



The Effect of Covid-19 on Sustainable Consumption Behavior in Chain Stores

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Abstract

Today, a critical situation is created by the Covid-19 virus, which has changed consumer behavior. One of the most important changes in this area is the trend towards sustainable consumption behavior that companies can use as an opportunity to attract customers. Therefore, this study examines the effect of the Covid-19 virus on the sustainable consumption behavior of customers in chain stores by examining customer 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. The statistical sample was selected by random sampling from customers of chain stores in Tehran and the data were analyzed using Smart PLS software. Findings showed that the Covid-19 virus has a 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 sustainable consumption behavior of customers. The results show that chain stores and their suppliers should increase attention, supply, and sales of sustainable consumable products.

Keywords: Covid-19, Sustainable consumption behavior, Individual factors, Social factors, Situational factors, Customer decision-making.

Introduction

The coronavirus first broke out in the last days of December 2020 in Wuhan, China. Data collected from Johns Hopkins University show that, the virus has spread to more than 185 countries, infected about 65 million people and killed about 1.5 million people (Worldometer, 2020). COVID-19 crisis as a worldwide catastrophe is considered a threat to the survival of companies around the world. The effects of this disease, which has affected the whole world, are inevitable (He & Harris, 2020; Wang *et al.* 2020). 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 of daily activities (Ben Hassen, El Bilali & Allahyari, 2020). 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 (Severo, De Guimarães & Dellarmelin, 2021). 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 (yang, 2020). So that it has involved many individual, social and living conditions of individuals. One of the topics that has recently come to the attention of researchers in the field of new coronavirus is the traces of the consequences of the pandemic of Covid-19 disease on the goals of sustainable development and the countermeasures of governments in line with the realization of these goals (Assadourian, 2010). 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 (Marzouk & Mahrous, 2020). 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 effective and efficient use of all material and human resources to guide and control the organization to achieve environmental goals through organization and planning, one of the most important pillars of which is to pay attention to sustainable production and consumption (Peattie, 2010). In such a way that it leads to increasing productivity, modifying the consumption pattern towards sustainability, recycling and management of solid waste, optimal use of resources in micro and macro level units, changing the direction of personal and organizational goals, moving towards social decentralize and reduce harmful external factors in consumption and production (Wu, Zhou & Song, 2016).

The sustainable development goals set the year 2030 as the target for cope with major global and social environmental crises. A significant feature of these goals is that many relate to accountable consumption, with goal 12 obviously relating to sustainable consumption and production (Liang *et al.* 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 minimizing the use of substances and toxic substances (Hwang & Lyu, 2020). The pandemic of coronavirus (COVID-19) has drastically changed the outlook for sustainable consumption. However, the effects of COVID-19 on sustainable consumption in the future are not well understood (Jiang & Wen, 2020).

Consumer behavior is changing as a result of the global epidemic, people around the world changes the way they live and shop. Many of them are eager to maintain their new habits (Craven, 2020). This conclusion was reached by McKinsey. They have conducted consumer surveys in 45 countries since mid-March to understand the impact of COVID-19 on consumer feelings and behaviors, and the consumption habits adopted by many during the COVID-19 epidemic show that citizens around the world have the desire and ability to make changes to more sustainable lifestyles (Cohen, 2020). Yang (2020) also showed in a study that the outbreak of Covid-19 virus has

led to a reduction in the consumption of animal meat products and the consumption of standard and sustainable products. Larsen and Gustavsson & Larsson, (2020) found in a study that companies were influenced by Covid-19 and were forced to change their marketing activities by changing consumer behavior and using innovation in their activities. Hirvonen *et al.* (2020) stated in a study that the epidemic of the virus has disrupted food marketing systems and dramatic changes in the consumer food basket.

This crisis can create a good opportunity for businesses to solve social and environmental challenges by recognizing the changing consumer behavior and adjusting their activities accordingly, to create a good position among customers. One of the most important issues that customers are more inclined to in this situation and has created a good opportunity for businesses, is the tendency towards sustainable consumption behavior. 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. He and Harris (2020) have stated in a study that Covid-19 disease provides a great opportunity for businesses to turn to a more authentic CSR and help address global social and environmental challenges. Previous research has attempted to provide results for the effect of COVID-19 on human health (e.g. Xu *et al.* 2020), but the extent to which the prevalence of Covid-19 virus on consumer consumption, and in particular on sustainable consumption behavior, is It has not been studied and there is still a research gap in this area. Cohen (2020) argued that the impact of the Covid-19 virus on sustainable consumer consumption should be accepted.

However, previous studies on Covid-19 have further addressed crisis management issues (Rao *et al.* 2020; Stephens *et al.* 2020; Navarro *et al.* 2020; Branicki, 2020), Social responsibilities (He & Harris, 2020; Aguinis, Villamor & Gabriel, 2020; He *et al.* 2020; Huang & Liu, 2020), marketing (Jiang & Wen, 2020; Habes *et al.* 2020; Lusk, Tonsor & Schulz, 2021; Mende & Misra, 2021), and in the field of consumer behavior and shopping, little research has been done (Ben Hassen, El Bilali & Allahyari, 2020; Kantar, 2020a; Liang *et al.* 2020; Grashuis, Skevas, & Segovia, 2020; Attwood & Hajat, 2020). There have been limited studies on sustainable consumption behavior, each focusing on a specific area. Research shows that, in particular, during the Covid-19 crisis, customers' buying behaviors, especially in the field of food, have changed

dramatically (Kantar, 2020b). This issue and the gaps in the background of research on sustainable consumption behavior have doubled the importance of examining changes in consumer behavior 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 disease on sustainable consumption behavior in chain stores and provide practical suggestions in this area. Therefore, the question that is raised in this study and we are looking for an answer is: What effect does the prevalence of Covid-19 virus have on the sustainable consumption behavior of customers in chain stores. The results and suggestions of this study are used as a success strategy for companies, especially food industry companies, in satisfying customers in critical and competitive conditions of the pandemic of Covid-19 virus. The results and suggestions of this study, to help different industries in recognizing changes in consumer consumption behavior, especially chain stores to supply products desired by customers in order to satisfy them, manufacturers (suppliers) to produce products according to consumer behavior, authorities are used to plan for the expansion of sustainable consumption behavior, especially in critical and competitive conditions, the outbreak of Covid-19 virus and helping the environment. In the continuation of this manuscript, research literatures and hypotheses, conceptual model, research methodology, data and findings analysis, discussion and conclusion are presented and finally suggestions for future research and references are presented.

Theoretical development

Covid-19

Covid-19 was introduced to the world with three characteristics: pandemic, incurability and fatal. The prevalence of coronary heart disease has changed from epidemic to 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.

Natural accidents cause crises to firms (Benson & Clay, 2004). The coronavirus prevalence was officially announced as a pandemic in March 2020 (WHO, 2020), and in February the first person was detected in Sweden (Statista, 2020). The Covid-19 pandemic has caused different events that have cause an economic problem. The COVID-19 pandemic is likely to cause bankruptcy for many well-known brands in many industries as consumers stay at home

and economies are shut down (Tucker, 2020). People are showing great concern about health and safety, which has resulted in fundamental changes in their preferences and purchasing patterns (Wang *et al.* 2020).

After pandemic outbreak we have become more caution and protecting. We save resources in order to be prepared if unaccepted happenings come true again. Countries are starting to stock food, equipment, and medicine or prepare to produce them locally for larger and global firms is essential to have trusty and stable supply chains, it is obvious that pandemic will make these firms think again about their supply chains to move supply chains closer to where they are needed in to protect the stop of production in the future. Furthermore, authorities said that people from other countries would be dangerous because they may carry the virus. A closed border shows that the fulmination is from the outside and, international flights would not be preferable (Donthu & Gustafsson, 2020).

Although the outbreak of Covid-19 disease has placed obstacles in the way of achieving the goals of sustainable development but the spread of the virus has also had benefits for cities and townspeople. Worldwide quarantines have led to significant reductions in carbon dioxide emissions even in some parts of the world, temperatures have dropped significantly however, and some researchers have argued that the short-term effects of Covid-19 outbreaks on environmental goals and biodiversity remain unclear, and have emphasized 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 behaviors of the person. There are different factors in this study, personal value factors, age, gender and knowledge as individual factors have been examined.

Each member involved in the purchasing decision-making process has their own personal motivations, mental perceptions, and preferences (Aghaei, Ghasemian Sahebi & Kordheydari, 2021a). Individual factors are influenced by age, income, level of education, professional identity, personality and risk-taking (Goli *et al.* 2021). Buyers themselves also have different ways of shopping. Younger, more educated buyers may want to scrutinize the various offers before making any decisions

about choosing a seller. There are other experienced buyers who skillfully pit sellers against each other to make a good deal (Ghasemian Sahebi, Moshabaki & Khodadad Hosseini, 2018). Personal values are commonly studied in psychology, although they are also studied in other fields, including sociology and management (Wu, Zhou & Song, 2016). The structure of personal values was introduced by Vernon & Allport (1931) in psychological research. Milton Roccas added new impetus to research by suggesting that values are the reference points that people use to formulate attitudes and behaviors. Personal values are a central content aspect that is distinct from other aspects, such as characteristics, motivations, goals, or attitudes (Schwartz, 2012). Everyone's personal values are one of the most important characteristics and traits that can greatly affect his life. Because it is obvious that when a person has something valuable for him, he does his best to make it work properly or not to be trampled on; So it can be said that it is a kind of guide and guide for people in life (Roccas & Sagiv, 2010).

One of the most important reasons for researchers' interest in this knowledge is that for years it was assumed that increasing knowledge is associated with a greater impact of attitudes on behavior. Numerous studies have confirmed this hypothesis. For example, Kallgren & Wood (1986) assessed attitudes toward environmental protection and assessed attitude-related knowledge using an open-ended knowledge cataloging task. They found that attitudes based on high levels of knowledge were more predictive of environmentally related behaviors than attitudes based on low levels of knowledge. Similarly, Davidson, Schaffer & Saron (1985) found that intentions are better predictors of behavior when they are based on high amounts of knowledge than when they are based on low knowledge (Wu, Zhou & Song, 2016).

Sidique, Joshi & Lupi (2010) confirmed the impact of demographic factors on individuals' recycling efforts. Diamantopoulos *et al.* (2003) conducted a comprehensive study of six socio-demographic variables and found that older people were more inclined to protect the environment and that adolescent girls were also more interested in the environment. Tilikidou & Delistavrou (2008) also found a direct relationship between people's interest in the environment and age and desire to preserve the environment (Wu, Zhou & Song, 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 many of a person's thoughts and actions. There are different types of these factors that in this study, culture, media and Internet penetration factors, reference groups, norm and social responsibility have been studied as social factors.

Self-image is a person's description of himself; That is, the idea that a person has of himself and has a vital aspect for him (Fereshteh, Rahil & Ali, 2020). This self-image is instructive and everything a person knows about himself comes from his past experiences, among which social experiences are more important (Aghaei, Ghasemian Sahebi & Kordheydari, 2021b). Values and norms are important factors that can influence sustainable consumer behavior (Stern, 2000). Peattie (2010) found in a study that green and sustainable consumption is influenced by people's values and norms, but this relationship is complex (Wu, Zhou & Song, 2016).

Most of these explanations reflect the fact that in developed countries there is still a higher level of inequality in wealth, health, education, etc., and these factors provide opportunities for CSR. Companies need to focus their efforts more on addressing social issues on these fronts during the epidemic as well as in the long run (UN News, 2020). A company's core and credible CSR builds a stronger connection between customers and the general public, as they create stronger expectations of leading brands, especially their favorite brands, in the current crisis, given their anti-virus efforts. During the crisis, consumers feel proud of their brands, which help their employees, offer their money and equipment during the crisis. The relationship between the brand and the consumer in tears is more important and lasting than "relaxing" times. Thus, the Covid-19 pandemic provides good opportunities for companies to engage with their CSR strategies and agenda (He & Harris, 2020).

Belief in the morals, behavior, and values that people in society have is a culture. Our culture influences our identity and our beliefs about the nature of life. The unique or collective culture in which a person is born influences and influences an individual's beliefs and behaviors. For example, a person growing up in a "compact" (collective) culture, where the rules are strictly enforced, does not support individualistic thinking or behavior. If culture creates a more extroverted personality style, our expectations for social interaction will increase. In addition, assertive behavior emerges from individualistic cultures. Self-

esteem increases when the general population encourages these group behaviors and exchanges more ideas (Valley News, 2020).

Situational factors

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

Promotions (incentives) are a set of activities that companies do to provide good information about the value and desirability of a product to buyers, so that among the products in the industry, the product that is offered for their purchase (Kotler & Armstrong, 2010). A small and medium-sized business must consciously and carefully combine advertising tools to create a balanced combination of these elements, a combination that makes it possible to achieve communication and marketing goals, so advertising is a set of activities to inform, persuade, Reminders and affected businesses can use conventional methods to promote or use conventional methods in a new and innovative way. They can also take advantage of innovative and entrepreneurial promotion approaches tailored to their structure, including verbal communication, which is a very powerful tool in promoting product sales (Hill, Piggott & Griffith, 2001).

This study examines a situational effect on the intention to purchase environmentally friendly products in actual purchasing behavior. Carrington, Neville & Whitwell (2010) Model provide a framework for how intentions lead to behavior, specifically using intentional execution programs as a mediator. The buying situation is expected to moderate the relationship between purchase intention and the formation of programs, as well as the relationship between programs and the PECB (Grimmer, Kilburn & Miles, 2016). If the results confirm expectations, the buying situation affects each of the proposed relationships (PECB) in such a way that a positive situational context facilitates the relationship and a negative situational context weakens the relationship. The scope of situational contexts is very wide because buying situations can be very different, just as the general environment in which buying behavior occurs can be different (Carrington, Neville & Whitwell, 2010). Given the role of consumers in determining the effects of sustainability during the stages of use and disposal of the product, their overall behavior strongly affects the sustainability

performance of all products and services. For sustainability marketers, success depends on understanding consumer behavior during the consumption process. Consumers' responses to products and services that differ in terms of these dimensions are different. A person who, out of habit in his daily consumption, chooses sustainable options when buying a complex product. Valuable items that are not purchased frequently (for example, a house) may not behave similarly (Frank-Martin & Peattie, 2009).

Behavior change is essential to deal with social problems. For example, consuming less sugar and fat and eating more plums is the key to good health (Warburton, Nicol & Bredin, 2006). To reduce student absenteeism, we need to find ways to motivate students to go to school. Some policy tools can be used by governments to change behavior. Simply put, these include financial incentives, deterrence and judgment, information, campaigns, as well as concessions. To stimulate change in government behavior, policy tools offer 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 behaviors of the decision-making process has been evaluated.

Attitudes: Attitude is a practical concept in social psychology. We have particular opinions about the objects, people, and thoughts that come from knowing about them, how we feel about them, and our desire to do something about them (Hwang & Lyu, 2020). Such opinions often even determine how we deal with those objects, people, or thoughts. host. The combination of cognitions, feelings, and readiness to act on a certain thing is called a person's attitude toward that thing (Lee, Zailani & Rahman, 2020). Attitude is a lasting system that includes a cognitive element, an emotional element, and a desire to act. The cognitive element includes a person's beliefs about an idea or object (Amaro & Duarte, 2015). The emotional element is that the type of emotional feeling is usually related to our beliefs, and the tendency to act in order to be ready to respond in a certain way (Grimmer & Bingham, 2013). Attitudes are the mental characteristics of individuals that have the characteristics of the social and physical world and are acquired through experience and are the result of teaching and learning (Dearing & Cox, 2018). Some researchers have identified the following

four main factors in the development of attitudes: what satisfies personal needs, obtaining information about a particular subject or object or person, group affiliation, and individual personality (Lee, Zailani & Rahman, 2020). A positive attitude causes higher intentions for product purchasing. For this reasons in the study, adaptability is the extent where purchasing sustainable products fits their current value, priority, and necessity. The more the idea of sustainable products fits their going values and lifestyle, the more positive the tendency would be towards sustainable product (Amaro & Duarte, 2015). Therefore, consumers' attitudes may affect their intention to buy and ultimately their behavior.

Intentions: For people, having intentions involves belief in the value of what they want to do. Normally purpose, are not formed for themselves, but cause the intention Grimmer & Bingham, 2013). The intention to buy a particular product as a good predictor is the actual behavior in buying the product recognized by actual customers. Purchasing intent is used to identify the possibility of buying goods over a period of time (Hwang Lyu, 2020). From a consumption process perspective, the intention to buy is a general term, including pre-purchase decisions, on-site experience and evaluations, and post-purchase behavioral intentions that may be influenced by consumers' attitudes about being valuable or worthless. Value leads to the intention and behavior of the purchase, and if it is worthless, it is abandoned (Raz, 2017).

Sustainable consumption behavior (SCB)

The term sustainable consumption has been formed with the aim of reducing the consumption of resources and energy to achieve less waste production and more recycling of consumables, and indicates the consumer's priority to buy green and healthy products (Aghaei, Sahebi & Kordheydari, 2021a). The World Commission on Environment and Development defines sustainability as "development that meets the needs of the present without addressing the ability of future races to meet their own needs" (Brundtland, 1987). Has been described as "a framework that governs the various interests, economic interests of companies and the environmental interests of society" (Humphreys, 2014). Sustainability has been studied in the classification range from continental change to human rights, supply chain management and marketing. The concept of sustainable behavior, which uses an inseparable approach to the past, including

individual and group actions aimed at the rational use of natural resources, ensures the balance between the individual and nature, and includes energy savings and balance in the use of natural resources with The goal is to achieve high levels of economic, political, social and environmental welfare (Viswanathan *et al.* 2014). Therefore, according to the issues raised, it is necessary to identify the factors affecting the occurrence of sustainable behavior, consumer behavior is organized in a specific framework and promote environmental thinking and culture and sustainable consumption behavior among individuals in society to address environmental problems (Shapiro, 2012). Increasing and the effects of abuse on the mental and physical health of human beings to be eliminated (Kilbourne, 2010). Research shows that current consumption patterns are unsustainable and need to be changed in order for society to remain stable and at the current population level. Many measures have evolved as a result of unsustainable consumption, such as slow consumption, and anti-consumerism. On the other hand, anti-consumption, as the term implies, is both an activity and an attitude of resistance to a culture of consumption (Cherrier, 2009; Marzouk & Mehros, 2020). Previous research has used more terms such as environmental conscious consumption, green consumption, and pro-environmental behaviors that have very similar meanings (see Marzouk, 2019 for definitions of alternative terms for sustainable use). Most of the present literature shows that the types of sustainable consumption are two-part, namely: protective behavior (typical SCB, optional simplicity, reduction or slack), and sustainable purchasing behavior (energy efficiency). There is agreement between the author and the organizations on both types of sustainable consumption, while they are related because both are energy reduction techniques. Is destined. No reflection, while requiring minimal structural adjustments (Marzouk & Mehros, 2020). The second type, sustainable buying behavior, has been described as a type of behavior that usually involves long-term changes, technical and financial investments, and requires more effort to do (Lesic *et al.* 2018; Sharaf & Perumal , 2018; Wooliscroft, Ganglmair-Wooliscroft, & Noone, 2014). Finally, most research on sustainable purchasing behaviors focuses on purchasing green products in general (products that exhibit sustainable characteristics). In general, the focus of this research on sustainable consumption behavior is on renewable resources, recyclable materials, low

pollution and health of consumer products. In this regard, Jiang & Wen (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 pay more attention to marketing.

Based on the theoretical foundations, background, issue 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 effect on their sustainable consumption behavior.

Also, according to the theoretical foundations, goals and hypotheses of the research, the conceptual model of the research consists of three layers:

1. Covid-19, along with its three characteristics, epidemic, deadly and incurable, is in the cognitive layer of the model to clearly prepare the human mind for this phenomenon.

2. 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

3. The last layer is the decision-making layer regarding the occurrence or non-occurrence of sustainable consumption behavior, in which the studied components include the process of attitude, intention and behavior.

Figure 1 shows the conceptual model of the research that in the present study, this process has been investigated as a process for sustainable consumption behavior in the context of the Covid-19 crisis.

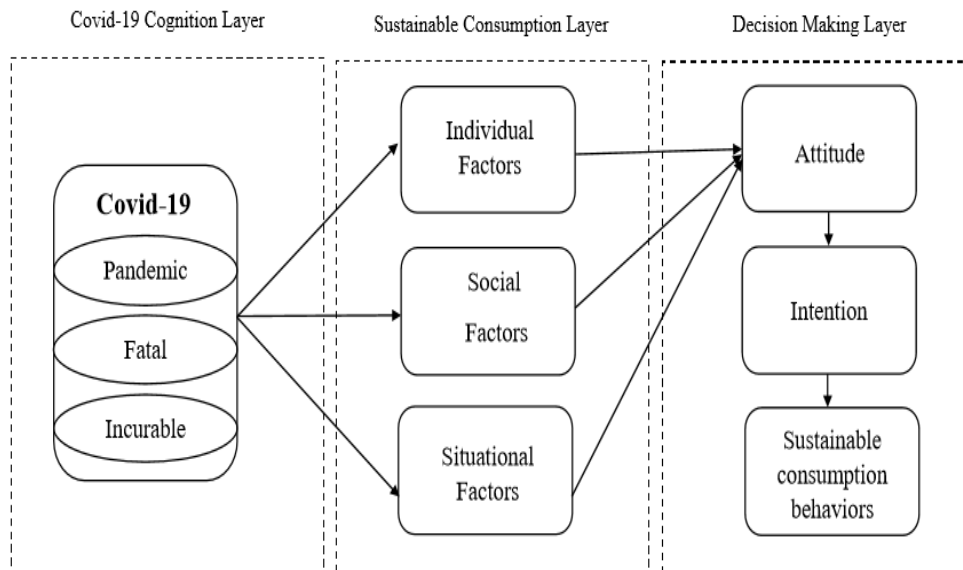


Figure 1. Conceptual model of research

Methodology

Considering the importance of issues related to customers' buying behavior in critical situations, the purpose of this study is to investigate the effect of the prevalence of Covid-19 disease on sustainable consumption behavior in chain stores and 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. The questions of the questionnaire were 47 questions that were made 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, 385 people using the Cochran's formula in the state of unlimited community, which were selected by random sampling method, samples were selected. In this regard, and to be more sure of the results, finally 1056 questionnaires were distributed, of which 56 questionnaires were excluded from the analysis due to difficulties in completing and incomplete information, and 1000 complete questionnaires remained for analysis, of which It was used to perform statistical analysis. Structural equation modeling method was used to analyze the data using Smart PLS software (Aghaei, Ghasemian Sahebi & Kordheydari, 2021b). In this study, face validity, CVI index and construct validity (factor) were used to evaluate the validity of the questionnaire (Aghaei, Sahebi & Kordheydari, 2021c). 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 experts, which is more than 0.7, so the research questionnaire has good validity. Also, the validity of the structure was evaluated using a confirmatory factor analysis model the results are presented in Tables 2 and 3 and 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; So that the total reliability of the questionnaire is equal to 0.893. The reliability of the variables is presented in the table below. 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. The calculated values for the research variables are described in the table below.

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

Table 1. Questionnaire specifications, reliability indices and convergent validity index

Variables	Cronbach's alpha	Composite reliability	AVE	Indicators	Num 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

Variables	Cronbach's alpha	Composite reliability	AVE	Indicators	Num of questions	Cronbach's alpha
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. Also, 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.

In this section, first the data distribution (normal or abnormal) is examined, then the confirmatory factor analysis done and finally the structural equation modeling 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 the table below.

Results

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.

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. 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. But 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.

Table 3. Factor load values and significance coefficients of items

Variables	Indicators	Indicators factor load	Indicators Significance
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

In the following, we must test the hypotheses. Smart PLS software was used to evaluate the studied model. Nonparametric 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. Each path coefficient in the PLS structural model can be considered

equivalent to a standardized 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.

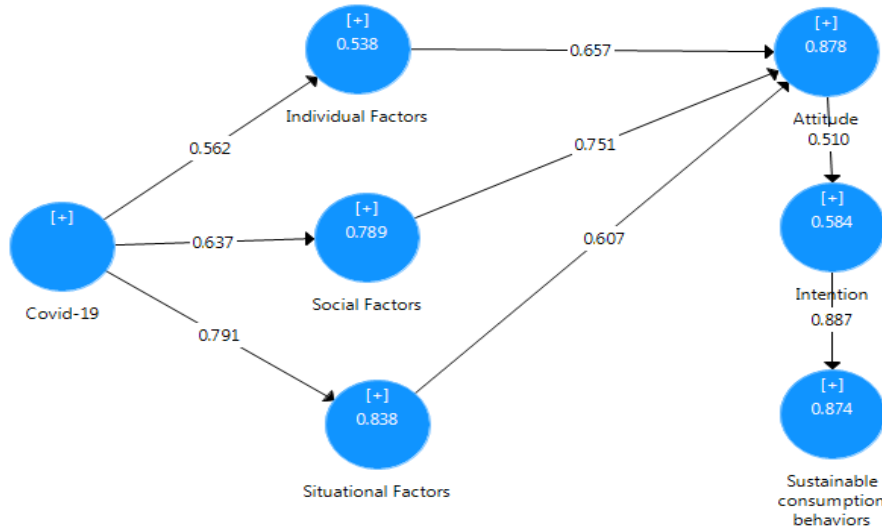


Figure 2. Model in the mode of path coefficients

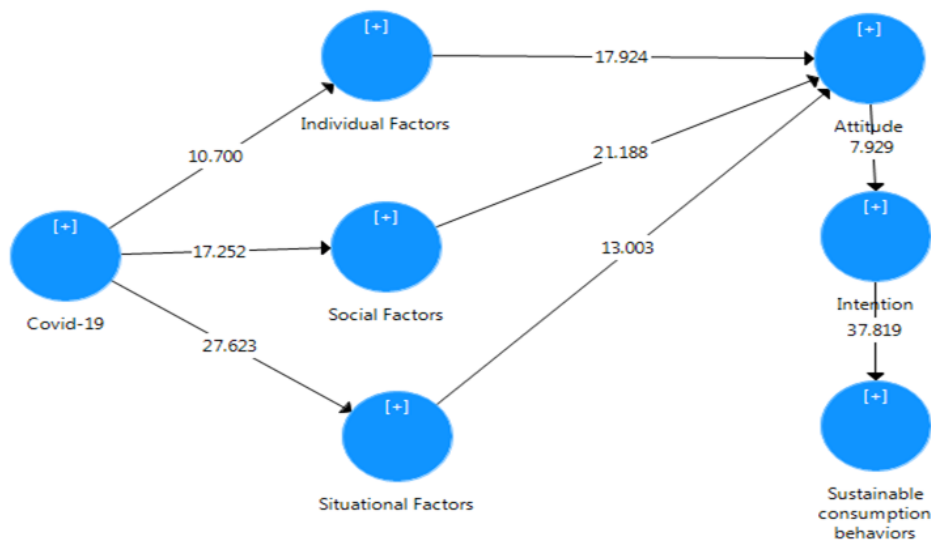


Figure 3. Model in the case of significant coefficients

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 Figure 3, the findings indicate that the significant coefficients obtained for the 8 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 intention on customers' sustainable consumption behavior has been significant.

The path coefficient results also show the effect of one structure on another. According to Figure 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 summarized in Table 4.

Table 4. Results of models and hypotheses

	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 impact on their sustainable consumption behavior.	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 (Lei & Wu, 2007).

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

Table 5. Average share of latent variables

Latent variables	AVE	R ²
Covid-19	0.541	-
Individual factors	0.630	0.537
Social factor	0.529	0.789
Situational factor	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. Also, the value of R² 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 behavior of businesses and humans. One of the most important effects of this virus has been a change in consumer behavior. Consumer behavior is changing as a result of the global epidemic. Recognizing the changes in consumer behavior 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 behavior of customers in this period, the tendency towards sustainable consumption behavior 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 behavior 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 effect of Covid-19 virus on sustainable consumption behavior 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, then the intention of individuals and finally the effect of intention on sustainable consumption

behavior of customers was measured. In this regard, the data were collected using a questionnaire in the fall of 2020 and analyzed using SmartPLS software.

The results and suggestions of this study helps, 1. Different industries in recognizing changes in customer consumption behavior, especially chain stores to supply products desired by customers in order to satisfy them, 2. Manufacturers (suppliers) in order to produce products according to consumer behavior, 3. Officials are used to plan for the development of sustainable consumption behavior, especially in critical and competitive conditions, the outbreak of Covid-19 virus and helping the environment.

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

The results obtained in this study are generally in line with the results of research by Hirvonen *et al.* (2020), Ben Hassen *et al.* (2020), Liang *et al.* (2020), Grashuis, Skevas, & Segovia,

(2020), Attwood and hajat, (2020); They found that the prevalence of Covid-19 virus affects consumption and consumption behavior and is more closely in line with the results of research by Yue *et al.* (2020), Cohen, (2020), Severo *et al.* (2020). In line with the results of research hypotheses, the following practical suggestions are presented:

Based on the effect of Covid-19 virus on social factors, it is suggested that chain stores in the dangerous conditions of the virus, strengthen the online sales of their sustainable products and provide additional services, So that customers do not have to buy in person and through the media and with appropriate advertising in the field of sustainable products and charitable activities and in line with social responsibilities, have a positive effect on their customers to attract 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 help financially and attract customers' emotions. 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 groups.

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. Also, by providing the products desired by customers, creating appropriate access for them and providing various sustainable shopping options in the store, to attract customer satisfaction.

Due to the influence of individual factors of customers from the Covid-19 virus 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. And 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 behavior, 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 which is suitable in this condition. In fact, what is needed for companies in this era is the development of contingency marketing programs. Having accurate information from customers in this period will help a lot in the type of reaction of the organization. Information such as the type of purchases, the place of purchases, the amount of change in the volume of purchases, customer sensitivities, etc., is a great help to companies in developing appropriate marketing plans. And by recognizing 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 position for themselves among customers.

Also, 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 health and mental health. It is only natural that consumers, and especially consumers, should be concerned about health issues in the current context, and organizations should address these concerns in a variety of ways. Among these activities, observing all health steps to present the product to customers or consumers and informing this issue through various media for customers and consumers. 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 and on trends and behavioral changes in consumers. Necessary concentration should be done 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 these attitudes are intended to buy from the store and Create sustainable product purchases in

customers and eventually buy and consume sustainable products.

Researchers are advised to investigate the effect of Covid-19 virus on marketing changes or its effect on corporate social responsibility activities in future research due to changes in consumer behavior. Also examine the effect of Covid-19 virus in different industries separately. One of the limitations of this study is the difficulty of collecting data in the context of Covid-19 virus and the lack of background in the field of studies.

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