

# Investigating the Change in Customers' Sustainable Consumption Behaviour after the Outbreak of COVID-19

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## Abstract

The crisis situation created by COVID-19 has changed the consumer behaviour. One of the most important behavioural changes among consumers is the trend in sustainable consumer behaviour. Companies can consider it an opportunity to attract customers. Therefore, this study investigates the effect of COVID-19 virus on sustainable consumption behaviour of customers in chain stores, by surveying customers' data in Iran. This research is a descriptive-survey type and a questionnaire tool has been used to collect data and measure variables in order to examine the research model. Statistical sample was selected by random sampling method from customers of chain stores in Tehran and the data were analysed using SmartPLS software. Findings showed that the COVID-19 virus has a positive, direct, and significant effect on individual, social, and situational factors of customers, and these factors also have a significant effect on attitudes, intentions, and ultimately, the sustainable consumption behaviour of customers. The results suggest that chain stores and their suppliers should increase attention, supply, and sales of sustainable consumer products.

**Keywords:** COVID-19, Sustainable Consumption Behaviour, Individual Factors, Social Factors, Situational Factors, Customer Decision-Making

## Introduction

The coronavirus first appeared in Wuhan, China, at the end of December 2019. According to data gathered by Johns Hopkins University, the outbreak has spread to over 185 countries, affected 110 million people, and killed 2.5

million people by February 2021 (Worldometer, 2020). The COVID-19 crisis, as a global disaster, has had a significant effect on the global economy's growth and is seen as a danger to the sustainability of companies all over the world (He & Harris, 2020; Wang, 2020). The consequences of this epidemic, spreading across the globe, are unavoidable.

Quarantine has become commonplace all over the world, especially in the European Union. There are restrictions on travel, a reduction in the amount of foreign travel and a pause in daily activities. Holding online business and training sessions has become routine, and in fact, all people, businesses, and professions are learning to adapt to reality, and new lifestyles and work. It may seem a bit repetitive to say that the corona outbreak has affected all aspects of human life, but the fact is that the growing effects of COVID-19 on the lives of global communities are leading people to explore the disease further. One of the topics that has recently come to the attention of researchers in the field of the new coronavirus is the traces of the consequences of the pandemic on the goals of sustainable development and the countermeasures of governments in line with the realisation of these goals. These days, the need to achieve the goals of sustainable development is felt more and more because their basic principles of increasing social participation, facilitating global access to public services, and building unity around the world are also very effective components in curbing the pandemic of COVID-19. In addition, sustainable development goals can help overcome the economic crisis caused by the spread of the virus and move the world in a green direction. Green management is the environmental performance of organisations, based on the participation

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of different groups, in order to minimise the damage to the environment caused by sustainable consumption and production. It leads to increased productivity, modified consumption pattern towards sustainability, recycling and management of solid waste, optimal use of resources in micro and macro level units, change in the direction of personal and organisational goals, a move towards social decentralising, and reduced harmful external factors in consumption and production.

The 2030 deadline for addressing significant economic and social environmental crises is set by the Sustainable Development Goals. Many of these objectives are related to responsible consumption, with 12 targets specifically addressing sustainable consumption and productivity (McKinsey, 2020). Sustainable consumption refers to the use of products, materials, and energy based on the principles of sustainable development. It is the saving of natural resources and energy that has the least impact on the environment. It is also related to minimising the use of substances and toxic substances. The pandemic of coronavirus (COVID-19) has drastically changed the outlook for sustainable consumption. For example, lockdowns around the world have led to lower oil consumption, where benchmark oil prices fell below zero for the first time in oil market history. Similarly, global consumption and demand for coal fell by 8%. However, the effects of COVID-19 on sustainable consumption in the future are not well understood.

Consumer behaviour is changing as a result of the global pandemic, with people around the world changing the way they live and shop. Many of them are eager to maintain their new habits (McKinsey, 2020). For many people, the economic effects of the current epidemic can create more fear, having an effect on their health. Declining incomes, changes in daily routines, and financial problems can all lead to increased conscious consumption, especially since many expect the effects of the pandemic to be long lasting (McKinsey, 2020). They have conducted consumer surveys in 45 countries since mid-March to understand the impact of COVID-19 on consumer feelings and behaviours; the consumption habits adopted by many during the COVID-19 pandemic show that citizens around the world have the desire and ability to make changes towards a more sustainable lifestyle. Yang (2020) also showed in a study that the outbreak of COVID-19 has led to a reduction in the consumption of animal meat products and the consumption of standard and sustainable

products. Larsen and Gustavson (2020) found in a study that companies were influenced by COVID-19 and were forced to change their marketing activities due to the changing consumer behaviour and be innovative in their activities. Hironen et al. (2020) stated in a study that the pandemic has disrupted food marketing systems, causing dramatic changes in the consumer's food basket.

This crisis can create a good opportunity for businesses to solve social and environmental challenges by recognising the changing consumer behaviour and adjusting their activities accordingly, to create a good reputation among customers. One of the most important issues that customers are more inclined to in this situation, and which has created a good opportunity for businesses, is the tendency towards sustainable consumption behaviour (SCB). For example, by advertising and filling the shelves with these products, stores can contribute to the health of society and future generations, and also gain popularity in the field of social responsibility. Hay and Harris (2020) have stated in a study that COVID-19 provides a great opportunity for businesses to turn to a more authentic CSR and help address global social and environmental challenges. Though a basic science paper has tried to include information about the impact of COVID-19 on people's wellbeing (e.g., Xu et al., 2020), the possible impacts on customers' behavioural habits have not been considered much and have yet to be fully investigated, and are not studied in terms of sustainable use. Policymakers, according to Cohen (2020), have to confirm that the coronavirus pandemic has an effect on the transition to more healthy consumption (Yang, 2020).

However, previous studies on COVID-19 have further addressed crisis management issues (Rao, Vemprala, Akello & Valecha, 2020; Stephens et al., 2020; Navarro et al., 2020; and Branicki, 2020), social responsibilities (He, & Harris, 2020; Aguinis, Villamor & Gabriel, 2020; Mao, He, Morrison, & Andres Coca-Stefaniak, 2020; and Huang & Liu, 2020), and marketing (Jiang & Wen, 2020; Habes, Alghizzawi, Ali, SalihAlnaser & Salloum, 2020; Lusk, Tonsor & Schulz, 2020; and Mende & Misra, 2020). In the field of consumer behaviour and shopping, little research has been done (Ben Hassen, El Bilali & Allahyari, 2020; Kantar, 2020a; Liang et al., 2020; Grashuis, Skevas & Segovia, 2020; and Attwood & Hajat, 2020). There have been limited studies on sustainable consumption behaviour, each focusing on a specific area. Research shows that, in particular, during the COVID-19

crisis, customers' buying behaviours, especially in the field of food, have changed dramatically (Kanter, 2020). This issue and the gaps in the researches on SCB have doubled the importance of examining changes in consumer behaviour in order to contribute to community health. Therefore, in order to satisfy customers, contribute to community health, and help the environment, this study was conducted to investigate the impact of COVID-19 on sustainable consumption behaviour in chain stores and provide practical suggestions in this area. Therefore, the question that is raised in this study and the answer we are looking for is: what effect does the prevalence of COVID-19 virus have on the sustainable consumption behaviour of customers in chain stores. The results and suggestions of this study are used as a success strategy for companies, especially the food industry companies, in satisfying customers in critical and competitive conditions of the COVID-19 pandemic. The results and suggestions of this study help different industries in recognising changes in consumer consumption behaviour, especially chain stores, in supplying products desired by customers in order to satisfy them; manufacturers (suppliers) to produce products according to consumer behaviour; authorities to plan for the expansion of sustainable consumption behaviour, especially in critical and competitive conditions, such as the outbreak of COVID-19; and the environment.

In the continuation of this manuscript, research literatures and hypotheses, conceptual model, research methodology, data and findings analysis, and discussion and conclusions are presented; finally, suggestions for future research and references are presented.

## Theoretical Development

### COVID-19

COVID-19 was introduced to the world with three characteristics: pandemic, incurable, and fatal. The prevalence of coronary heart disease has changed its status from an epidemic to a pandemic for some time. An epidemic is an increase in the prevalence of a disease over a period of time, while a pandemic is an increasing mutation in a region, country, or world.

Firms face crises as a result of natural disasters (Benson & Clay, 2004). In March 2020, the coronavirus was declared a pandemic by the World Health Organization (WHO),

and the first case was discovered in Sweden in February (Statista, 2020). The COVID-19 pandemic has triggered a series of developments that have resulted in a financial crisis. As customers remain at home and markets shut down due to the COVID-19 pandemic, many well-known brands in many sectors are likely to go bankrupt (Tucker, 2020). People are increasingly concerned with their health and wellbeing, causing significant shifts in their shopping habits and tastes (Wang et al., 2020). It is clear that a pandemic would cause these firms to reconsider their supply chains, to bring them closer to where they are required in order to avoid potential manufacturing stoppages (Donthu & Gustafsson, 2020). Although the outbreak of COVID-19 has placed obstacles in the way of achieving the goals of sustainable development, the spread of the virus has also had benefits for people in the cities and towns. Worldwide quarantines have led to significant reductions in carbon dioxide emissions in some parts of the world, temperatures have dropped significantly, and some researchers have argued that the short-term effects of COVID-19 outbreaks on environmental goals and biodiversity remain unclear, and have emphasised the continuation of economic activities without patterns of past environmental degradation.

### Individual Factors

Individual factors are indicators of each person that are related to internal characteristics and can affect many decisions and behaviours of the person. There are different factors in this study, such as personal value factors, age, gender, and knowledge, which have been examined as individual factors.

Personal principles are mostly examined in psychology, though they are examined in sociology, management, and political science as well (Wu, Zhou & Song, 2016). Gordon Allport was the first to incorporate the concept of personal beliefs into psychological study (Allport & Vernon, 1931). With his suggestion that values act as reference points for people to formulate beliefs and habits, Milton Rokeach re-energised value analysis. Personal principles are characterised as general, trans-situational, desirable goals that people use to guide their lives (Schwartz, 1992). Unpacking this term reveals their distinct characteristics, which set them apart from other core facets of the self (Roccas & Sagiv, 2010).

One of the reasons that scholars have been involved in knowledge is the assumption that greater knowledge is

linked to greater impact of attitudes on behaviour. This hypothesis has been confirmed by a number of tests (Wu et al., 2016). Age, educational status, wages, and the number of people living in a household are all variables that affect recycling activities, according to Sidique et al. (2010). Diamantopoulos et al. (2003) published a systematic study of six socio-demographic variables (age, marital status, gender, number of children, education, and social status), concluding that older people with more education are more likely to recycle. Teenage girls, in particular, appeared to have greater emotional feelings about environmental problems, though their dedication was no higher than that of boys. Consumers who behave in harmony with the climate, are involved in product recycling, and engage in environment-priority events, according to Tilikidou and Delistavrou (2008), are older citizens (Wu et al., 2016).

## **Social Factors**

Social factors are indicators that relate to the characteristics of society and the social conditions in which a person lives and it can affect a person's thoughts and actions. There are different types of these factors, such as culture, media and Internet penetration factors, reference groups, norm and social responsibility, which have been studied as social factors in this study.

Values and norms are significant influences on long-term customer behaviour (Stern, 2000). The evolving image of green consumption, according to Peattie (2010), is of a mechanism that is heavily driven by consumers' beliefs, norms, and habits, but is also highly fluid, dynamic, and context based (Wu et al., 2016).

The firms have to devote more resources to addressing social problems on these fronts, both during the pandemic and in the long term (UN.org, 2020). Customers and the general public will have higher expectations of leading brands, especially their favourite brands, in the current crisis, in terms of their attempts to fight the epidemic, because a company's initial and true CSR will strengthen its relationship with them. Throughout the crisis, consumers would think their brands were greedy if they helped their workers with money and clothing through the recession. In a crisis, the bond between the brand and the customer is stronger and lasts longer than during 'peaceful' days. As a result, the COVID-19 pandemic provides excellent ways for businesses to invest in their CSR plans and agendas (He & Harris, 2020).

Culture refers to people's beliefs about ethics, attitudes, and ideals in a society. Our identity and convictions about the meaning of life are influenced by our history. The unique or collective culture into which a person is born has an impact on how they think and act. Individualistic thinking and actions are not supported by those growing up in a "tight" (collective) society where laws are strictly enforced. Our expectations for social contact would rise if society had a more extroverted personality type (Gantt, 2020).

Deutsch and Gerard's (1955) propositions of informative or comparative effects are close to the reference group influence, although its meaning is not precise. As concluded in the Yale community studies (Hovland & Weiss, 1951), origins of high validity have a very significant role to play in defining conformity. An individual can use the knowledge reference category in two separate ways. One is to deliberately seek input from opinion makers or from a community with the appropriate expertise. Secondly, by analysing the actions of significant others, an individual makes an induction. The person attributes to the nature of the goods, the purchase or sponsorship of the product by an individual or a party, which is suggested by the attribution theory (Park & Lessig, 1977).

The media and the Internet, as intermediaries for communication, have provided access to global consumers, by providing information about retailers, their goods, and services. The interactive nature of the Internet allows retailers to have an active two-way communication with their customers, to make it easier for customers to make decisions and establish a one-on-one relationship with them. The Internet allows its users to see and order the product or service they want faster and more economically than any other medium. See your invoice, complete your transaction, and even pay for it (Liu, Marchewka, Lu & Yu, 2005).

## **Situational Factors**

Situational factors are the conditions that are created for a person and where the person buys under the influence of those conditions. There are different types of these factors, such as promotion factors, access and purchase location, sustainable purchase options, and policies, rules, and regulations, which have been examined as situational factors in this study.

Promotions (incentives) refers to the set of activities that companies do to provide good information about the value and desirability of the product to buyers, so that among the products available in the industry, the product offered by them is preferred (Kotler & Armstrong, 2010). A small and medium business must consciously and carefully combine promotion tools in order to create a balanced combination of these elements, a combination that makes it possible to achieve communication and marketing goals; so, promotion is a set of activities that businesses can use to inform, persuade, remind, and influence customers; businesses can use conventional promotion methods or use conventional methods in a new and innovative way (Hill, Piggott & Griffith, 2011).

The Carrington et al. (2010) model provides a structure for the conduct of intentions, in particular, the use of action plans as a mediator. The hope is that the purchasing condition would moderate the relationship between the purchase intentions and the creation of plans, as well as the relationship between plans and the PECB (Grimmer, Kilburn & Miles, 2016). If the findings approve of the expectations, the buying condition would affect both the suggested collaborations (Intent Plan and Plan-PECB) in such a way that a favourable situational context would facilitate the partnership and a negative situational context would undermine the relationship (Carrington et al., 2010).

Due to the role of consumers in determining the effects of sustainability during the stages of use and disposal of the product, their overall behaviour will strongly affect the sustainability performance of all products and services. For sustainability marketers, success depends on understanding consumer behaviour during the consumption process. Consumers respond differently to products and services that differ in terms of these dimensions, such as a person who chooses sustainable options out of habit in his daily consumption, when buying a complex product (Frank-Martin & Peattie, 2009).

Changing behaviour is important in addressing social issues (Warburton, Nicol & Bredin, 2006). To minimise student absenteeism, we need to find ways to inspire students to go to classes. Any legislative tools may be used by governments to alter their actions. In easier words, they involve financial motivation, inhibition and ruling, intelligence, campaigns, and even points to encourage improvement in government behaviour policy

tools, which provide real opportunities (Rogers & Feller, 2018).

## Customer Decision-Making

Customer decision-making has a specific process that ultimately leads to the selection and purchase of products. In this research, customers' attitudes, intentions, and behaviours during the decision-making process has been evaluated.

*Attitudes:* Different disciplines like business, psychology, and sociology focus more on customer attitudes (e.g. Byun & Jang, 2018) (Hwang & Lyu, 2020). How much an individual has a favourable or unfavourable behaviour assessment is the degree of Attitude to Behaviour. An optimistic mindset can result in greater determination in the performance of an operation (Lee, Zailani & Rahman, 2020). The phenomenon in this analysis is the strength of a person's sense of benefit or disadvantage in the purchase of renewable goods (Amaro & Duarte, 2015). Attitude is categorised into relative advantage, suitability, and complication for assessing attitudinal values. During distinguishing attitudes, they can be assessed across issues related to relative benefit, compatibility, market identity, and perceived harm. First, it would be weighed against the use of such renewable materials if it has a relative benefit. This is a construction of the apprehended expense and benefits to customers (Grimmer & Bingham, 2013). If a commodity gives customers more benefits than prices, it is optimistic. An optimistic mindset triggers higher intentions for the purchase of products (Amaro & Duarte, 2015). The further the notion of sustainable products suits their current ideals and lifestyle, the more favourable the trend in the case of sustainable products (Lee et al., 2020).

*Intentions:* For the individuals, possessing intentions means believing in the importance of what they want to do. Generally, objectives are not created on its own, yet lead to intention. What is organising this normality? How is it shown? The goal of an attempt is defined by the specification of the effort (I want to drink the water in this glass now; I desire to repeat my teachings next year; I want to help the fight against discrimination in my country; I intend to dance all the way to the grave; and so on). Secondly, tries not made that were not nullified, i.e., the operator did not wish to quit, indicate that the agent who had them was failing (though not strictly a fault). Ultimately, even forgotten or overridden purposes

can make the agent lose if their occurrence is because of a lack of determination, an insufficient desire to keep going, or other factors. There are times when providing a function without the assistance of any meaning in the object comes at a cost. When agents believe this is the case, they will believe that there is worth in the attempt itself (Raz, 2017).

## **Sustainable Consumption Behaviour (SCB)**

Sustainability was described by the World Commission on Environment and Growth as “development that meets the needs of the present without jeopardizing the ability of future races to meet their own needs”. It was described as “a structure that governs various priorities, the economic interests of corporations and the environmental interests of society” (World Commission on Environment and Development, as quoted in Hunt, 2012: p. 405) (Humphreys, 2014: p. 273). The scope of sustainability research has ranged from continent transition to human rights, supply chain management, and marketing. Sustainable marketing was described by Dam and Apeldoorn (1996: p. 46) as “marketing inside, and encouraging of, sustainable economic growth”. Sustainable consumption, which seeks to save the planet, is a central part of recent macro-marketing literature. It is clear that there is a transition from consumerism/traditional consumption to sustainable consumption. (Kilbourne, 2010). Present demand schemas are unsustainable, according to research, and has to be updated if civilisation wants to remain healthy and at current demographic levels (Marzouk & Mahrous, 2020).

Unsustainable consumption has spawned a slew of responses, including sluggish consumption campaigns and anti-consumerism. Slow consumption, according to Pookulangara and Shephard (2013), is described as movements that are not focused on time – as the term implies – but rather on wisdom that is aware of the needs of its stakeholders and the impact that development has on them and on ecosystems. They focus on consumption of environmentally renewable raw materials, effective waste and pollution-reduction technologies, tracking food flow across the supply chain, and applauding shoppers who understand the environmental and social consequences of their purchases. Anti-consumption, on the other hand, is both a practice and a mindset of opposition to consumption society, as the term suggests (Marzouk & Mahrous, 2020).

Idioms related to conceptualisations have been used in previous studies, like ecologically aware eating, green consumption, and pro-environmental practices (see Marzouk, 2019, for definitions of alternative terms for sustainable consumption). A majority of the current studies indicate that there are two forms of sustainable consumption: conservation behaviour (habitual SCB, voluntary simplicity, downshifting, or slack) and sustainable purchasing behaviour (energy efficiency). Although all forms of sustainable use are associated, since they are both energy-use mitigation strategies, there is agreement between writers and institutions on the first kind, conservation behaviour, which is the decreased habitual behaviours predestined to save energy that humans create without reflection, involving limited systemic changes (Marzouk & Mahrous, 2020). Sustainable purchasing behaviour, on the other hand, was described as a form of behaviour that typically includes long-term adjustments, technological and financial commitments, and takes more effort to carry out (Sharaf & Perumal, 2018; Yang et al., 2016). Ultimately, a majority of the literature on environmental purchasing practices has concentrated overall on green commodity sales (products exhibiting sustainable attributes).

In general, the focus of this research on sustainable consumption behaviour is on renewable resources, recycleable materials, low pollution, and health of consumer products. In this regard, Jiang et al. (2020) in their research entitled the effects of COVID-19 on the marketing and management of hotels, have expressed the perspective of the industry in the current situation. Researchers recommend that you go beyond the usual views on hotel hygiene and cleanliness, and that guests pay attention to the cleanliness of certain hotel surfaces and marketing.

Based on the theoretical foundations, background, issues, and objectives, the following hypotheses have been proposed for consideration in this study:

- H1: The prevalence of COVID-19 virus affects individual factors of customers.
- H2: The prevalence of COVID-19 virus affects social factors.
- H3: The prevalence of COVID-19 virus affects situational factors.
- H4: Individual factors of customers affect their attitude.
- H5: Social factors of customers affect their attitudes.

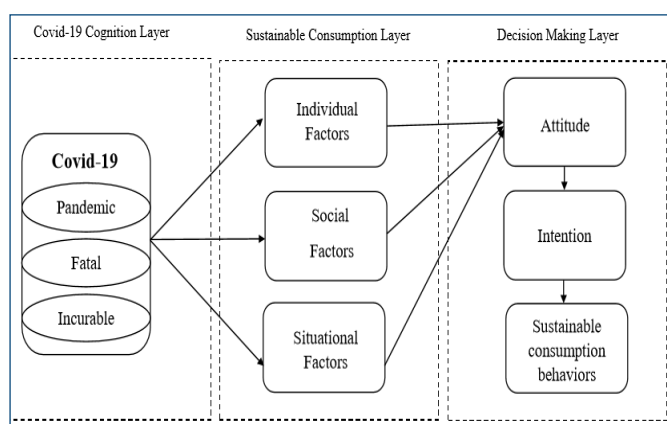
H6: Situational factors of customers affect their attitudes.

H7: Customers' attitudes affect their intention to buy.

H8: Customers' intention to buy has an effect on their sustainable consumption behaviour.

- In addition, according to the theoretical foundations, goals, and hypotheses of the research, the conceptual model of the research consists of three layers:
- COVID-19, along with its three characteristics, as a pandemic, incurable, and fatal, is in the cognitive layer of the model, to clearly prepare the human mind for this phenomenon.
- The next layer is called the sustainable consumption layer. The reason for this naming is the placement of three important factors affecting sustainable consumption or non-consumption. These factors include individual, social, and situational factors, respectively.
- The last layer is the decision-making layer regarding the occurrence or non-occurrence of sustainable consumption behaviour, in which the studied components include the process of attitude, intention, and behaviour.

Fig. 1 shows the conceptual model of the research; this process has been investigated as a process for sustainable consumption behaviour in the context of the COVID-19 crisis.



**Fig. 1: Conceptual Model of Research**

## Methodology

Considering the importance of issues related to customers' buying behaviour in critical situations, the purpose of this study is to investigate the effect of the prevalence

of COVID-19 on sustainable consumption behaviour in chain stores by surveying customers' data in Iran. This research is applied in terms of purpose and is among the descriptive-survey research that has been done cross-sectionally.

Data were collected using a questionnaire tool in the fall of 2020. There were 47 questions in the questionnaire, created by the researcher and designed using the opinions of experts in this field. The statistical population of this research consists of all customers of chain stores in Tehran. Statistical sample in this section, due to the large size of the statistical population and its unlimited size, was 385, using the Cochran's formula in the state of unlimited community, which were selected by random sampling method. In this regard, and to be more sure of the results, 1,056 questionnaires were distributed, of which 56 questionnaires were excluded from the analysis due to difficulties in completing and incomplete information, and 1,000 complete questionnaires remained for analysis. It was used to perform statistical analysis. Structural equation modelling method was used to analyse the data using SmartPLS software.

In this study, face validity, CVI index, and construct validity (factor) were used to evaluate the validity of the questionnaire. The content and appearance (face) validity of the questionnaire was confirmed using the opinion of experts and the CVI index was 0.808 with the opinion of the experts, which is more than 0.7, so the research questionnaire has good validity (Aghaei, Ghasemian Sahebi & Kordheydari, 2021). Further, the validity of the structure was evaluated using a confirmatory factor analysis model, the results of which are presented in Tables 2 and 3; they indicate the appropriate validity of the questionnaire. In order to evaluate the reliability of the questionnaire, Cronbach's alpha test was used. The results indicate that the questionnaire has high reliability; the total reliability of the questionnaire is equal to 0.893. The reliability of the variables is presented in Table 1. Structural equation models are usually a combination of measurement models and structural models. For this purpose, the composite reliability measurement and the mean value of the extracted variance are calculated. Values greater than 0.5 are used for the amount of variance extracted (an important convergence index) and greater than 0.7 is used for the composite reliability (Ghasemian Sahebi, Moshabaki & Khodadad Hosseini, 2018). The

calculated values for the research variables are described in Table 1.

$$CVI = \frac{\sum CVR}{\text{Number of remaining questions}} = \frac{38}{47} = 0/808$$

**Table 1: Questionnaire Specifications, Reliability Indices, and Convergent Validity Index**

Variables	Cronbach's Alpha	Composite Reliability	AVE	Indicators	No. of Questions	Cronbach's Alpha
COVID-19	0.883	0.811	0.541	Pandemic	2	0.853
				Fatal	2	0.804
				Incurable	2	0.895
Individual factors	0.802	0.805	0.630	Personal values	3	0.824
				Age	1	-
				Gender	1	-
				Knowledge	3	0.920
Social factors	0.749	0.729	0.529	Culture	3	0.737
				Media and Internet penetration	3	0.858
				Reference groups	3	0.793
				Norm and social responsibility	3	0.729
Situational factors	0.919	0.842	0.825	Promotions	3	0.891
				Access and purchase location	3	0.945
				Sustainable purchase options	3	0.866
				Policies, rules, and regulations	3	0.943
Attitudes	0.768	0.792	0.672	-	3	0.768
Intentions	0.896	0.831	0.688	-	3	0.896
SCB	0.923	0.776	0.599	-	3	0.923

According to Table 1, the Cronbach's alpha value for all variables and the whole questionnaire is more than 0.7, and therefore, the research questionnaire has good reliability. In addition, the composite reliability for all variables is more than 0.7 and the AVE index is more than 0.5, which indicates the confirmation of the reliability of the research questionnaire.

## Results

In this section, first the data distribution (normal or abnormal) is examined, then the confirmatory factor

analysis is done, and finally, the structural equation modelling and research hypotheses are investigated using Smart PLS software.

Different methods are used to test the normality of the data. In this study, to evaluate the normality of variables, Kolmogorov-Smirnov test was used, the results of which are presented in Table 2.

**Table 2: Investigating the Normality of Research Variables**

Variable	COVID-19	Individual Factors	Social Factors	Situational Factors	Attitude	Intention	SCB
Number	1000	1000	1000	1000	1000	1000	1000
Kolmogorov-Smirnov Test	0.224	0.305	0/168	0/139	0/113	0/276	0.127
Significance Factor (sig)	0.021	0.037	0.000	0.012	0.000	0.000	0.000

Where the significance number of the test is greater than the considered significance level (0.05), the null hypothesis (normal distribution of variables) is accepted. According

to the results of this test, the homogeneity of research variables has an abnormal distribution. Therefore, in the following, we use SmartPLS software and tests with

abnormal assumptions to confirm or reject the hypotheses (Mansouri Moayyed, Kordheydari & Ghasemian Sahebi, 2020).

Before entering the testing phase of research hypotheses and conceptual models, it is necessary to ensure the accuracy of measurement models of research variables. Therefore, the following models for measuring research variables are discussed. This was done by confirmatory factor analysis. The results of confirmatory factor analysis of all research variables show that all appropriate measurement models and all numbers and model parameters are significant. Given that all factor loads in all dimensions are greater than 0.5 and the mean of extraction variances (AVE) is greater than 0.5, there is a construct validity of convergent validity (Aghaei, Ghasemian Sahebi & Kordheydari, 2021). The results of factor analysis are presented in Table 3.

The results of confirmatory factor analysis show that all questions have the necessary validity to measure research variables. Criteria for approving or rejecting a question to measure a variable are significant numbers. If the significant number is greater than 1.96 or less than  $-1.96$ , it indicates that the question is appropriate for measuring the desired dimension. However, if the significant number is in the upper range, the question is not suitable for measuring the desired dimension. As can be seen, the variables and questions are in a good position in terms of factor load, significance coefficients, and other validity indicators.

In the following, we must test the hypotheses. SmartPLS software was used to evaluate the studied model. Non-parametric tests are also used to estimate standard errors and test hypotheses. The basic criterion for evaluating endogenous latent variables is the coefficient of determination,  $R^2$ . The values (0.67, 0.33, and 0.19) for  $R^2$  in PLS route models are high, medium, and weak,

respectively. Each path coefficient in the PLS structural model can be considered equivalent to a standardised beta coefficient in ordinary least squares regressions. COVID-19 variable is an exogenous latent variable and other variables are endogenous latent variables. The results in two modes of significant number and path coefficient are shown in the following figures. The path coefficient results also show the effect of one structure on another.

**Table 3: Factor Load Values and Significance Coefficients of Items**

<i>Variables</i>	<i>Indicators</i>	<i>Indicators Factor Load</i>	<i>Indicators Significance</i>
Individual factors	Personal values	0.512	5.345
	Age	0.692	23.198
	Gender	0.611	18.413
	Knowledge	0.573	7.528
Social factors	Culture	0.601	15.372
	Media and Internet penetration	0.579	12.168
	Social groups	0.642	20.371
	Norm and social responsibility	0.703	28.217
Situational factors	Encouragers	0.642	16.476
	Access and purchase location	0.747	33.651
	Stable shopping options	0.678	21.732
	Policies, rules, and regulations	0.695	29.596
Attitude	-	0.554	18.407
Intention	-	0.589	22.329
SCB	-	0.782	35.891
COVID-19	Pandemic	0.591	13.367
	Incurable	0.517	9.724
	Fatal	0.608	23.246

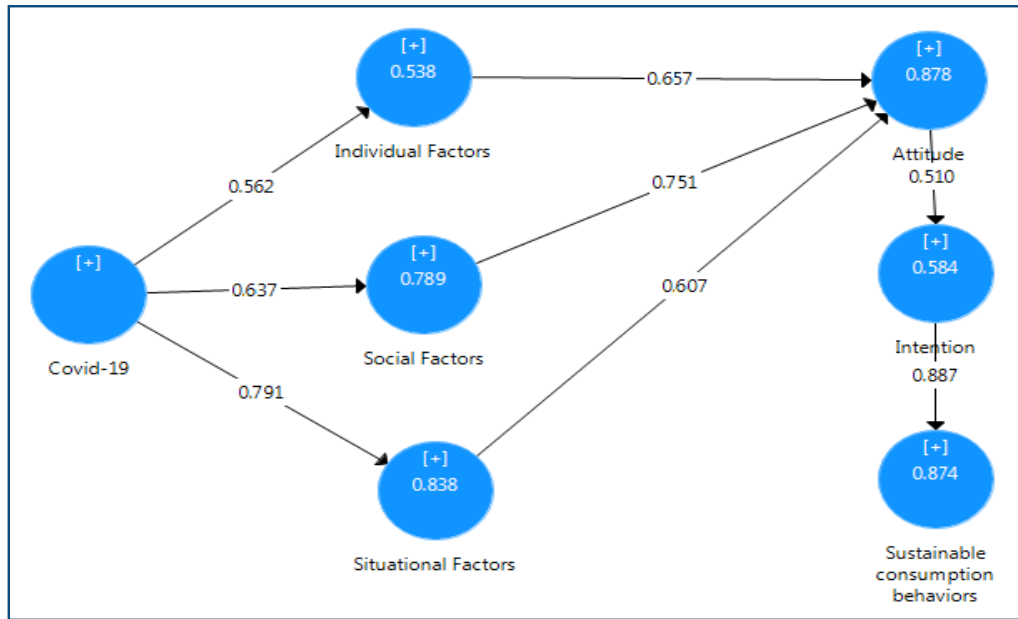


Fig. 2: Model in the Mode of Path Coefficients

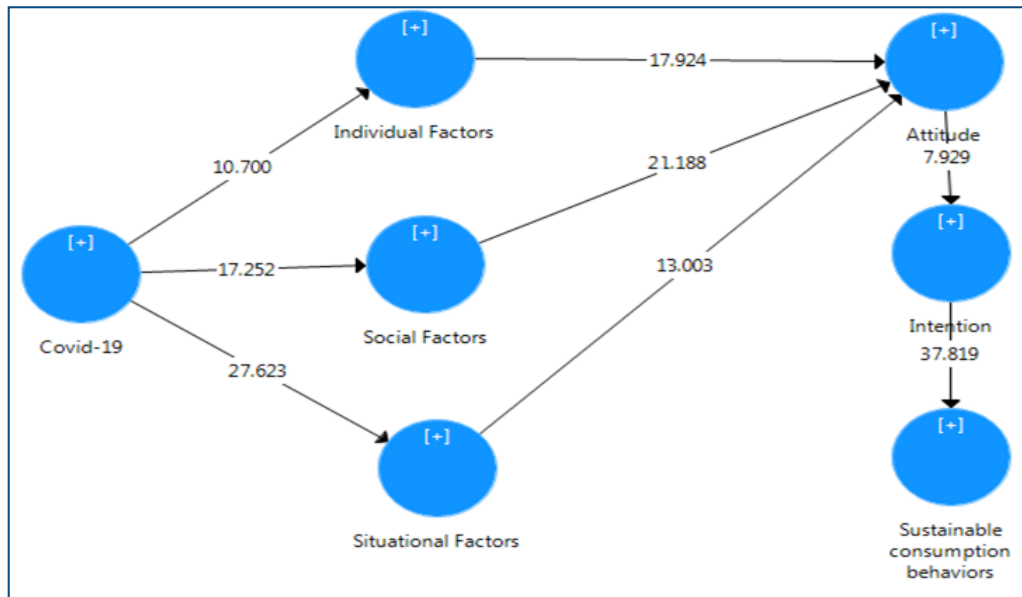


Fig. 3: Model in the Case of Significant Coefficients

The results of significant numbers indicate the effect of one structure on another structure and its value to confirm a hypothesis at the level of 0.05 should be outside the range of 1.96 to -1.96. Therefore, according to Fig. 3, the findings indicate that the significant coefficients obtained for the eight research hypotheses are out of range, and therefore, all research hypotheses have been confirmed. In fact, COVID-19 had a significant effect on individual, social, and situational factors of customers, and these factors also had a significant effect on customer attitudes,

and the effect of attitude on customers' intentions, and ultimately, the intention on customers' sustainable consumption behaviour has been significant.

The path coefficient results also show the effect of one structure on another. According to Fig. 2, the path coefficient obtained for all structures and the effect of each structure on the other structure is specified. Path coefficients for research structures show the direct and positive effect of structures on each other. The findings of the research hypotheses are summarised in Table 4.

**Table 4: Results of Models and Hypotheses**

Sr. No.	Hypotheses	Path Coefficient	Significance Coefficients	Result
1	The prevalence of COVID-19 virus affects individual customer factors.	0.562	10.700	Confirm
2	The prevalence of COVID-19 virus affects social factors.	0.637	17.252	Confirm
3	The prevalence of COVID-19 virus affects situational factors.	0.791	27.623	Confirm
4	Individual factors of customers affect their attitude.	0.657	17.924	Confirm
5	Social factors affect their attitudes.	0.751	21.188	Confirm
6	Situational factors affect their attitudes.	0.607	13.003	Confirm
7	Customers' attitudes affect their purchase intention.	0.510	7.929	Confirm
8	Customers' purchase intention has an impact on their sustainable consumption behaviour.	0.887	37.819	Confirm

### Goodness of Fit of Model

In this study, GOF index has been used to measure the fit of the structural model. The average subscription value represents the percentage of changes in the indices that are justified by the corresponding structure. The researchers reported an acceptable level for statistical sharing of more than 0.5 (Lee & Wu, 2007). In PLS modelling software, there is no standard for measuring the whole. Nevertheless, a general measure of good fit (GOF) has been proposed by Tenenhaus et al. (2005). This index considers both measurement and structural models; it is used as a measure to predict the overall performance of the model. This criterion is calculated as the geometric mean  $R^2$  and the mean subscription.

$$GOF = \sqrt{\text{Average}(AVE) * \text{Average } R^2}$$

**Table 5: Average Share of Latent Variables**

Latent Variables	AVE	$R^2$
COVID-19	0.541	-
Individual factors	0.630	0.537
Social factors	0.529	0.789
Situational factors	0.625	0.838
Attitude	0.672	0.878
Intention	0.688	0.584
SCB	0.599	0.874
GOF	0.627	

GOF values greater than 0.36 are very appropriate, moderate 0.25, and weak 0.1 (Cohen, 1988). The obtained GOF value of 0.627 indicates that the studied model has good predictive power and has a good fit. Therefore, the findings confirm the overall validity of the model. Further, the value of  $R^2$  is more than 0.5 and indicates the proper fit of the model.

### Discussion and Conclusions

The spread of the corona virus has affected all companies, customers, and the global community in some way, and has had a profound effect on the behaviour of businesses and humans. One of the most important effects of this virus has been a change in consumer behaviour. Consumer behaviour is changing as a result of the global epidemic. Recognising the changes in consumer behaviour has been raised as one of the most important issues in the world that is important for different types of companies. Among the important changes that have been considered in the consumption behaviour of customers in this period is the tendency towards sustainable consumption behaviour, in order to increase human health and help the health of the environment and pay attention to the next generation. Due to the novelty of the crisis, research in this area is limited and there are many gaps to identify changes in consumer behaviour and pay attention to various components of sustainable consumption. Considering the necessity of the subject and the importance of chain stores in the supply of household consumer products, the present study was conducted to investigate the effects of COVID-19 on sustainable consumption behaviour of customers in chain stores, and by surveying customers' data in Iran. In this regard, in this study, the effect of COVID-19 on individual, social, and situational factors of customers was measured, and then, the effect of these factors on customer attitudes, the intention of individuals, and finally, the effect of intention on sustainable consumption behaviour of customers was measured. In this regard, the data were collected using a questionnaire in the fall of 2020 and analysed using SmartPLS software.

The results and suggestions of this study helps:

- Different industries in recognising changes in customer consumption behaviour, especially chain

stores, to supply products desired by customers in order to satisfy them;

- Manufacturers (suppliers) in order to produce products according to consumer behaviour;
- Officials who plan for the development of sustainable consumption behaviour, especially in critical and competitive conditions like the outbreak of COVID-19, and who help the environment.

The findings of this study show that the research model is a good fit and the results are reliable. The results of the research findings are:

- The prevalence of COVID-19 virus with an effect value of 0.562 has a significant effect on individual factors of customers.
- The prevalence of COVID-19 virus with an effect value of 0.637 has a significant effect on social factors.
- The prevalence of COVID-19 virus with an effect value of 0.791 has a significant effect on situational factors.
- Individual factors of customers with an effect value of 0.657, have a significant effect on their attitudes.
- Social factors with an effect value of 0.751 have a significant effect on their attitudes.
- Situational factors with a value of 0.607 have a significant effect on their attitudes.
- Customers' attitude with a value of 0.510 has a significant effect on their purchase intention.
- Customers' purchase intention with an effect value of 0.887 has a significant effect on their sustainable consumption behaviour.

The results obtained in this study are generally in line with the results of the researches conducted by Hironen et al. (2020), Ben Hassen et al. (2020), Liang et al. (2020), Grashuis et al. (2020), and Attwood and Hajat (2020). They found that the prevalence of COVID-19 virus affects consumption and consumption behaviour and is more closely in line with the results of the research by Young et al. (2020), Cohen (2020), and Severo et al. (2020). In line with the results of the research hypotheses, the following practical suggestions are presented.

Based on the effect of the COVID-19 virus on social factors, it is suggested that chain stores strengthen the

online sales of their sustainable products and provide additional services, so that customers do not have to buy in person; through the media and with appropriate advertising in the field of sustainable products and charitable activities, and in line with social responsibilities, this will have a positive effect on the customers, encouraging them to buy sustainable products from their store. Many families are in a doubtful economic situation, and reducing profits and prices or providing gifts related to health along with food products and sending them to customers and consumers is another offer related to corporate social responsibility, to attract customers financially and emotionally. For example, in order to pay attention to customers and consumers and show concern for them, products such as antiseptic gels, masks, or industrial alcohols can be sent to customers. Another practical suggestion in this area is to offer promotions and discounts to different groups of society, especially medical staff.

Given the impact of situational factors on the COVID-19 virus crisis, it is suggested that chain stores attract customers by offering more incentives, such as price discounts and prizes on sustainable consumer products. In addition, by providing the products desired by customers, creating appropriate access for them, and providing various sustainable shopping options in the store, stores can attract customer satisfaction

Due to the influence of individual factors of customers during the COVID-19 crisis, it is recommended that chain stores offer their incentives and advertisements according to the age and gender of customers and according to their wishes. Stores can gain their trust by providing information about products and increasing customers' knowledge about sustainable consumer products.

Based on the effect of individual, social, and situational factors on customers' attitudes and the effect of attitudes on intention, and ultimately, the effect on customers' sustainable consumption behaviour, it is recommended that companies operating in the field of chain stores review and change their marketing campaigns. In fact, companies have to adapt to the conditions in this period and run campaigns and advertising activities that are suitable. What is needed for companies in this era is the development of contingency marketing programmes. Having accurate information from customers will help a lot in the type of reaction of the organisation. Information such as the type of purchases, the place of purchases, the

amount of change in the volume of purchases, customer sensitivities, and so on, are a great help to companies in developing appropriate marketing plans. By recognising customers, they can more easily provide the sustainable products they need. As the presence of customers and consumers in online areas has increased, it is recommended that companies enter these areas seriously. Therefore, one of the practical suggestions of this research is to develop connections with reputable online stores throughout the country and conclude sales contracts with them. Companies can also reduce their profits and offer discounts, especially on sustainable consumer products to customers in this period, lead customers to buy sustainable products, and also attract customer satisfaction and create a good reputation for themselves among customers.

Further, these companies should consider the health sensitivity of customers in the current situation in all their actions, and put the development of health culture at the forefront of their affairs in order to instill a proper perception of customers in terms of physical health and mental health. It is only natural that consumers should be concerned about health issues in the current context, and organisations should address these concerns in a variety of ways. Among these activities is observing all health steps to present the product to customers or consumers, and informing them about this issue through various media. Due to the fact that various laws and restrictions have been implemented in different parts of the country, it is suggested that according to the type of effects of this disease in different parts of the country, appropriate strategies should be developed based on the trends and behavioural changes in consumers. There should be necessary concentration in different geographical areas. Companies should create a positive attitude in the minds of customers with all these measures, as well as carrying out activities in the field of social responsibility and filling their store shelves with a variety of sustainable consumer products, so that customers intend to buy from the store. Companies should create the attitude of sustainable product purchase in the minds of customers, who will eventually buy and consume the products.

Researchers are advised to investigate the effect of COVID-19 on marketing changes or its effect on corporate social responsibility activities in future research due to changes in consumer behaviour. Further, they may examine the effect of COVID-19 in different industries separately. One of the limitations of this study is the

difficulty in collecting data in the context of COVID-19 virus and the lack of background in the field of studies.

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