

Qualitative Analysis of Corona Effects on the Environment

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تحلیل کیفی تأثیرات کرونا بر محیط‌زیست

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Abstract

The purpose of this paper is to analyze the semantic system of ecotourism resort owners about the effects of Coronavirus on the environment and nature to show how they understand, interpret and evaluate this phenomenon and its consequences. 12 owners of ecotourism resorts in Mazandaran province participated in this study. After discovering the basic concepts and major categories in the axial coding stage, the process of connecting the categories was done based on their properties. The environmental effects of Coronavirus as a core category, major categories under the headings of consumption, environmental attitudes, barriers and solutions/strategies were revealed as major categories. Food consumption (packaged and home-made), consumption of hygienic chemicals, consumption of natural sources (water, energy) under the category of consumption, attitudes towards littering, biodiversity conservation, environmental pollution under the category of attitudes towards the environment, legal, individual and structural barriers were placed under the category of barriers to pro-environmental behaviors and creating opportunities for support, increasing environmental awareness and attracting public participation under the category of solutions/strategies. According to the respondents, the emergence of Coronavirus has increased littering in nature and due to its social fear, volume of new waste (masks and gloves) has increased; however the positive effects such as biodiversity conservation and reduction of air pollutants due to reduced traffic would be transient and temporary.

Keywords: Coronavirus, Environmental Consequences, Littering, Dominant Social Paradigm, Ecotourism.

چکیده

این مقاله با هدف واکوی نظام معنایی صاحبان اقامتگاه‌های بوم‌گردی از آثار کرونا بر محیط‌زیست و طبیعت می‌کوشد نشان دهد بوم‌گردان این پدیده و پیامدهای مربوط به آن را چگونه درک، تفسیر و ارزیابی می‌کنند. ۱۲ نفر از صاحبان اقامتگاه‌های بوم‌گردی در استان مازندران در این بررسی مشارکت داشتند. پس از کشف مفاهیم اولیه و مقولات عمده در مرحله کدگذاری محوری فرایند اتصال مقولات بر اساس خواص آنها صورت گرفت. آثار محیط‌زیستی کرونا به‌عنوان مقوله هسته، مقولات عمده تحت عناوین مصرف، نگرش محیط‌زیستی، شرایط زمین‌های، موانع و راهکارها به‌عنوان مقولات عمده آشکار شدند. مصرف مواد غذایی (بسته‌بندی‌شده و خانگی)، مصرف مواد شیمیایی بهداشتی، مصرف منابع طبیعی (آب، انرژی) در زیرمجموعه مقوله مصرف، زباله پراکنی، حفظ تنوع زیستی، آلودگی‌های محیط‌زیستی در زیرمجموعه مقوله نگرش نسبت به محیط‌زیست، موانع قانونی، فردی و ساختاری در زیرمجموعه مقوله موانع تغییر رفتار محیط‌زیستی مسئولانه، انگاره مسلط اجتماعی در خرده مقوله شرایط زمین‌های و ایجاد فرصت‌های حمایت، افزایش آگاهی محیط‌زیستی و جلب مشارکت مردمی در زیرمجموعه مقوله راهکارها قرار گرفتند. از دیدگاه پاسخگویان ظهور و بروز کرونا باعث افزایش زباله پراکنی در طبیعت شده است و به دلیل هراس اجتماعی از آن، حجم این زباله‌ها (ماسک و دستکش) افزایش پیدا کرده است و اگر آثار مثبتی مانند حفظ تنوع زیستی و کاهش آلاینده‌های جوی (به دلیل کاهش تردها) داشته، این آثار گذرا و موقتی بوده است.

واژه‌های کلیدی: کرونا، پیامدهای محیط‌زیستی، زباله پراکنی، انگاره مسلط اجتماعی، بوم‌گردی.

Introduction

Initially, the virus appeared in a seafood market in Hunan, Wuhan, China, which also traded bats, snakes, raccoons, ferrets, and other animals (2020, Harsono). The COVID-19 infection is so far considered the largest outbreak of atypical pneumonia since the severe acute respiratory syndrome (SARS) outbreak in 2003 (El-Zoghby et al. 2021). COVID-19 has proved that nature loss and wildlife consumption are the root cause of the emergence of zoonotic infectious diseases, such as Coronavirus, Ebola and HIV/AIDS (Cherkaoui et al. 2020). Although they are quite different at first glance, they all originated from animal populations under conditions of severe environmental pressures. In addition, they all illustrate that destructive human behavior towards nature is endangering human health – a stark reality that was ignored for decades (Ibid). Covid-19 pandemic is a global phenomenon, has intergenerational effects, and theoretical and managerial tools such as intergenerational ethics have not yet been well developed to predict and manage (Zabaniotou, 2020). With the aim of slowing the spread of disease, mandatory ‘shelter-in place’ restrictions on peoples’ movements, also known as lockdowns or quarantines, typically prevent people from leaving their homes or local areas for extended periods of time. (Amador Jimenez et al. 2020), washing hands regularly, using disinfectants, gloves and masks (Ozbay et al. 2020), using packaged foods to reduce infection and breaking the virus transmission chain has been introduced. Covid-19 has greatly influenced the daily lives and lifestyles of people in the societies. Such as changing food consumption patterns (fear of consuming raw materials and tendency to consume packaged foods), increasing the frequency of bathing, washing hands with water and detergents, continuous use of surface disinfectants). Also, since people must often stay at home, energy consumption (electricity and gas) has increased. On the other hand, what is seen dangerous is the release of new sanitary and hospital wastes such as masks and gloves in nature. This situation shows that beside the collective fear of Corona, due to the lack of institutionalization of pro-environmental

behaviors, new wastes have been added to the list of previous wastes, which are far more and overwhelmingly dangerous.

Therefore, the purpose of this study is to analyze the consequences of the spread of Covid-19 in the environment specifically in the ecotourism areas of Mazandaran province. Despite the widespread affliction of different regions of Iran by Coronavirus, the situation in Mazandaran province is much more catastrophic. Mazandaran province, with more than 3 million annual rural tourists, is one of the main and most important tourism destinations in Iran (Salehi and Khoshfar, 2020). Ecotourism has a prominent position in terms of natural and geological attractions as well as other tourist attractions such as culture, customs, traditions and for this reason, it is a special interest for tourists (Bashami et al. 2021). Objective of ecotourism activities is to learn, to appreciate, and to preserve nature and to enhance the income of local communities (Dewi, 2020). Globally, ecotourism has been central to thousands of conservation projects that have generated jobs and income, empowering rural communities (Cherkaoui et al. 2020). This study intends to examine the effects and consequences of Coronavirus on the environmental and ecotourism areas from the perspective of ecotourism resort owners with a qualitative approach. Hence, this study intends to answer the following three basic questions:

- 1) What are the environmental consequences of Coronavirus in ecotourism areas?
- 2) What obstacles have exacerbated these consequences?
- 3) What solutions can be offered to protect the environment in respect to ecotourism areas?

Theoretical Framework

Global risks threatening human health are intensifying due to environmental fragilities and technological unsustainability, along with social and human vulnerabilities (Un, 2018; Zabaniotou, 2020: 116). Scientism, the separation of human from nature and his dominance over nature, has caused modern man to give originality to materialism and recognize welfare as the ultimate goal of life (Aminzadeh, 2002). According to the dominant social paradigm, human is the only ruler of the

planet and this idea emphasizes the exemption of he/she so that human beings do not need to follow the laws of nature (Geno, 2000). In the era of the Anthropocene, we are facing the global problems of environmental damage and economic cynicism. "In the Anthropocene, with materiality being the essence of existence, the 'homo industrialis' used to 'heat, beat, and treat' the earth for the extraction of resources, production of materials as well as the wasting of resources" (Benyuos, 2002; Zabaniotou, 2020: 120). Over the past few decades of the twentieth century, humanity has overused the capacity of the planet. This unsustainable development is the cause of the current crisis and the growing threat to human survival (Ibid). International economists believe that the world should be seen as a complex system that needs reform to create a more transparent and flexible globalization. (Zabaniotou, 2020). Planet Earth is a self-regulating and self-organizing biosphere. The natural world and human activities are completely interconnected and interdependent. Climate change has disrupted the earth's physical systems. In turn, these disorders pose direct and indirect risks to human health (Zabaniotou, 2020; Salehi and Pazokinejad, 2017). Some scientists have suggested that Gaia's hypothesis could explain the earth and the visible material world as a living being, with all its components interconnected in an unpredictable way (Nasr, 2010). In the environmental sciences, this hypothesis provides a comprehensive framework by exploring the complexities of the relationship between Amazon deforestation and climate change or the relationship between blood pollution in polar bears and the Hudson River pollution or deforestation and widespread influence in other ecosystems (Ibid). Man-made catastrophes in today's world have fragmented self-regulating ecosystems and disrupted the web of life (Zabaniotou, 2020). The consequences of many of these actions are still with us; the global epidemic of Covid-19 is not an exception too. The Intergovernmental Panel on Climate Change (IPCC) is currently in its sixth assessment cycle and is planning to produce three special assessment reports which are due for release in 2022. The IPCC synthesis report (AR6 SYR) will be based on the content of the three working groups assessment reports that are devoted to the impacts, adaptation and

vulnerability, and mitigation of climate change (IPCC, 2019). "Notably, while it is not yet 2022, nature is already sending us a message with the hazardous Covid-19 pandemic. We need to decode this message. According to the UN, the ongoing climate crises are due to the fact that humanity has placed too many pressures on the natural world with damaging consequences" (Carrington et al, 2020). "Therefore, understanding the whole human-nature system and how the planet functions are of primary importance" (Capra and Luisi, 2014; Zabaniotou, 2020: 122). New Ecological Paradigm is a new environmental approach to the world of science. People like Riley Dunlap insisted that worrying about the growing environmental crisis would have important consequences not only for the natural world, but also for human society. This approach introduces a new field in sociology that considers the environment as necessary for understanding social conditions as political and economic processes (Salehi, 2010). This paradigm was initially viewed as a one-dimensional relationship between human beings and environment, but over time it has been referred to as a combination of a complex structure composed of three elements: ecological balance, limited development, and rejection of the idea of man's priority over nature. In this paradigm, human is not separate from nature, but is a part of it (Ibid). "Nature-centered spiritual traditions/practices and philosophies have many lessons concerning the relationships between humankind and nature" (Egri, 1997; Zabaniotou, 2020: 122). "Thus, human societies worldwide have developed interpretations of their interactions with nature" (Sheehan, 2016; Zabaniotou, 2020: 122). "Philosophers have made certain fundamental assumptions through culture, science, art, spirituality, ethics, and politics and have been successful in interconnecting them with life" (Syrgiannis et al. 2019 Zabaniotou, 2020: 122).). In his book *Introduction to Environmental Sociology*, Sutton (2013) argues that humans not only learn, but must also learn how to behave in order to survive and thrive in society. Humans have the collective ability to adapt to changing natural environments and social events. They can learn from each other and transfer their knowledge and successful actions to each other even at

long distances (Najafloo and Yaghoobi, 2019). It is a process of social development that is based on learning from a shared source of knowledge. Therefore, two related factors are proposed to solve environmental problems. The first is knowledge and the second is participation in learning and action (Ibid).

Literature Review

A review of the research literature shows that some Iranian researchers have paid attention to the issue of Corona and tourism. For example, Mirtaghian Rudsari et al. (2020) examined the attitudes and behaviors of the host community towards the presence of tourists during the outbreak of Covid-19 in Ramsar (Mazandaran). The research method was qualitative and 21 residents of Ramsar participated in this study. Torabi Farsani and Bahadori (2020) studied the strategies for the recovery of tourist resorts in the post-Corona era. Bashami et al. (2020) with a qualitative approach, considered the revival of ecotourism activities in the post-corona period.

In non-Iranian literature, various studies have shown the effect of Corona on changing lifestyles and consumption patterns of citizens. For example, in the UK, Public Health Center (2021) reported that food and beverage consumption increased by 11% compared to 2019. Janseen et al (2021) examined changes in food consumption among residents of three countries: Germany, Denmark and Slovenia. The results of their study showed that consumption patterns varied from 15 to 42% during the Corona. Consumption of prepared, packaged and canned foods increased while consumption of fresh and organic foods decreased. Moreover, Harsono (2020) examined the economic effects of Covid-19 on marine ecotourism in the Tegal region of Indonesia. Besides, Cherkoui et al. (2020) examined the effects of Covid-19 on ecotourism in Morocco. They found that illegal hunting and animal trafficking and cutting down trees had resumed due to reduced human presence during the Corona outbreak. Amador-Jimenez et al. (2020) examined the unintended consequences of quarantine on increasing the number of wildfires in Colombia's forests. Qarnain et al. (2021) found that physical distance and quarantine increased energy

consumption in the household sector. Eastman et al. (2021) reported that drinking water consumption increased by 14% over the past three years. Some researchers have also examined the secondary transmission of the Coronavirus to humans through contamination of domestic sewage, such as Liu et al. (2020) and Haramato et al. (2021). Goncalves et al. (2021) and Huraimel (2021) also found that solid waste, especially transporter waste, can transmit the disease.

During the two years since the Corona crisis, there has been a lot of studies on the social and economic effects and consequences of this crisis, but little studies have been done on the environmental consequences of it and its solutions. This research differs from previous researches in two ways. The first is the study location in Mazandaran, a northern province in Iran, which is culturally different from other regions of Iran. Second, unlike previous researches, which has focused mainly on the economic and social consequences of Corona on tourism, this study has assessed the environmental consequences.

Methodology

This research done with qualitative approach and non-structured interview method has been used to collect data. The sample size was 12 owners of ecotourism resorts in Mazandaran province who were selected based on purposive sampling with maximum diversity. On this basis, we have tried to select participants who have more than two years of work experience in ecotourism and they were differ in education, age and gender. Theoretical sampling was also used and the categories obtained in coding of the first interview were used as basis and subsequent interviews were conducted to fill the information gaps. The basis of the end of the interviews was theoretical saturation. Due to the infection of Covid-19 and the closure of ecotourism resorts, an electronic questionnaire was sent to the owners of ecotourism resorts through WhatsApp platform. Respondents sent their answers in the form of audio files. Interviews were received between May and June 2021. Each text of the interview was read several times by the researcher to gain a deep understanding of it. The interviews were coded

in three stages: open, axial and selective stages. The base of coding was line-by-line. The first step was open coding that it was allocated to break down, name, and conceptualize the data. Then in axial coding step, the initial codes which had more semantic overlap, were placed under one category with the aim of showing the relationship between the concepts. Due to semantic similarities, some of the axial categories were changed to another category and finally, in the selective coding step, a core concept was created by finding common lines between the concepts. Thus, the result of data analysis is construction of 67 concepts, 17 categories, 5 major categories or dimensions, and a central concept. Quotations and

abbreviation were used to assess reliability. The number of secondary codes was less than the primary codes. Also, to confirm the validity of the questioner, the constructed categories were shown to the experts as well as the interviewees.

Findings

At the first coding step, all the key points of the interviews were given a title. These titles are listed in Table (1). The frequency of extractive codes indicates the theoretical saturation and agreement of the majority of participants on the environmental consequences of Corona in ecotourism.

Table 1. Initial coding of environmental consequences

Code	Extracted codes	Frequency
1	Consumption of packaged local food	2
2	Welcoming the tourists from local services	7
3	Restrictions on serving local food due to hygiene	6
4	Decreased confidence in home-made products	8
5	Reducing demand for in home-made products	6
6	Consumption of packaged foods	4
7	Consumption of canned foods	4
8	Low desire to buy local products	5
9	Effect of Corona on the consumption of local food	7
10	Negative impact of Corona on the tourist mentality	8
11	Canned food: Negative advertisement for accommodation	6
12	Tendency to consume the packaged foods	5
13	Damage of packaged food for human	7
14	Positive attitudes towards local food	6
15	Lack of effect of corona on travelers' positive attitudes towards local foods	6
16	Increase the use of chemical disinfectants	6
17	Fear for health and future	8
18	Obsession with the use of disinfectants	10
19	Obsession with washing	8
20	Permanent washing with water	9
21	Continuous bathing	5
22	Lack of passengers and its effect on reducing energy consumption	10
23	Reduce movements to accommodations and reduce energy consumption	9
24	Elimination of reservations and its effect on reducing energy consumption	8
25	Effect of outdoor accommodation on reducing energy consumption	1
26	Effect of the proximity of the residence to the forest space on reducing energy consumption	1
27	Effect of residence architecture on reducing energy consumption	2
28	Effect of climate on reducing energy consumption	2
29	Effect of fear of corona on forest cleanliness from garbage	7
30	Reduce the volume of plastic waste in the forest	10
31	Impact of reduced movements on forest ecosystem	12
32	Excessive use of detergents and disinfectants	10
33	Dropping masks in the environment	12
34	Dropping gloves in the environment	7
35	Increasing of roadside waste in the second year	12
36	Increasing of waste in forests and mountains in the second year	12

37	Increasing of coastal waste in the second year	8
38	Entering new waste into nature	11
39	Lack of forethought about waste	8
40	Lack of seriousness in training to deal with waste	5
41	Lack of importance waste for people	7
42	Generality of garbage disposal	2
43	Disposal of waste in the environment according to public culture	10
44	Dominance of Coronavirus fear over its environmental damage	6
45	Insignificance of the value of the environment in people's lives	4
46	Prioritizing people's livelihood and income over preserving the environment	8
47	Taking the garbage away from yourself and dropping it in nature	3
48	Indifference to littering	8
49	Decreasing air pollution	3
50	Reducing water pollution	3
51	Reducing soil pollution	2
52	Negative impact on habitats	4
53	Return of animals to habitats	1
54	Reducing the influx of people to natural habitats in the first year	9
55	Reducing the forest pollution with waste in the first year	11
56	Impact of reduced movements on forest ecosystem in the first year	10
57	Lack of support of environmental laws	8
58	Social Responsibility	6
59	Dealing decisively with violators	7
60	Gap between attitudes and behaviors	4
61	Environmental education in childhood period	8
62	Institutionalizing the environment in elementary education	5
63	Environmental pre-crisis management	5
64	Using the Coronavirus as an opportunity for environmental education	6
65	Educating villagers to create a culture of environmental protection	7
66	Public education in villages to protect forests from littering	5
67	Waste management training	11
68	Creating opportunities to support environmental protection	10
69	Educating rural and nature tourists to create a culture of environmental protection	5

Source: Authors' Research Findings, 2021

In the next step, the initial codes were placed in the form of similar categories. Several secondary codes became a conceptual code. Table (2) presents the results of open coding based on secondary code, concept codes and categories, which was changed from 67 primary codes to 16 secondary codes.

Categories analysis

A. Consumption

The first category discovered is consumption, which has subcategories of food consumption, consumption of hygienic chemicals and consumption of natural sources (energy and water). In relation with food consumption, according to the frequency of the initial codes, the consumption of canned and packaged food took precedence over the consumption of

handmade food in eco-lodges. According to the respondents, in 2019 (the first year of infection with the Coronavirus) the popularity of handmade and local food decreased sharply.

A thirty-year-old woman with a doctorate degree: "Although our products have the brand of organic products and are completely controlled and the amount of toxins used or chemical additives in the soil is completely under control, the same brand of organic or healthy products is not effective. The general perception of the community was to use fewer local products and replace packaged products." In the spring of 2020 and 2021, with the normalization of life and the reduction of social fear of the Corona, the consumption of home-made food flourished again.

A thirty-year-old man with a bachelor’s degree: “They criticized that why you do not give food? and we have to prepare food from outside. Why don't you provide the locals with food? Practically, the people of our country do not resist this issue and accept living with Corona.” Some respondents also mentioned the environmental effects of using disinfectants and detergents.

The thirty-year-old woman with a doctorate degree: “There is a new environmental pollutant called detergents and disinfectants that can pollute the air, soil or beneficial insects and be harmful to the environment, and of course the consumption of detergents and water has increased a lot.”

The next sub-category is the consumption of natural sources, including water and energy (electricity and gas). It is necessary to wash the hands with soap and water and use disinfectants. This has increased water consumption.

A thirty-year-old woman with a bachelor’s degree: “The use of masks and detergents also affects the health of the body and skin. When it was announced that we had to wash our hands several times, I got a skin disease. Well, the fact that everyone used detergents and water several times more than normal is a big problem.”

Unlike water, energy consumption (electricity and gas) decreased due to reduced reservations, the architecture of the accommodation and the climate of the region.

The thirty-year-old woman with a bachelor’s degree: “you say that if the tourists are in the space of the residence, the cost of electricity or water will increase. I do not think so. I did not have such a problem because the space of my residence is 3000 meters and it is located near the forest. If tourists want to leave the residence and go to the forest, and the cost of electricity or gas is not a problem for me, but they can be in the space of the residence.”

Table 2. Formation of the core concept of consumption

Initial codes	Category	Main Categories
Consumption of packaged foods	Tendency to consume industrial food	Food consumption
Consumption of canned foods		
Tendency to consume the packaged foods		
Canned food: Negative advertisement for accommodation	Negative attitudes towards industrial food	
Harms of packaged food for human		
Welcoming and benefiting the tourists from local services	Positive attitudes towards local food	
Consumption of packaged local food		
Lack of effect of corona on travelers' positive attitudes towards local foods		
Restrictions on serving local food due to hygiene	Declining popularity of handmade food	
Decreased confidence in home-made products		
Reducing demand for in home-made products		
Slight desire to buy local products		
Increasing the use of chemical disinfectants	Excessive use of detergents	Consumption of hygienic chemicals
Obsession with the use of disinfectants		
Obsession with washing	Excessive water consumption	Consumption of natural sources
Permanent washing with water		
Continuous bathing		
Lack of passengers and its effect on reducing energy consumption	Impact of accommodation closure on energy consumption	
Reduced movements to accommodations and reduce energy consumption		
Elimination of reservations and its effect on reducing energy consumption		

Effect of outdoor accommodation on reducing energy consumption	Reducing energy consumption	
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B. Environmental Attitudes

Another major category is attitudes toward the environment, which included attitudes toward littering, biodiversity conservation, and environmental pollution. From the respondents' point of view, new wastes such as masks and gloves that can transmit the disease were dumped in nature, along roadsides and in the streets.

The thirty-year-old woman with a bachelor's degree: "The masks as we see were easily dropped everywhere; they have 100% negative effect. I think the biggest problem is easily ignoring the problem. And while the situation worsens, we do not know what is the best thing to do."

The next category is attitudes towards biodiversity conservation. Reducing movements in rural areas has had positive effects on habitat conservation and biodiversity. In this regard, one of the respondents said:

The thirty-year-old man with a bachelor's degree: "First year that I came here, animals that lived nearby left due to fear of people. But

through this one year, when the movements have decreased, the situation has improved. The animals came back and this was an example that in the time of Corona, the absence of humans helped nature."

Finally, the sub-categories of environmental pollution should be mentioned. At the end of 2020, when the Covid-19 virus entered the country, many trips and reservations were canceled and due to the general fear of Corona, people did not want to travel. According to the interviewees, the volume of garbage and environmental pollution decreased sharply this year, but in 2021, when the Corona became part of daily life, the amount of pollution increased.

A thirty-seven-year-old man with master's degree: "In April 2020, when the whole nation was quarantined and travel was reduced, forest waste-related pollution was reduced. But a few months later, new garbage was added to it (such as masks). Wherever we have tourist and passenger gatherings, this waste has been added to other wastes such as soft drink cans or nylon chips and puffs and so on."

Table 3. Formation of the core concept of Environmental Attitudes

Items	Categories	Core Concept
Effect of the proximity of the residence to the forest space on reducing energy consumption	Attitudes towards littering	Attitudes towards the environment
Effect of residence architecture on reducing energy consumption		
Effect of climate on reducing energy consumption		
Effect of fear of corona on forest cleanliness from garbage		
Reduction of the volume of plastic waste in the forest		
Impact of reduced traffic on forest ecosystem		
Excessive use of detergents and disinfectants		
Dropping masks in environment		
Dropping gloves in environment		
Increasing of roadside waste in the second year		
Increasing of waste in forests and mountains in the second year		
Increasing of coastal waste in the second year		
Entering new waste into nature		
Lack of forethought about waste		
Lack of seriousness in training to deal with waste		
Do not care waste for people		
Generality of garbage disposal		
Disposal of waste in the environment according to public culture		

Negative impact on habitats	Biodiversity conservation
Return of animals to habitats	
Reduce the influx of people to natural habitats in the first year	
Decreasing air pollution	Environmental pollution
Reducing water pollution	
Reducing soil pollution	

C. Barriers to pro-environmental behaviors

Another major issue is the existence of barriers ranging from legal to individual. Individual behaviors are the result of interactions between attitudes and external circumstances. Individual behaviors are not only influenced by attitudes, but also by the external environment.

A twenty-eight-year-old man with a bachelor’s degree: “Unfortunately, some of these passengers threw their masks on the side of the roads. This goes back to the discussion of waste, littering, education and culture. They do not take this issue seriously. In traffic laws, once somebody throws garbage from inside the car into the street; he will be fined, but if someone throws his garbage in nature, no one fines him.”

The second category of the barriers are individual, which is due to the fear of infection or the beliefs and attitudes that they have to

the environment, in the literature of sociology and environmental psychology it referred to the gap between attitudes and behaviors.

A thirty-year-old woman with a bachelor’s degree: “The fact that we should not throw garbage in nature. Littering is not something that can be solved now. If I used to throw paper towels in the street, now I throw masks. This problem is not related to the Corona.”

According to the respondents, one of the contextual conditions is the neglect or negligence of environmental problems and the small share of the environment in the Iranian value system or the priority of issues such as livelihood and economy for the people.

A thirty-year-old-man with a bachelor’s degree: “In my opinion, the environment is not very important in our society and it is more a place to dump garbage or sewage. In my opinion, in this economic crisis, what the environment can mean for the people.”

Table 4. Formation of the core concept of Barriers to pro-environmental behaviors

Items	Categories	Core Concept
Lack of support of environmental laws	Legal barriers	Barriers to pro-environmental behaviors
Dealing seriously with violators		
Gap between attitudes and behaviors	Individual barriers	
Fear of Corona		
Negative impact of corona on the tourist mentality		
Insignificance of the value of the environment in people's lives	Structural barriers	
Prioritizing people's livelihood and income over preserving the environment		

D. Environmental protection strategies/ solutions

Another major category is environmental protection strategies, which are divided into three categories: increasing environmental awareness, creating support opportunities, and attracting public participation. Many tourist destinations are moving towards instability and self-destruction. Successful and sustainable presence in the field of tourism is not possible without the presence of people familiar with the sustainable tourism (Shobeiri et al, 2013).

The thirty-year-old woman with a doctorate degree: “We see the environmental consequences of Corona in Iran and even in the world. A new range of garbage such as masks and gloves that were left. Environmental education is not taken seriously”.

The thirty-year-old woman with a bachelor’s degree: “In primary education, students should be introduced to the environment and natural resources. Must be managed with planning from childhood.”

Another sub-category is support opportunities.

The support opportunities are facilities and equipment at a time and place where one wants to behave responsibly.

A forty-year-old man with a bachelor's degree: "It is important that we separate the waste at home, but we had a series of issues. Here, we told people to turn wet wastes into compost and separate the wastes from home. With this plan, practically 20% of waste will remain unused, and if this plan is implemented, we can save our environment. If the officials support and reduce the costs in this area, the volume of waste will be reduced to 20%."

The last solution mentioned by the respondents

is the public participation. When people are encouraged to participate in environmental protection, society's abilities to ensure the quality of a sustainable life improves. Public participation is a strategy that helps to identify local sources and mobilization of them in an institution or community (Bui, 2011)

A thirty-nine-year old woman with a master's degree: "The first person who can help himself is himself. The villagers must love their village and value what they have. When they go to the forest or along the river, they should not pollute it."

Table 5. Formation of the core concept of environmental protection strategies/solutions

Items	Categories	Core Concept
Social Responsibility	Public participation	Environmental protection strategies/solutions
Cooperation of rural and nature tourists to protect of environment		
Participation of villagers		
Environmental education in childhood period	Environmental awareness	
Institutionalizing the environment in elementary education		
Using the Corona era as an opportunity for environmental education		
Public education in villages to protect forests from garbage	Support opportunities	
Waste management training		
Creating opportunities to support environmental protection		
Environmental pre-crisis management		

Based on the concepts and categories constructed, a theoretical model including conditions (contextual, causal), actions

(strategies), and consequences is obtained (Fig. 1).

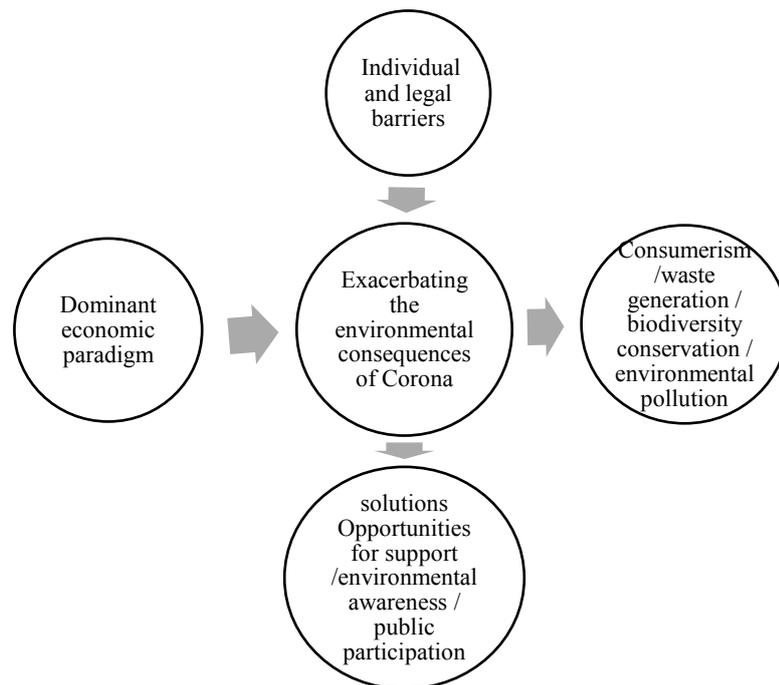


Figure 1. Theoretical model of understanding the effects of Corona on the environment

Discussions

The purpose of this paper is to understand the perspectives of ecotourism resort owners about the effects of corona on the environment, to identify the causes and contextual conditions influencing on harms of Coronavirus to the environment and the strategies that they have proposed to reduce these harms. This study was done with qualitative approach and non-structured interview method used as collection data tool. The sample was 12 owners of ecotourism resorts in Mazandaran province. Interviews were received between May and June 2021. Each text of the interview was read several times by the researchers to gain a deep understanding of it. Coding was done in three stages: open, axial and selective. As mentioned in the literature section, corona has changed the lifestyle and consumption patterns of citizens in different regions. For example, in a study by Janssen et al. (2021), food consumption patterns changed among residents of Germany, Denmark and Slovenia. Consumption of prepared, packaged and canned foods increased, but consumption of fresh and organic foods decreased. This result

is consistent with the results of the present study on the phenomenon of industrial food consumption and the reduction of organic food consumption. Cherkoui et al (2020) found that the negative effects of Covid-19, such as poaching, animal trafficking and deforestation increased due to reduction of ecotourism activities. In the present study, the respondents did not mention these cases and pointed to the improvement of habitat conditions and the reduction of pollutants in forests. In the present study, the increase in water consumption was one of the negative consequences of Coronavirus, which it is consistent with the result of Eastman et al (2021). He pointed to the increase in water consumption costs.

According to the results of our study, the effects of Coronavirus on the environment have been both positive and negative. Negative effects include the production of the new waste, overuse of disinfectant and hygienic chemicals, increased water consumption, and the positive effects include maintaining biodiversity and reducing pollutants. The category of Coronavirus effects on the environment refers to the conditions which the owners of eco-lodges

became involved both as a member of the Iranian society and as a member of the tourism industry. Owners of eco-lodges have understood the effects of Coronavirus on the environment with a variety of ups and downs. On the one hand, they believe that Coronavirus has created environmental hazards that result from health waste that is either left on the street or in nature due to the lack of facilities such as trash bin or the indifference of people. Furthermore, the psychological pressure of Coronavirus increased the use of hygienic chemicals such as disinfectants and detergents and water consumption. On the other hand, when participants compare the economic, mental, and environmental consequences of corona, they believe in the first year of Coronavirus incidence, the amount of pollution in air, water, and soil decreased, and animals returned to their habitats. However, these changes were not sustainable. According to the participants in this study, whether during the Coronavirus or post-corona, there is no permanent change in people's environmental behaviors. The main problem from the respondents' point of view is the unconscious mentality of the people towards nature and the preservation of the environment. The causal conditions for the occurrence of these hazards or obstacles to environmentally responsible actions are both structural and individual. Lack of sanctions and punishment of offenders and lack of environmental education are some of the barriers that have led to the continuation of irresponsible behaviors towards the environment, such as littering in nature, destruction of natural habitats and resources. In the semantic system of the participants in this study, these risky behaviors will continue as long as the environment has a small share in the needs of Iranian society and it is seen only as raw materials or wells to fill the waste produced by modern human. Finally, changing the dominant social paradigm in the society and replacing it with an ecological one, attracting people's participation, increasing environmental awareness and creating opportunities for support of environment were among the strategies mentioned by the

participants. Owners of ecotourism resorts are groups that try to show the place of nature in modern human life by preserving cultural and environmental values and place attachment.

Notes

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