURING) and after the pandemic (AFTER). The results of the measurement model show that significant relationships exist in the proposed model, namely, the relationship between IS and SFB, FAS and SFD, SUS and SFD, SUS and CHA, FC and CHA, and SFD and CHA. Furthermore, the selected demographic variables acted as a mediator for the measurement model.

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Generation Z; shopping; fashion; sustainability; circular economy; covid-19

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1. Introduction

Generation Z was significantly influenced by COVID-19 and faced a fear of the unknown and unstable situation. Due to physical restrictions related to the first wave of the COVID-19 pandemic in the first half of 2020, many service providers had to close their operations due to COVID-19, and Generation Z consumers lost or

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significantly reduced their regular incomes from different kinds of full-time and part-time jobs. Generation Z, also known as 'zoomers', refer to a population group born late 1990s and early 2000s. This segment is characterised by tremendous purchasing power, high involvement in technological innovation, and high expectations (Ferri-Reed, 2011). This group of shoppers is unique not only in terms of motivation and behaviour but also in terms of the ability to spend, which is much higher than all other previous generations (Thomas et al., 2016). The quality of products and services offered is an important element of the Generations Y and Z decision-making process (Nowak et al., 2006). Product properties, packaging, and store atmosphere all have a significant effect on the intention of Generation Z to shop (Michon et al., 2008). Generation Z exceed 32% of the world's population and are the largest growing online consumer group (Arumugam & Wing, 2020). They prefer to shop online, where they perceive more benefits than in traditional stores, such as delivery, price, and payment conditions. According to Eger et al. (2021), Generations Y and Z consumers spend more on personal or digital services than on clothing, suffer higher levels of debt, and earn less compared to previous generations of consumers.

However, Generation Z consumers are not a homogeneous group. Considering Generation Z as a segment is superficial, as they do not have similar attitudes and behaviours (Ladhari et al., 2019). Some previous research confirmed that Generation Z consumers are the biggest social media consumers and online purchasers (Bento et al., 2018; Hall et al., 2017) with different offline and online attitudes and behaviours (Soares et al., 2017). However, only a few studies have addressed Generation Z online shopping behaviour for fashion apparel (e.g. Bento et al., 2018; Ladhari et al., 2019; Sethi et al., 2017) or the influence of the first wave of the COVID-19 pandemic on fashion shopping behaviour (Guthrie et al., 2021; Peluso et al., 2021). Millennials and Generation Z had to switch from physical stores to online shopping, home delivery, or cashless payment, which they did not use so frequently (Pantano et al., 2020). When Generation Z consumers purchase fashion, these rapid changes in shopping behaviour influenced by the first wave of the COVID-19 pandemic are also connected with deferred consumption, with a greater focus on sustainability (Beckers et al., 2021; Peluso et al., 2021) and circular economy and consumption (Sadiq et al., 2021). However, these phenomena have not been investigated yet.

Our research takes into account the literature gap related to the lack of empirical research on the influence of the fashion shopping behaviour of Generation Z after the COVID-19 pandemic. This study is an initial effort to bridge this gap in the literature by exploring how the fashion shopping behaviour of Generation Z evolved before, during and after the first wave of the COVID-19 pandemic. Therefore, this study aims to examine the shopping behaviour of fashion by Generation Z consumers before and during the first wave of the COVID-19 pandemic.

To address our research questions, we applied a conceptual research model based on the literature review to investigate the relationships between Fashion & Style (FAS), Sustainability (SUS), and attitudes towards the Circular Fashion Economy (CFE) and their impact on changes in shopping behaviour before, during, and after the first wave of the COVID-19 pandemic.

The rest of the study is structured into the following chapters: Literature Review, Materials and Methods, Results, Discussion, Theoretical contributions and managerial implications (including limitations of this study), Conclusions and references.

2. Literature review

2.1. Fashion & style

People use clothing as an extension of their identity and as a means of expressing status, social class, age, or gender (Niinimäki, 2010). At the same time, they constantly evaluate each other's appearance in time and social context, which results in a constant process of building their own identity (Kirgiz, 2014). The result of the whole process is hedonism. People attach meaning to the way we dress, so our clothes communicate our social identity (Asmalovskij & Sadílek, 2016; Johnson et al., 2008). Interest in clothing among Generation Z consumers is evoked based on psychological impulses (fashion trends and innovation, self-concept, and the need to identify), as well as on marketing communication (social networks and advertising in general) (Cham et al., 2020). Consumer psychology influences each individual's choice of products and services (Rogers et al., 2005).

Marketing, in general, plays an indispensable role in influencing consumers in fashion (Jai & Tung, 2015) and therefore increases demand. Although the data show that interest in online shopping is still growing, most clothing retail sales are still in physical stores. This fact shows that barriers to online shopping continue to prevail (Johnson & Ramirez, 2020). For example, showrooming directly affects online shopping by allowing customers to eliminate the risk of selecting goods they may not want when they see the actual merchandise. At the same time, it reduces the financial risk of the entire transaction (Johnson et al., 2008).

Closely related to materialism is the need for consumption as a 'motivational process' by which an individual seeks to improve their social status through consumer goods (Eastman et al., 1999). Fashion and fashion innovation represent the presentation of physical attractiveness and self-identification, and it is important to perceive its influence on the interest in clothing (Anič et al., 2010).

During the COVID-19 pandemic, people spent most of their time at home and instead of presenting their status to others (ElHaffar et al., 2020; Kumar & Shah, 2021), they did not buy new fashion as frequently as before the first wave of the COVID-19 pandemic, and we expect that the shopping frequency before the first wave of the COVID-19 pandemic was higher than during the first wave of the COVID-19 pandemic. At the same time, due to closed stores, they were not attracted by marketing communication in stores and therefore did not have the opportunity to shop impulsively in physical stores. Based on the above findings, we assume that

H1: The frequency of shopping before the first wave of the COVID-19 pandemic positively affects an interest in fashion and style.

H2: The frequency of shopping during the first wave of the COVID-19 pandemic negatively affects the interest in fashion and style.

2.2. Sustainability

Generation Z consumers are ambitious, have a global perspective, are very considerate of each other, and want to change the world for the better (Dharmesti et al., 2019). Sustainable clothing is generally associated with the production of clothing in a socially, ethically, and environmentally friendly way (Niinimäki, 2010). As a result of ever-changing clothing trends, the price and quality of the goods on offer are perceived as constantly decreasing, which has dramatically increased clothing production (Niinimäki & Hassi, 2011). This results in excessive clothing consumption and an increasing amount of textile waste (Dissanayake & Sinha, 2015). The textile industry is one of the worst polluters in the world (Niinimäki & Hassi, 2011), giving fashion a profound adverse effect on the environment (Roos et al., 2017). Industrialisation and urbanisation have made goods available. This encourages hyper-consumption or buying much more than we need. Then we quickly discard things and buy new ones (Gumulya, 2020).

Alternative approaches are becoming increasingly popular. For example, products and services can be used without having to own them (Phau & Woo, 2008). One approach is rental-based consumption, and this concept is applied in many industries, such as fashion, property, and more recently, children's items (Gumulya, 2020). Sharing is generally considered to have a positive effect on the environment over non-sharing, due to the added value in the phase of use (Möhlmann, 2015). In this sense, social networks can shape attitudes and standards of sustainability in the field of fashion (de Lenne & Vandenbosch, 2017).

The disruptive period of the first wave of the COVID-19 pandemic is ideal to adopt these sustainable models (Bocken & Short, 2021), mostly related to environmental issues (Ranjbari et al., 2021; Sandberg, 2021). The COVID-19 pandemic is an unprecedented and unique event in the history of human civilisation and allows some patterns of behaviour to be changed based on uncertainty (Laato et al., 2020; Rausch & Kopplin, 2021; Sadiq et al., 2021). Customers in the first wave of COVID-19 cannot shop, so this forces them to look in their closets, where they find out what they have and based on this, they realise that they bought unnecessarily/imprudently (Vladimirova et al., 2022). We also hypothesise the frequency of shopping during the first wave of the COVID-19 pandemic and changes in shopping behaviour after the first wave of the COVID-19 pandemic were influenced by growing interest in sustainability, because consumers behave more responsibly and purchase less new products. Additionally, we expect that consumers who behave sustainably could not shop during the first wave of the COVID-19 pandemic, they have utilised fashion available at their households and therefore behave in more responsible way.

Based on the above, we can assume that:

H3: The frequency of shopping during the first wave of the COVID-19 pandemic positively affects the interest in sustainability.

H4: The interest in sustainability positively affects the frequency of shopping after the first wave of the COVID-19 pandemic.

2.3. Circular fashion economy

A relatively new emerging alternative consumption model that contributes to greater sustainability in the textile industry is the approach based on cooperation in the field

of fashion (de Lenne & Vandenbosch, 2017). Circular Fashion includes concepts such as sharing, reselling, exchanging, and renting (Botsman & Rogers, 2010). Although this approach has a positive impact on sustainable consumption, unfortunately, environmental and social issues have no major impact on the intention of participating in clothing rental (Becker-Leifhold, 2018). To ensure sustainability, consumers must reduce their consumption or adjust the choice of goods and services they consume (Pogutz & Micale, 2011). Renting instead of buying new clothing could be a viable approach to prolong the life cycle of clothing and reduce material and energy consumption (Zamani et al., 2017). The Sharing Economy is an overarching concept that allows access to all products and services in the same way as a standard method of consumption (Hamari et al., 2016). Many consumers spent more time at home and needed to feel comfortable rather than wearing work clothes (Vladimirova et al., 2022). Consumers also started to wear clothes that we bought but had not yet used. These aspects opened our minds to the idea of 'other' lifestyle fashion. Until the COVID-19 pandemic, services such as clothing repairability, reuse or lack thereof, or recyclability were of little importance to consumers (Koszewska et al., 2020; Zhu & Liu, 2021). Based on the above, we present the following hypothesis that expects that interest in circular fashion will have a negative influence on changes in shopping behaviour after the first wave of the COVID-19 pandemic because Generation Z consumers interested in circular fashion will purchase less than the majority of this consumer cohort and will behave in more responsible way. In addition, consumers who support a circular fashion economy could not shop during the first wave of the COVID-19 pandemic and utilise fashion available at their households, and therefore they behave in more responsible way.

H5: Changes in shopping behaviour during the first wave of the COVID-19 pandemic will positively affect interest in a circular fashion economy.

H6: The circular fashion economy positively affects the frequency of shopping after the first wave of the COVID-19 pandemic.

2.4. Influence on the shopping behaviour

In the past, there were some dangerous epidemics, such as Ebola, SARS, MERS, swine flu, and dengue fever (Balinska & Rizzo, 2009). Typically, these events had the most significant impact on two categories of human behaviour: consumer behaviour and health risk mitigation behaviour (Torre et al., 2009). Changes in consumer behaviour have affected not only grocery stores, regular stores, cafes, and restaurants, but also their supply structures (Laato et al., 2020). Similar studies report an increase in the purchase of food, face masks, hand disinfectants, and other items considered important for pandemic survival during the previous SARS disease (Goodwin et al., 2011). Information sources have generated more interest and have played an important role in consumer behaviour (Laato et al., 2020). People began to learn to shop online.

Generation Z consumers buy fashion through all available channels. Their use of mixed channels includes 'showrooming' and 'webrooming', or using the Internet to research products they then buy in a store, or order online and then deliver home (Alexander & Kent, 2020). This trend has persisted for the last five years, and the

integration of modern technologies is an element that Generation Z consumers evaluate when choosing a shopping centre (Ameen et al., 2021). Generation Z women are better able to navigate shopping malls than men. Although men can buy in a shorter time, they spend more money (Bogomolova et al., 2016). For Generation Z women, the quality of interaction and service is an essential element of customer service, while men focus on the outcome and consider effective problem solving to be sufficient, rather than overconsumption (Mathies & Burford, 2011). From the above, we conclude that the first wave of the COVID-19 pandemic has affected the frequency of shopping both before and especially during, and we assume the following hypotheses.

H7: The frequency of fashion shopping behaviour during the first wave of the COVID-19 pandemic positively affects changes in shopping behaviour after the first wave of the COVID-19 pandemic.

Furthermore, we added a group of demographic variables that play a mediator role in changes in shopping behaviour after the first wave of COVID-19 (Bogomolova et al., 2016). They are age, gender, household size, place of residence, education, occupation, and household income (Ameen et al., 2021).

We constructed a theoretical conceptual model to evaluate the proposed hypotheses derived from previous studies on sustainable consumption during the first wave of the COVID-19 pandemic (Laato et al., 2020; Sharma et al., 2020). The conceptual model is presented in Figure 1 and identifies how the shopping behaviour of fashion by Generation Z consumers before and during the first wave of the COVID-19 pandemic was influenced by Fashion & Style (FAS), Sustainability (SUS) and attitudes towards Circular Fashion Economy (CFE). Between these items, we did not expect significant correlations. Then we considered age, gender, household size, region, education, full-time/part-time studies, and income as a moderating variables.

3. Materials and methods

The study aims to examine the shopping behaviour of fashion by Generation Z consumers before and during the first wave of the COVID-19 pandemic. Therefore, the authors developed hypotheses H1–H6 to examine the relationship between Fashion & Style (FAS), Sustainability (SUS), and attitudes towards the Circular Fashion Economy (CFE) and their impact on shopping behaviour after the first wave of the COVID-19 pandemic. Questions in the survey questionnaire were derived from the previously published studies cited in the literature review and were defined to compare the shopping behaviour of fashion before and after the first wave of the COVID-19 pandemic.

After developing the first version of the questionnaire, we piloted it in a group of 20 respondents to answer the questions and receive feedback on the understandability of the questions and the ability to answer quickly. Then we adopted a couple of changes in terms of better understandability and higher specificity of the questions. We made all content questions with validated 5-point Lickert scale answers ranging from strongly disagree to strongly agree mandatory. Some open-ended questions were also included in the questionnaire, but we did not provide an analysis of them. Additionally, to ensure face and content validity, the survey was validated by two independent researchers who

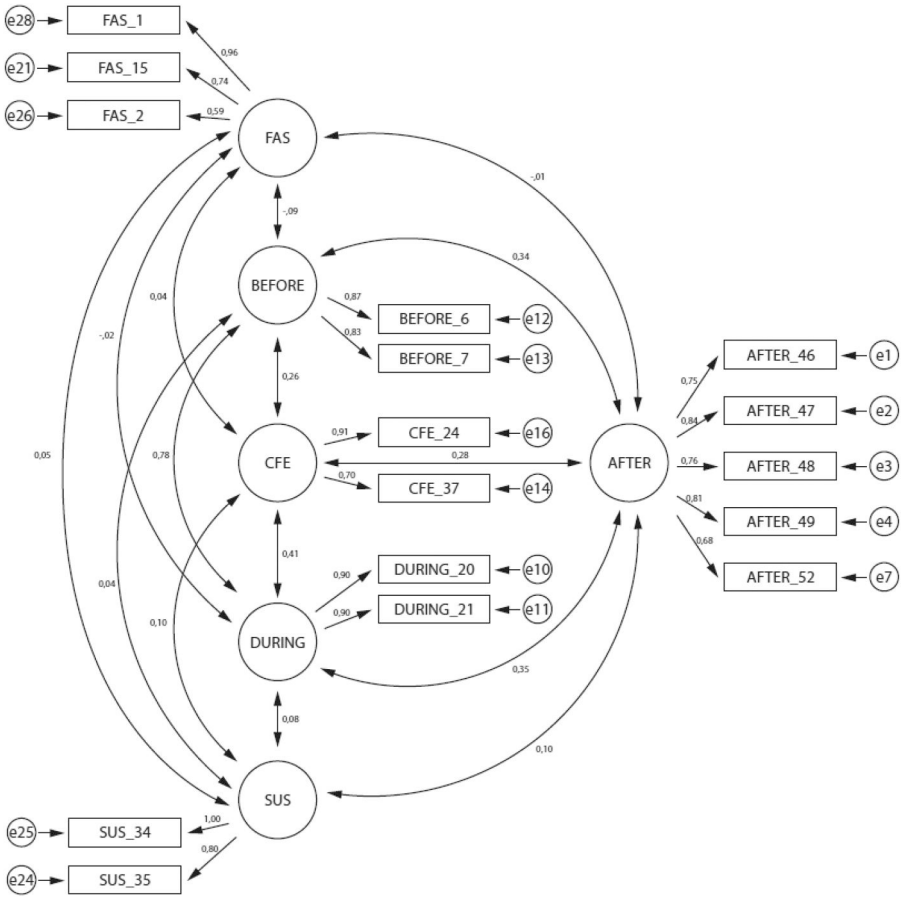

Figure 1. Conceptual model on factors influencing shopping behaviour of fashion by millennial consumers before and during the first wave of the COVID-19 pandemic.
Source: Own processing according to the questionnaire survey.

are experts in consumer behaviour. These experts recommended minor changes to the phrasing of certain items which were incorporated in the final questionnaire. The final version of the questionnaire is shown in the Appendix.

After that, we distributed the survey link *via* direct email on 20 September 2020 to Generation Z consumers in Czechia selected by convenient sampling. In total, 3575 respondents were invited to answer the questionnaire. After two weeks, we sent a second round of emails to remind recipients to answer the questionnaire. The survey statistics showed that 589 respondents returned complete questionnaires, so the response rate was 16.5%. Regarding the structure of the sample, approximately 77% of the respondents were female, reflecting their interest in purchasing fashion. The mean value for age was 24.8 years and the range was 21 to 26 years. Most of the respondents live in four-member households (56%) and two-member households (24%), and 92% of the respondents work part-time or full-time apart from their studies at university. Regarding the level of education of the respondents, 59% of them reported having a secondary school, 28% had a bachelor's degree and 12% had a master's degree. Detailed information on the distribution of the respondents is presented in Table 1.

Table 1. Sample structure ($n = 589$).

Gender	Male	22.43%	Education	Secondary school	59.70%
	Female	77.57%		Bachelor degree	28.15%
Age	21	5.44%		Master degree	12.15%
	22	17.49%	Household size	1 member	5.09%
	23	19.86%		2 members	23.91%
	24	18.00%		3 members	16.12%
	25	20.20%		4 members	51.02%
	26	19.02%		5 and more members	3.86%
			Work-activity	Part-time of full-time	91.59%
				No	8.41%

Source: Own processing according to the questionnaire survey.

4. Results

Before evaluating the structural model, we ensured that the fit of the model meets the necessary values for the optimum relations between constructs. At the same time, we ensured the reliability, convergence, and discriminant validity of the data. Then we checked the collinearity issues and the existence of a common-method bias. In addition to the PLS-SEM, mediation analysis was also carried out. These methods are widely used in consumer research because they can be combined with linear regression modelling and confirmatory factor analysis. The objective of PLS-SEM is predictive modelling with a focus on the complex model with many indicators (Sharma et al., 2020). For data analysis, the statistical software SPSS 28 version was used and for CFA, mediation analysis, and SEM we used SPSS Amos 28. For the confirmation of the structural equation model, we proceeded maximum likelihood estimate in SPSS Amos 28 to validate the conceptualised research model statistically and to test the mediation and moderation effects between the select variables.

4.1. Model fit

CFI, RMSEA, and (S)RMR were used to evaluate the quality of the model (Kline, 1998). CFI, the comparative fit index should be greater than 0.9, which is considered a sufficient value (Kline, 1998). In the model shown, the CFI value is 0.924. The second measure is RMSEA, where the root means a square error of approximation, where the value should ideally be below 0.05 or should not exceed 0.1 (Kline, 1998). In the model shown, the CFI value is 0.084, which is within the acceptable range. The value of the last measure (S)RMR, (standardised) root mean square residual, should not exceed 0.08 (Kline, 1998). In the model shown, the (S)RMR value of 0.041 can be accepted.

4.2. Reliability, convergent and discriminant validity

First, we measured the factor loadings of the constructs for the model evaluation and the reliability of the constructs. The Cronbach alpha meets the appropriate values shown in Table 2.

According to the recommendation in previous studies, the standardised outer load of the items should be greater than 0.7. The value of AVE should be greater than 0.5 and less than 0.7 to confirm the convergent validity between the constructs (Rahman

Table 2. Reliability and validity of the measurement model.

Construct	Indicators	Mean	Standard deviation	Loadings α	Composite reliability	Cronbach's alpha	Average variance extracted
FAS	FAS_1	3.650	1.069	0.908	0.814	0.791	0.602
	FAS_2	3.876	1.025	0.768			
	FAS_15	3.436	1.322	0.852			
BEFORE	BEFORE_6	3.367	1.273	0.928	0.840	0.839	0.724
	BEFORE_7	2.540	1.333	0.928			
CFE	CFE_24	2.144	1.376	0.905	0.794	0.775	0.662
	CFE_27	1.784	1.195	0.905			
DURING	DURING_20	3.146	1.439	0.951	0.893	0.894	0.807
	DURING_21	2.508	1.461	0.951			
SUS	SUS_34	1.992	0.446	0.948	0.900	0.886	0.820
	SUS_35	1.975	0.405	0.948			
AFTER	AFTER_46	2.727	1.236	0.802	0.878	0.877	0.592
	AFTER_47	3.127	1.324	0.865			
	AFTER_48	2.873	1.269	0.816			
	AFTER_49	3.224	1.302	0.849			
	AFTER_52	2.756	1.295	0.760			

Source: Own processing according to the questionnaire survey.

Table 3. Intercorrelation matrix.

	SUS	FAS	FC	IS	SFB	SFD
FAS	0.245[a]					
FC	0.809	0.126[a]				
IS	0.251	0.701	0.231[a]			
SFB	−0.042	−0.063	0.006	0.079[a]		
SFD	0.076	−0.043	0.022	−0.015	−0.137[a]	
CHA	0.048	−0.020	−0.004	−0.038	−0.131	0.801[a]

Source: Own processing according to the questionnaire survey.

et al., 2015). This was confirmed for all factors that show optimal values, except for AFTER. According to Fornell and Larcker (1981), the value of AVE for all factors should be higher than 0.50, because it explains beyond 50% of the variance. Detailed results are presented in the intercorrelation matrix in Table 3.

4.3. Collinearity issues

In the next step, we need to check the collinearity issues and the variance inflation factor (VIF) among the model constructs. According to Hair et al. (2017), the outer VIF values show the collinearity among the items in constructs, the inner VIF shows the collinearity among the latent variables, and the values of both inner and outer VIF should be lower than five. This is visible in Table 4 where the values of inner and outer VIF are less than five and this means that there exist any collinearity problems among the model constructs.

4.4. Common-method bias

As a final test, we checked for the occurrence of common method bias due to errors in the measurement model (Kock, 2015). For example, variation can occur due to items developed during filling in the survey that may affect the responses of the respondents. Furthermore, the desirable way of responding to a particular question may cause common-method bias (Sharma et al., 2020). In this study, the authors try

Table 4. Outer VIF.

Constant	Tolerance	VIF
FAS	0.981	1.019
CFE	0.865	1.157
SUS	0.988	1.013
BEFORE	0.538	1.857
DURING	0.495	2.020
AFTER	0.882	1.134

Source: Own processing according to the questionnaire survey.

to understand the changes in the shopping behaviour of Generation Z consumers before and during the first wave of the COVID-19 pandemic that can indirectly address the issue of common method bias. Then we calculated Harman's single factor test and, second, the correlation matrix process. The total variance explained by Harman's single factor test is 41.26%, which is less than 50% and confirms that there is no common method bias. Second, the correlation of more than 0.9 indicates a common-method bias, but the values of our correlation coefficients were less than 0.9, thus there is confirmed no existence of common-method bias.

4.5. Structural model

For the evaluation of the direct relationship hypothesised, we used standardised regression weights to infer the association between independent variables such as SUS, FAS and CFE and the shopping frequency before the first wave of COVID-19 (BEFORE), the shopping frequency during the first wave of COVID-19 (DURING), and the changes in shopping behaviour after the first wave of COVID-19 (AFTER).

First, we need to check the compatibility of the measurement model, because the structural model (see Figure 2) is analysed to verify the over-mentioned hypotheses and predict the conceptual model. In PLS-SEM, the measurement model can be predicted by estimating the values of R^2 and Q^2. R2 accurately predicts the variance explained by the construct, and Q^2 proposes predictive relevance using the sample reuse method where part of the data matrix is omitted and the results are used to predict the omitted part (Sharma et al., 2020). According to Hair et al. (2017), the higher the value of R^2 (on a scale from 0 to 1), the higher the predictive precision would be. According to previous studies, 0.75 R2 values are considered adequate, 0.50 is moderate, and 0.25 are weak predictive accuracy values. The value of R^2 for the variables is 0.13, which means a weak predictive accuracy value. It also means a weaker explanatory power of the structural model, which implies that the independent variables in the model contribute 13.0% of the total variance in AFTER.

The findings of Table 5 show that our set of direct hypotheses (H1-H6) is sustained as $p < 0.05$ or lower in four of the set of seven hypotheses.

The results showed a weak negative relationship between BEFORE and FAS (-0.224), for those consumers who declare a positive attitude towards fashion. Furthermore, the results found a weak relationship between DURING and SUS (0.034) and, at the same time, between DURING and CFE (0.257). Therefore, the period during the pandemic has a positive effect on the view of sustainability and the circular fashion economy. At the same time, the relationship between DURING and

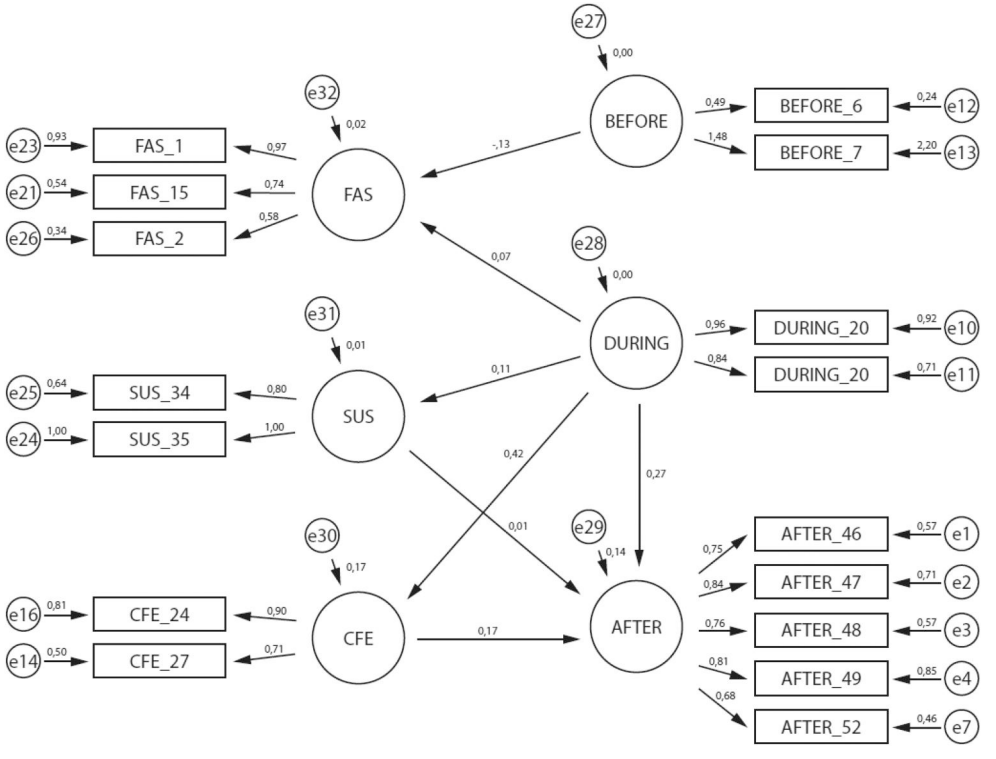

Figure 2. Partial least squares (PLS) structural model.
Source: Own processing according to the questionnaire survey.

Table 5. Structural model estimates and main hypotheses.

Regression Weights				Estimate	S.E.	C.R.	P	Hypothesis
H1	FAS	←	BEFORE	−0.224	0.049	−4.597	0.001	Supported
H2	FAS	←	DURING	0.052	0.032	1.617	0.106	Not supported
H3	SUS	←	DURING	0.034	0.013	2.685	0.007	Supported
H4	AFTER	←	SUS	0.026	0.095	0.277	0.782	Not supported
H5	CFE	←	DURING	0.257	0.037	07.1	0.001	Supported
H6	AFTER	←	CFE	0.186	0.057	3.264	0.001	Supported
H7	AFTER	←	DURING	0.181	0.035	5.167	0.001	Supported

Source: Own processing according to the questionnaire survey.

AFTER was confirmed. Pandemic shopping has a weak positive effect on post-pandemic shopping, and SUS (0.026) and CFE (0.186) affect the first wave of COVID-19 (AFTER) shopping. So those for whom sustainability and circular fashion economy were important in the past will be even more important. In other words, customers in the future, precisely based on a COVID-19 pandemic, will care how the clothing is produced and used and will adjust their choice and, finally, their purchase. However, demographic variables (age, gender, and household size, place of residence, education, full H time/part H time study, and income) have no significant impact on AFTER. We need to comment on gender as a demographic variable, which is generally believed to have a significant effect on fashion shopping and by the fact that 77% of respondents are female, although we did not find any significant effect by gender. Detailed information is presented in Table 5.

Table 6. Mediation effects of SUS, CFE and FAS on DURING and AFTER.

Standardized Indirect Effects											
	DURING	*p*	SUS	*p*	CFE	*p*	BEFORE	*p*	FAS	*p*	AFTER	*p*
SUS	0	…	0	…	0	…	0	…	0	…	0	…
CFE	0	…	0	…	0	…	0	…	0	…	0	…
FAS	0	…	0	…	0	…	0	…	0	…	0	…
AFTER	0.072	0.005	0	…	0	…	0	…	0	…	0	…

Source: Own processing according to the questionnaire survey.

Table 7. Specific Indirect Effects.

Specific Indirect Effect	Estimate	*p*
DURING → CFE → AFTER	0.071	0.002
DURING → SUS → AFTER	0.001	0.954

Source: Own processing according to the questionnaire survey.

4.6. Mediation analysis

In this study, we verified the individual mediation effects between the individual variables. Table 6 describes the standardised indirect effects relationship among the constructs, which illustrates that the only statistically significant mediating effect is the variable BEFORE to the variable AFTER, *via* the variable SUS and CFE, and it is positive but very weak (0,072). The statistically significant mediating effect was not confirmed among other relationships. Therefore, we expect that Generation Z consumers who purchased during the first wave of COVID-19 pandemics will be affected in the future by the manner and conditions of buying during the pandemic, in part due to the influence of CFE. The entire results are presented in Tables 6 and 7.

5. Discussion

When developing the model, similar to Laato et al. (2020; Sharma et al., 2020), we expected that the variables of Fashion & Style (FAS), Sustainability (SUS), and attitudes towards Circular Fashion Economy (CFE) will be influenced by the shopping frequency before (BEFORE) the first wave of the COVID-19 pandemic and the shopping frequency during the first wave of the COVID-19 pandemic (DURING) and that (DURING) variable would impact the independent variable of Changes in Shopping Behaviour (AFTER), similar as result by (Ahmed, et al., 2020). The final sample of 589 responses for the analysis and the proposed conceptual model was tested using PLS-SEM to verify the set of hypotheses and the outcome of the structural model for the AFTER (Laato et al., 2020; Sharma et al., 2020). During the evaluation process of the measurement model, we confirmed that the reliability and validity of the collected data are within an acceptable range and can be used for the next analysis (Sharma et al., 2020). Furthermore, we evaluated the collinearity for both the inner and outer models to verify that there is no collinearity in the measurement model, and this confirms the compatibility with the measurement model. We confirm that intentions themselves do not contribute to changes in shopping behaviour during the first wave of COVID-19. Furthermore, the mediation effect of demographic variables is much smaller for age, household size, education, and income.

Moreover, we tested the relationship among the constructs and calculated the path coefficients using the bootstrapping approach. The hypotheses tested proved that the hypotheses H1, H3, H5, H6, and H7 are valid, and the measurement model can support the theoretical conceptual model. H1 expects that shopping before the first wave of COVID-19 pandemics (BEFORE) affected consumers interested in fashion and style (FAS). Customers who like fashion and style and who could shop and thus enjoyed this kind of hobby, albeit with a little negative effect. Similarly to the study by Becker-Leifhold (2018), studying interest in fashion and style, specifically renting services. H2 estimated that DURING affects FAS, which would mean that consumers who are interested in fashion and style could not shop and their hobby was influenced by this. Customers used older or borrowed clothes, which changed the general view of the area because they could not normally shop (Vladimirova et al., 2022). This hypothesis has not been confirmed, and we expect that customers interested in fashion have found other ways to satisfy their appetite for fashion during a pandemic. Similar to interest in fashion and style and the general acceptance of online shopping (Dharmesti et al., 2019). H3 was confirmed and although a very weak positive effect was found, we can say that shopping during a pandemic (DURING) affects the relationship to sustainability (SUS). H5 described a positive relationship between DURING and CFE, describing a positive influence of the first wave of COVID-19 on consumers' interest in the circular fashion economy, and it confirmed a previous study (Průša & Sadílek, 2019). Not only did the shopping barrier have to play an important role here, but also the influence of social networks, according to de Lenne and Vandenbosch (2017). Sustainable consumer behaviour has a significant influence on changes in shopping behaviour (consumers purchase less typically as confirmed previously) (Tey et al., 2018) or based on (Hamari et al., 2016) researching perceived sustainability and its impact on future behaviour. Hypothesis H7 confirmed the relationship between DURING and AFTER. Customers have been affected by the COVID-19 pandemic, and this experience may affect them in the future. This is both in terms of another form or method of shopping and, for example, consideration for shopping as such, similar to Deng et al. (2020) or similar to Sheth (2020). Hypothesis H4 was not confirmed. Sustainability (SUS) does not affect post-pandemic shopping (AFTER). However, H6 confirmed statistical significance. Circular fashion economy (CFE) affects pandemic shopping (AFTER), as well as if consumers are more interested in circular fashion economy and second-hand purchases, then they also purchase less fashion as stated by Gazzola et al. (2020), but this is the result of the opposite side of the spectrum than (Pogutz & Micale, 2011). Standardised indirect effects and specific indirect effects show that DURING affects changes in shopping behaviour after the first wave of COVID-19 (AFTER) through CFE. The specific indirect effect of CFE is 0.071. Customers shopping after the first wave of the COVID-19 pandemic will be affected not only by the pandemic as such but also by the effects of the increasing importance of the circular fashion economy. Therefore, (Eger et al., 2021), we expect that Generation Z consumers who decreased purchases or focused on sustainable consumption during the first wave of COVID-19 should purchase less and also look for sustainable fashion after the first wave of COVID-19. The relationship between DURING and AFTER *via* consumer income is not

significant in the model. Infers that the changes of consumers are not related to their income levels. Eventually, the entire testing confirms the conceptual model for the AFTER.

5.1. Theoretical contributions

The study has three main theoretical contributions. First, the study presents items and measures to predict changes in consumer behaviour during and after the COVID-19 pandemic influenced by sustainability, fashion and style, circular fashion economy and the frequency of purchases before the COVID-19 pandemic and the frequency of purchases during the COVID-19 pandemic. The model is unique and tested for Generation Z consumers, which have different patterns of consumer behaviour from previous generations of consumers. Thus, the study contributes to the literature on shopping behaviour before, during, and after the COVID-19 pandemic (Eger et al., 2021; Laato et al., 2020; Omar et al., 2021). Apart from (Eger et al., 2021), limited studies have explored findings in a central European country context.

Second, the combination of variables such as sustainability, fashion and style, attitudes towards the circular fashion economy, and its influence on shopping frequency before the COVID-19 pandemic and shopping frequency during the COVID-19 pandemic is rather novel. It confirms that changes in fashion consumer behaviour after the COVID-19 pandemic are most directly influenced by the interest in sustainability and shopping frequency during the COVID-19 pandemic could also be potentially influenced by impulsive shopping. This proposed model substantially adds to the evolving literature (Bocken & Short, 2021; Omar et al., 2021; Peluso et al., 2021; Ranjbari et al., 2021; Sandberg, 2021).

Lastly, this study focuses on a particular age cohort of consumers, Generation Z, and the model was established for the fashion market only, because of changes in consumer behaviour before, during and after the COVID-19 pandemic for other products (such as food products or online shopping in general) are already known (Beckers et al., 2021; Guthrie et al., 2021; Kumar & Shah, 2021; Sadílek, 2020). In general, studies investigating the influence of the COVID-19 pandemic on Generation Z consumer behaviour are very rare at the moment (Eger et al., 2021; Ozuem et al., 2021; Seabra et al., 2021; Zwanka & Buff, 2021)

The main direction for future research is focused on the question of whether consumers will change their shopping behaviour when the situation completely returns to the non-COVID-19 pandemic or if they continue to adopt new patterns of shopping behaviour. Therefore, it would be a great contribution to continue this research and measure how shopping behaviour will change back.

5.2. Managerial implications

The first managerial implication is that this research brings new information on how the COVID-19 pandemic influences the consumer behaviour of Generation Z in the fashion market. We can see that the majority of Generation Z in European countries have changed their patterns of consumer behaviour. Therefore, this could be valuable

information for marketers, non-profit organisations and government institutions, to see the exact changes and the factors that influenced them. It also enables retailers to formulate new strategies for new markets. The positive influence of the interest in sustainability and circular fashion economy on changes in shopping behaviour during COVID-19 is evident and fashion producers and retailers should react to this trend (Brydges, 2021). This also creates the potential for marketers to focus on promoting a sustainable fashion and for nongovernmental organisations to participate in educating consumers. Additionally, we expect a growing interest in circular fashion business models and sharing economy platforms (Elliott et al., 2020; Ranjbari et al., 2021) that enable reducing the amount of newly produced fashion. There is a potential to improve knowledge about the circular fashion economy and to help consumers understand that it can provide a successful solution to possible future crises. In general, for fashion retailers, there is an opportunity to use marketing and commercial communications to attract consumers' interest in fashion and style, sustainability, and circular fashion, and to promote products that fit these characteristics.

The limitation of this study is the sample structure consists of millennial respondents born between 1994 and 2000 and therefore does not cover older generations and age cohorts. The second limitation is the time range of this study. When conducting this research in September 2020, we did not expect that the third wave of the COVID-19 pandemic in Czechia will restrict the operation of physical stores and other services almost until May 2020. Then the variable of changes in shopping behaviour after the COVID-19 pandemic should be connected to the future without COVID-19 restrictions. The fourth limitation is the sample structure which consists of 77% women and 23% men. It does not represent the population however, it might reflect the interest and passion in fashion shopping that is more typical for women than men. Finally, the research was focused only on the fashion industry and is not generalisable to shopping for groceries or electronics.

6. Conclusions

In this study, we began an empirical analysis of changes in the fashion shopping behaviour of Generation Z consumers during and after the first wave of the COVID-19 pandemic. We used a conceptual model to examine the relationship between Fashion & Style (FAS), Sustainability (SUS), and attitudes towards the Circular Fashion Economy (CFE) and its impact on changes in shopping behaviour after the first wave of the COVID-19 pandemic. To do this, we collect data from Czech respondents ($n = 589$). Empirical results suggested that fashion-loving consumers shopped before the pandemic and enjoyed the hobby. At the same time, consumers found other channels they used to buy fashion during the pandemic. Shopping during a pandemic generally affects both the view of sustainability as such and the circular fashion economy. Customers used older or borrowed clothes, which changed the general view of the area, because they could not shop normally (Vladimirova et al., 2022). At the same time, this change in pandemic shopping will affect post-pandemic shopping. The topic of the circular fashion economy becomes an important argument for Generation Z consumers (perhaps even based on a pandemic) and this view can

influence (the method, form, and final selection of products) after the COVID-19 pandemic.

Disclosure statement

No potential conflict of interest was reported by the author(s).

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Appendix –Questions in the survey questionnaire

Constructs	Items	Question
SUS	SUS1	Before the first wave of the COVID-19, I tried to limit my fashion shopping.
	SUS2	Before the first wave of the COVID-19, I used to borrow clothes from friends, relatives, acquaintances, and / or professional clothing rentals.
	SUS3	During the first wave of the COVID-19, I tried to limit my fashion shopping.
	SUS4	During the first wave of the COVID-19 I like to repair my clothes.
	SUS5	My online fashion shopping changed during the first wave of the COVID-19.
	SUS6	During the first wave of the COVID-19, my relationship with the fashion you bought before her changed.
	SUS7	During the first wave of the COVID-19, I gained more control over myself as a fashion consumer.
	SUS8	During the first wave of the COVID-19, I focus on my personal growth instead of economic growth.
FAS	FAS1	Before the first wave of the COVID-19, fashion was essential to me.
	FAS2	Before the first wave of the COVID-19, I liked to dress in style.
	FAS3	Before the first wave of the COVID-19, I bought more fashion than I really needed.
	FAS4	During the first wave of the COVID-19, fashion was essential to me.
	FAS5	The frequency of borrowing fashion from my friends and family members increased during the first wave of the COVID-19.
FC	FC1	Before the first wave of the COVID-19, I tried to limit my fashion shopping.
	FC2	Before the first wave of the COVID-19, I knew how to change fashion (with friends, family, within a certain group, or otherwise).
	FC3	Before the first wave of the COVID-19, I liked to repair my clothes.
	FC4	During the first wave of the COVID-19, I tried to limit my fashion shopping.
	FC5	My relationship with fashion during the first wave of the COVID-19 pandemic has changed.
IS	IS1	Before the start of the first wave of the COVID-19, I bought the fashion without prior planning.
	IS2	Before the first wave of the COVID-19, I liked shopping in the second hand.
	IS3	During the first wave of the COVID-19, I buy more fashion than I really need.
	IS4	The frequency of borrowing fashion from my friends and family members changed during the the first wave of the COVID-19 pandemic.