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The Impact of the Epidemic on Consumer Behavior: People's Conception of Medical Products in the Post-Epidemic Era

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Master (MSc) in Marketing

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ISCTE Business School - University Institute of Lisbon

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BUSINESS
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Department of Marketing, Operations and General Management

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Acknowledgment

Firstly, I would like to thank all those who helped me during my academic journey. I would like to extend my deepest gratitude to my mentor, Professor Helena Rodrigues. Even though we are in different regions, she still responds quickly to each of my emails and patiently answers all my questions under the time lag. Under her guidance, I have a deeper understanding of my academic papers and stricter specifications.

My sincere thanks will also be dedicated to all the participants in this interview. Through this interview, I have a lot more eyes to see the facts that I haven't noticed. It is you who made me understand that the dimensions of thinking are different from different perspectives.

Finally, it is my family and friends. It is your belief and support that made me persist in completing this process, as well as my colleagues in the company where I was intern. Under your guidance, I have a deeper understanding of this industry. Thank you.

Abstract

The COVID-19 pandemic is considered to be the most extensive and far-reaching epidemic in the history of human epidemics. Due to epidemic prevention and control measures, consumers' behavior patterns have undergone tremendous changes. In this epidemic, medical products used for personal protection or surveillance have become the target of market competition. In addition, we lack of relevant market research on consumer behavior during the epidemic. This study aims to gain insight into the consumer behavior characteristics of various consumers of medical products under the epidemic, and to determine the similarities and differences with previous behaviors. In this case, the interviewees will be consumers in China (from the end of 2019 to the end of 2020, they lived completely in China and were involved in the epidemic throughout the whole process).

The result of this study reveal that: the factor of consumer behaviour change include daily routine change, difference between many information source, and people’s forecast to the future condition. On the other hand, the result of these changes are consumption increase, hoarding and the development of online shopping, beside, people’s consumption also don’t affect by the price rising of product.

China's medical product-related industry personnel must have an in-depth understanding of consumers after the epidemic and institutional strategies to meet their changes. Therefore, according to the survey results, it is necessary to develop and formulate different medical product marketing strategies and distribution channels in accordance with the needs and psychological changes of consumers.

Key Word: Consumer Behaviour; Covid-19; Pandemic impact; Medical product.

JEL Classifications: General (M30); Marketing and Advertising(M3).

Resumo

A pandemia COVID-19 é considerada a epidemia mais extensa e de longo alcance na história das epidemias humanas. Devido às medidas de prevenção e controle de epidemias, os padrões de comportamento dos consumidores sofreram mudanças tremendas. Nesta epidemia, os produtos médicos usados para proteção ou vigilância pessoal tornaram-se alvo da concorrência no mercado. Além disso, carecemos de pesquisas de mercado relevantes sobre o comportamento do consumidor durante a epidemia. Este estudo tem como objetivo obter informações sobre as características de comportamento do consumidor de vários consumidores de produtos médicos durante a epidemia e determinar as semelhanças e diferenças com comportamentos anteriores. Nesse caso, os entrevistados serão consumidores na China (do final de 2019 ao final de 2020, eles moraram totalmente na China e estiveram envolvidos na epidemia em todo o processo).

O resultado deste estudo revela que: o fator de mudança de comportamento do consumidor inclui mudança de rotina diária, diferença entre muitas fontes de informação e previsão das pessoas para a condição futura. Por outro lado, o resultado dessas mudanças é o aumento do consumo, o entesouramento e o desenvolvimento das compras online, ao lado, o consumo das pessoas também não é afetado pelo aumento do preço do produto.

O pessoal da indústria de produtos médicos da China deve ter um conhecimento profundo dos consumidores após a epidemia e das estratégias institucionais para atender às mudanças. Portanto, de acordo com os resultados da pesquisa, é necessário desenvolver e formular diferentes estratégias de marketing de produtos médicos e canais de distribuição de acordo com as necessidades e mudanças psicológicas dos consumidores.

Palavras-chave: Comportamento do consumidor; Covid19; Impacto pandêmico; Produto médico.

Classificações JEL: Geral (M30); Marketing e Publicidade (M3).

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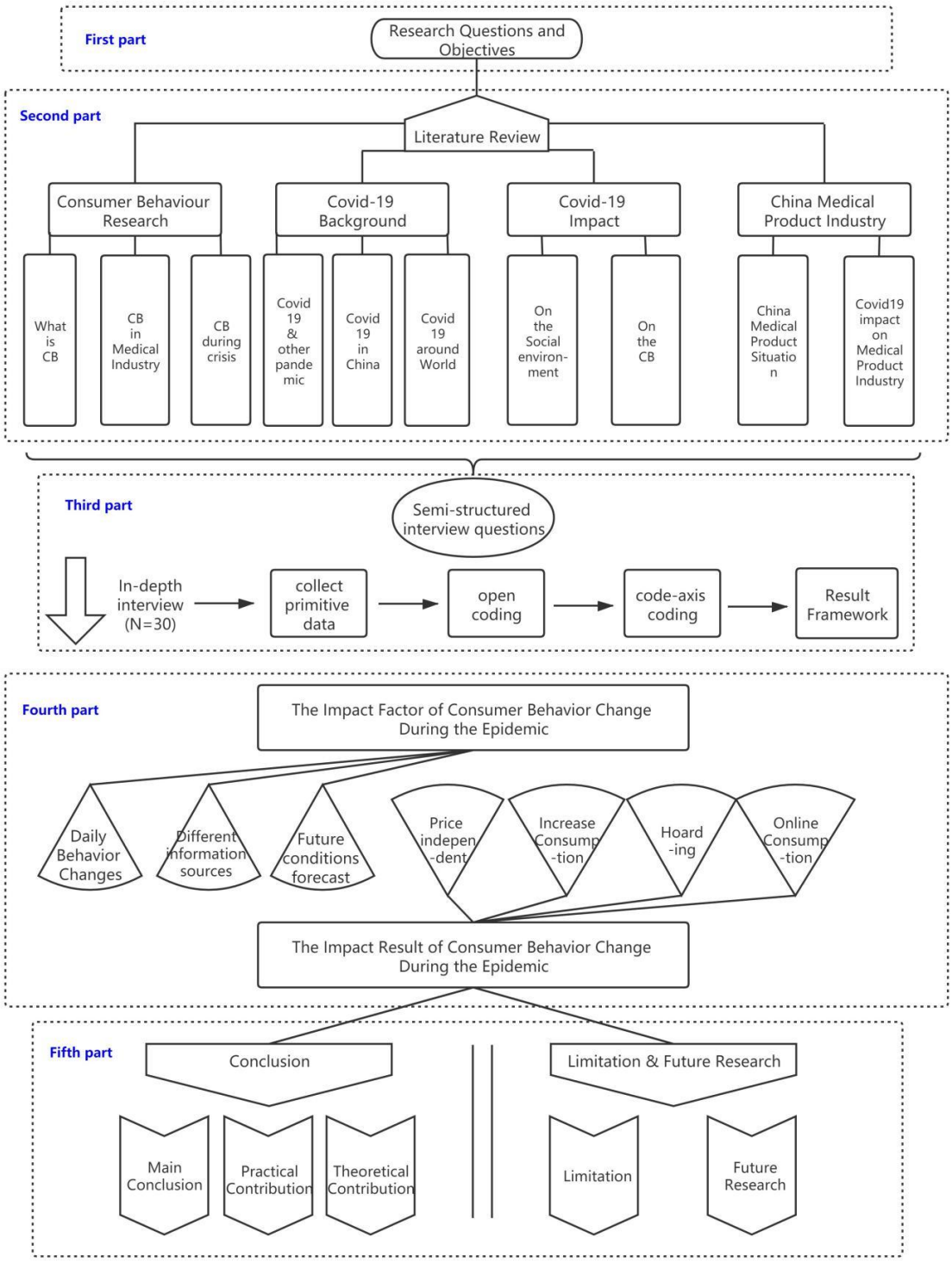
1 Introduction

Figure1 -Flow Chart of the thesis framework



The overall framework of this article is divided into five parts. The full text adopts research methods such as literature research and qualitative analysis. As figure 1 flowchart, the research idea of the overall content of this article is“WHAT WHY HOW”

1.1 Relevance of the Research

The Covid-19 Pandemic is one of the events that has caused sever damage to the economy in recent years. Compared with other diseases, it has a higher infection rate and a faster spread, which poses a great threat to the lives of people all over the world. (Song, 2020).

Consumer behavior is an important and ongoing decision-making process by the search, purchase, use, and disposal of products and services to evaluate the composition.(Valaskova et al., 2015). All consumer behavior depends on location and time constraints. The formation of consumer habits, including what to consume, when and where to consume, are all affected by these two factors.(Sheth,2020). In the case of COVID-19, in order to alleviate the anxiety caused by death threats, consumers' choices are often based on the information of others(Song, 2020).

A study conducted by Flatters and Willmott (2009) found that there are few new buying trends during the crisis, that is, the simplification of demand due to limited quotations, and this trend will continue after the crisis. The rich after the crisis expressed dissatisfaction with excess consumption and focused on recycling and teaching their children simple and traditional values.

According to (Jagdish, 2020), there are four main areas that can affect or change consumer habits, and the more difficult to predict are special natural disasters, such as earthquakes, hurricanes, and global pandemics, including the Covid-19 pandemic. When consumers facing the death threats, they will guided by the information of the group they belong to, their consumer behavior is often unreasonable and leads to compliant consumer behavior (Murray, 2012).

Due to this, it is very important for companies to understand the impact of Covid-19 pandemic on consumer behavior, especially to the relevance industry like medical products industry, because people's perceptions on medical products had a great changes compared to which before the COVID-19 pandemic occurs. Abe (2020) observed such trends in her report on "Market Trends and D2C Opportunities in COVID-19", for example, from people attacking the sidewalks of grocery stores to canceling the world's most important events, and temporary closures"Non-essential" enterprises to prevent the spread of infection.

1.2 Research Problem and Research Questions

Given the massive economic and social changes in the pandemic period, the main research problem of this study is to investigate the consumer behaviour in China after the pandemic from a marketing perspective. In order to figure out the results, it is necessary to propose the research questions: What is the impact of the Covid-19 pandemic on the Chinese consumer behaviour, especially to the medical product industry? In this research, the studied consumer behaviour are buying motivations, information sources, activity preferences and future behaviors, based on the previous literature review. In addition, during the research, the other aspects of impact would also be considered, for example, the impact to the company marketers while they are predicting the Chinese consumer behaviors in accordance with those previously mentioned elements; and possible time will these impacts last if there would be another pandemic in the future.

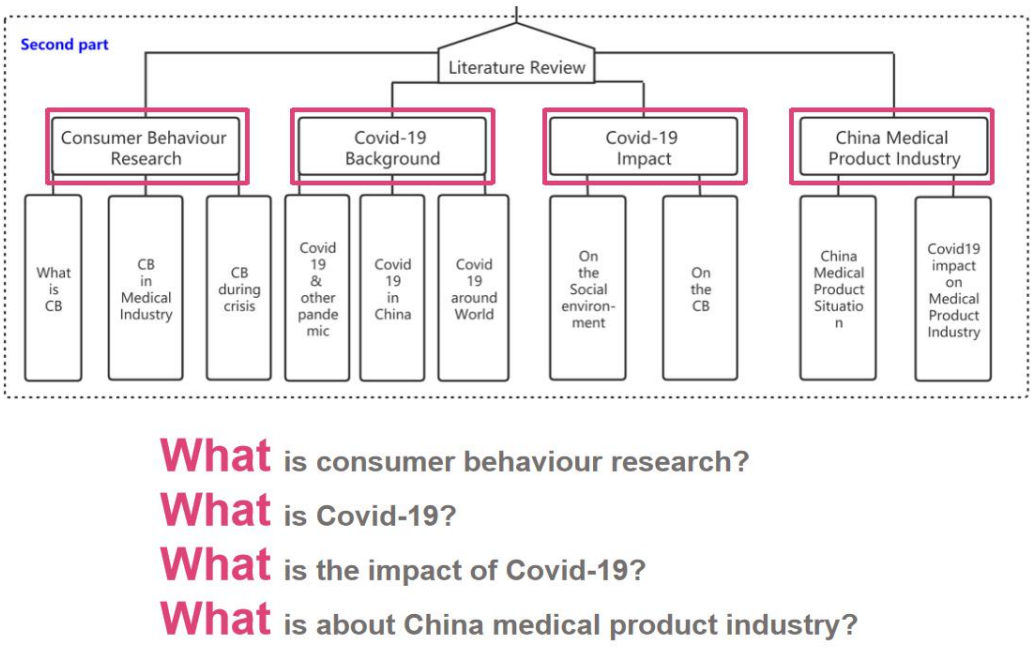
1.3 Aim and Objectives of the Study

In this case, unlike most studies focus on the specific aspect of consumer behaviour, the research would extend to the whole decision making process, and mainly focused on the reason why their decision result changed.

For this study, the aim is to understand more of the behaviour under the pandemic background, especially the period after the pandemic outbreak, and identify the differences to the normal period without pandemic. In order to address an effective research, it is necessary to know how the message spread, what kind of message that people receive most, and how they react to these message. Also, it is necessary to know their prediction to the situation which lead to their next reaction. To develop a more specific analyse, there is also a need to observe medical product industry, which can reflect the dynamic market mostly at this period, and what should the marketer pay attention on when they need to make a decision base on these behaviour changed.

2 Literature review

Figure 2 - Flow Chart of the Literature Review Part



This article conducted literature based on the four keywords mentioned earlier (see Fig.2), and solved the four WHAT problems in the process. which is “What is

consumer behaviour research?" "What is Covid-19?" "What is the impact of Covid-19?" "What is about China medical product industry?".

2.1 Consumer Behaviour Research

2.1.1 Consumer Behaviour Research and Metaphors for consuming

Consumer behavior is one of the most relevant research topics in the marketing field, and it has been studied in various topics related to different industries. In the book of Michael R. Solomon, the Ph.D. and Professor of Marketing and Director of the Center for Consumer Research, Consumer behavior was defined as *"the processes involved when individual select, purchase, use or dispose of products, services, or experiences to satisfy needs and wants"* (Solomon, 2015: 28). Human's needs and wants can be divided into two parts: utilitarian (functional) and hedonic (emotional/experiential) needs. The important thing is, it is an ongoing process which exists before, during and after the purchase (Solomon, 2015).

In addition, as far as overall consumer behaviour is concerned, there are many social and cultural influences that may have an impact, including cultural and sub-cultural levels, social class, reference groups, family influences and interpersonal communication. On the other hand, marketing stimuli and personal psychological factors also play an important role in influencing consumer behaviour, such as individual personalities and lifestyles, motivations, opinions and information processing(Schiffman and Wisenblit, 2015; Solomon, 2015).

Due to the uniqueness of consumers, it is important for marketers to understand the needs and wants of different market segments influenced by a range of factors, which require further segmentation strategies. In addition, important criteria that can help marketers identify include demographics (e.g. age, family structure, social class), geographical areas (e.g. nationality) and psychographics (e.g. values, preferences and lifestyles)(Schiffman and Wisenblit, 2015; Solomon, 2015).

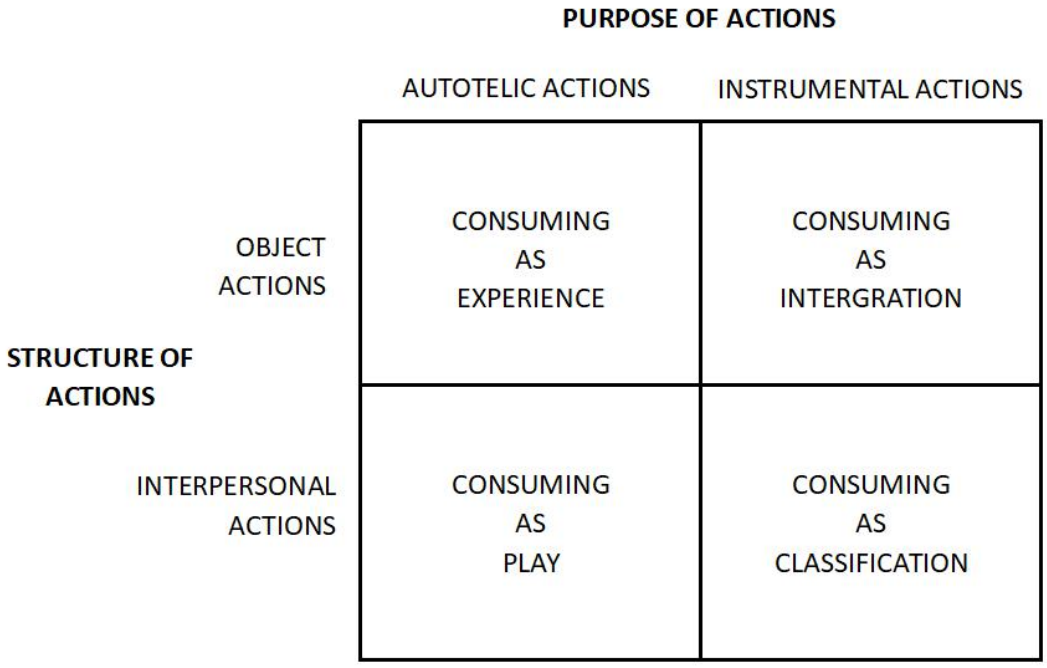
According to Douglas Holt (1995), consumer behavior will change continuously according to the characteristics of the consumer object.Specific consumer objects are

usually consumed by different consumer groups in various ways. Therefore, one of the key points of studying consumer behavior is to understand how differences in consumer behavior change among different groups, and to explain the unknown consumption conditions and pattern consequences of different groups (Giddens, 1987).

In the concept of Holbrook (1994), there are two basic concept to figure out the different aspect of consumption---the structure and the purpose of consumption. On the structure aspect, consumption includes both the consumer's direct participation in the behavior of the consumer object (object behavior), as well as the interaction with the consumer object as the focus resource (interpersonal behavior) of other people); on the purpose aspect, consumer behavior itself can be both ends (automatic behavior), or it can mean a further purpose (tool behavior).

On the basis of two dimensions, we can get a 2x2 matrix that describe four classification of consuming (see Fig.3).

Figure3 - Metaphors for Consuming



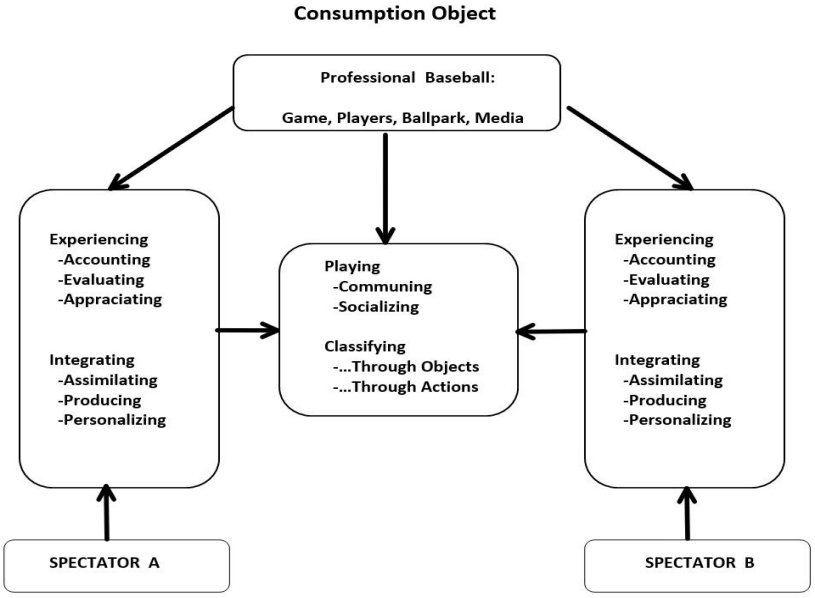
Source:Holt, Douglas. B.(1995)

Holbrook and Hirschman (1982) firstly study about the experiential, hedonic, aesthetic, autotelic and subjective dimensions of consuming. Affected by their research, Wallendorf, Melanie and Eric Arnould (1991) tend to view consumption as a psychological phenomenon from a phenomenological perspective, emphasising the emotional states arising from the process of consumption.

Research on consumption-as-integration metaphors describes the ways in which consumers acquire and manipulate the meaning of objects. According to Belt.et al (1989), consumers can integrate themselves and objects, allowing themselves to obtain the attributes of consumption objects. As for the consuming-as-classification metaphor, which is the foundation of the research, regard the consumption as a process, during the process, the consumption objects will contain culture and personality, and try to classify the customers and explain the meaning.

As the fourth dimension of consumption, the area of health care consumption has received the least attention in the consumer research literature(except Sherry [1990] and Arnould and Price [1993]). All four metaphors are necessary to describe the comprehensively of consumption and these four domains provide a specific glossary to describe how consumers consume (see Fig.4) (Holt, 1995)

Figure 4 - Consuming Professional Baseball: A Model of Spectator Consumption Practices



Source:Holt, Douglas. B.(1995)

2.1.2 Consumer Behaviour in Medical and Healthcare Industry

Over the past few decades, the rise of global aging and economic globalization has challenged the status quo of health care systems in many countries (Aspalter et al., 2012).Global aging is the result of two basic population forces, including longer lifespan and declining fertility(Peterson, 2002). It is estimated that the proportion of people over 65 years old will increase from 8% in 2010 to 16% in 2050 (Haub, 2011). The global population aging trend will increase people's demand for medical and health services. Therefore, medical expenses borne by individuals and government investment in the medical industry will also increase substantially (Peterson, 1999).

In this context, consumers will increasingly focus on the medical and healthcare industries---- “health is wealth” as the saying goes. Healthcare is closely related to issues of happiness, well-being and quality of life. Although maximizing health outcomes seems to be an obvious priority for healthcare organizations, in the operation of increasingly complex and complex healthcare systems and procedures, the views of consumers (or patients) are often blurred (Mark.J, 2007).

Responsibility for the growing crisis is increasingly attributed to a profit-driven health care system that favors commercial interests and raises consumer costs (Mahar,

2006). Two broad health care marketing issues are related to providing the "useful" discoveries that Armstrong (1998) expects will be an opportunity to improve health care delivery. The first is the important issue of consumer access to information that will improve patient care decisions. Despite consumers' desperate search for reliable information source to aid in decision making, health systems continue to ignore this consideration when serving patients.

2.1.3 Consumer Behavior During the Crisis

Survival psychology recognizes that individuals may experience behavioral changes as a result of certain events, including natural disasters, medical crises, and terrorist attacks (Forbes, 2017). Panic buying is often thought of as a behavior exhibited by consumers who buy unusually large or diverse products in anticipation, during or after, in anticipation of a disaster or perceived disaster, in anticipation of price increases or upstream shortages (Yoon et al, 2017). Herd mentality is defined as a congruence of individual thoughts and/or behaviors in a group that occurs without intentional coordination by a central authority or leader, but emerges through local interactions between agents (Kameda and Hastie, 2015). According to the hierarchical system, consumers during a crisis often focus first on satisfying basic physiological needs, and then turn to higher levels and more extravagant discretionary behaviors (Forbes, 2017). As for the media function, Kilgo et al. (2019) reported that while the initial panic seeped in organically from the unfolding crisis, the media caused a disproportionate amount of anxiety by emphasizing aspects of the news coverage, which largely drew more attention to itself by stoking fear.

2.2 Covid-19 Background

2.2.1 The Difference between Covid-19 and Other Pandemic

On January 10, 2020, the genome of a new corona-virus (now called Severe Acute Respiratory Syndrome Corona-virus 2 (SARS-CoV-2)) was released on the Internet (Global subsampling, 2020). Soon thereafter, more and more scientists around the world began to analyze its molecular details in depth (Tay et al, 2020).These scientists immediately recognized the pandemic potential of SARS-CoV-2 and immediately alerted selected vaccine manufacturers in hopes of triggering a rapid vaccine design and development process (Moderna website, 2020).

Table 1 - Known Human Diseases Caused by a Coronavirus

Disease	Virus	Main Manifestation(s)	Hospitalization	Antiviral Therapy	Vaccine	Case Fatality (%)
Common cold	HCoV-HKU1	Runny nose*	Very rare	None	None	0
Common cold	HCoV-OC43	Runny nose*	Very rare	None	None	0
Common cold	HCoV-NL63	Runny nose*	Very rare	None	None	0
Common cold	HCoV-229E	Runny nose*	Very rare	None	None	0
SARS	SARS-CoV-1	Pneumonia	Very frequent	None	None	9.5
MERS	MERS-CoV	Pneumonia	Very frequent	None	None	34.4
COVID-19	SARS-CoV-2	Respiratory tract infection†	Frequent	Remdesivir	None‡	>1.6§

* Rare: lower respiratory tract infection (bronchitis or pneumonia).

† Upper respiratory tract infection frequent, pneumonia in a minority of patients.

‡ 125 different vaccines in various phases of development, none yet approved.

§ Case fatality value varies with population characteristics, age distribution, quality of healthcare services, medical equipment, etc.

COVID-19, coronavirus disease 2019; HCoV-229E, human coronavirus 229E; HCoV-HKU1, human coronavirus Hong Kong U1; HCoV-NL63, human coronavirus Netherlands 63; HCoV-OC43, human coronavirus OC43; MERS-CoV, Middle East respiratory syndrome coronavirus; SARS-CoV-1, severe acute respiratory syndrome-coronavirus-1; SARS-CoV-2, severe acute respiratory syndrome coronavirus-2.

Source: Silvio D.P., (2020)

Although the transmission rates of severe acute respiratory syndrome (SARS) and Middle East respiratory syndrome (MERS) are lower than COVID-19, they cause many times more mortality than COVID-19 (Table 1)(Hirano, 2020).However, the number of COVID-19 SARS and MERS cases significantly exceeds the number of cases. Although the clinical manifestations of the two most recent infections are usually only in the respiratory tract, despite the higher severity of the disease, it is noteworthy that a variety of clinical manifestations exist in patients infected with COVID-19. From a pathophysiological point of view, this phenomenon can be explained by the prevalence of ACE2 receptors in multiple organs and blood vessels (Silvio, 2020).

2.2.2 Covid-19 Background in China

On December 31, 2019, China notified the World Health Organization (WHO) of the discovery of an unknown case of pneumonia in Wuhan, Hubei Province (WHO, 2020).The pneumonia was accompanied by persistent fever, cough, and difficulty breathing (Huang, 2020), and was then named Corona-virus Disease 2019 (COVID-19). Within two weeks, the disease spread rapidly from Hubei province to other neighboring provinces(Li et al, 2020). As of November 14, 2020, China has identified 92,409 confirmed cases and 4,749 deaths, of which less than 17% of the cases and less than 4% of the deaths occurred outside Hubei Province (Chan et al, 2020).

From January 15, 2020, local governments in China began their emergency response. From traffic controls in Wuhan, the epicenter of the outbreak, to forcing people to wear masks and avoid going outside and coming into close contact with others, thus reducing exposure to susceptible populations(Junwen Tao, 2021). Since China first reported the outbreak of the disease and took emergency measures (The State Council of China, 2020), including cross-regional traffic control, as well as

the suspension of the operation of restaurants, entertainment venues and cultural and tourist areas, in early March 2020, the outbreak has been initially controlled (National Health Commission of China, 2020).

2.2.3 Covid-19 Background Around the World

COVID-19 has become one of the greatest threats known to the human world (Kandel N et al, 2020). This new coronavirus spread significantly and frighteningly to the expanding areas of China in the Wuhan area, and was exported to the other countries of the world (Coronavirus Resource Center, 2020).With the spread of the COVID-19 pandemic, most countries imposed a lockdown to contain local transmission of the virus. In the wake of this, to guard against airborne transmission of the virus, governments required people to wear masks in public and tested people who showed signs of infection. Data from some countries show that the earlier the embargo is implemented and the stricter it is, the better the efforts to contain the outbreak (Ghosal S, 2020).

According to WHO conclusions, at least 125 different COVID-19 vaccination programs are currently underway (WHO draft, 2020).The high number of deaths caused by COVID-19 has triggered numerous projects aimed at identifying drugs that can be rapidly reproduced for use in critically ill patients with specific diseases (Silvio, 2020). Plasma extraction from the blood of recovered COVID-19 patients is currently being experimented at different sites (including new clinical trials), but conclusions about this treatment are still awaited (BlochEM, 2020).

2.3 The Impact of the COVID-19 Pandemic

2.3.1 The Impact of the COVID-19 Pandemic on the Social Environment

The economic impact of past epidemics is difficult to assess due to the lack of reliable data (GansJ, 2020). However, a review of the first 6 months of the COVID-19 epidemic reveals that the disease had a devastating impact on the economies of most countries that had to deal with large numbers of cases. The most severe economic impact occurred to varying degrees in wealthy countries (Silvio, 2020). As a result of the COVID-19 pandemic, quantifying the relevant activities of selected populations allows for a more accurate assessment of world economic changes and impacts. For example, collecting the purpose of outdoor activities (homes, parks, workplaces, grocery stores, and pharmacies) may help provide a comprehensive assessment of household units affected during COVID-19 (Capital Economics, 2020).

According to the research of WarWick & Roshen (2020), during the COVID-19 pandemic, production costs will rise rapidly, and the damaged national finances need to continue to operate. Faced with such fiscal pressures, the government plays a key role, because this is a need for currency, finance and Health policy responds quickly to a multifaceted crisis. Levine and McKibbin (2020) point out in their research that good health policies need to reduce the level of infection while reducing social and economic operating costs. The following table shows the total central bank expenditures of some central banks to stimulate the economy.

Table 2 - Central bank spending

S/N	Central Bank	Amount	Covid-19 Policy response
1	Reserve bank of India	$50 billion	India adopted a 'whatever it takes' policy which suggest an uncapped spending
2	Central bank of Russia	300-billion ruble ($4 billion)	Anti-coronavirus crisis fund
3	Bank of Canada	C$1.0 billion (US$703 million)	Purchase of government bonds, beginning with purchase of C$5 billion per week
4	ECB	€750bn (£637bn) ($796.2billion)	Emergency fund for bond purchase program for EU member countries
5	Bank of England	£ 200 billion pounds ($248 billion)	First round of quantitative easing. An additional round of QE is currently being considered
6	Federal reserve	more than $3 trillion	For loans and asset purchases. FED said its balance sheet had exceeded US$3 trillion
7	People bank of china	500billion yuan ($79 billion)	To rescue a virus-weakened economy
8	Reserve Bank of South Africa	-	Fiscal authorities are taking the lead on this, not central bank
9	Bank of France	45 billion euros ($48.9billion)	Country allocation from the ECB rescue fund
10	Central bank of Italy	25 billion euros ($27.2billion)	Country allocation from the ECB rescue fund
11	Reserve bank of Australia	A$90 billion ($56 billion)	Coronavirus support fund
12	Central bank of Brazil	1.2 trillion reais ($231 billion)	Financial support to counter the effects of COVID-19
	Total	$4.541 trillion	

Source: Ozili, et al (2020)

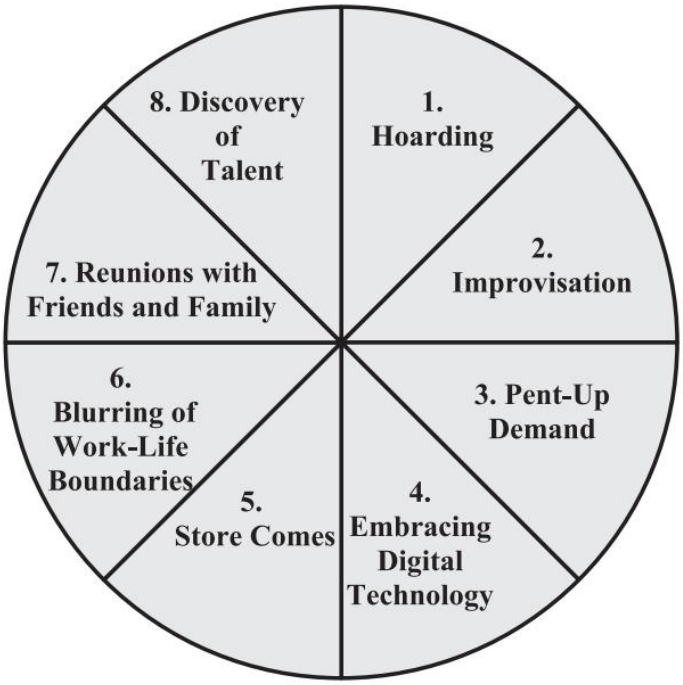
Because of the home isolation policies promulgated by various countries, the seeds of decline have been planted. Economists generally believe that the COVID-19 pandemic will plunge the world into a global recession (Financial Times, 2020). The International Monetary Fund (IMF) predicted in March 2020 that this global recession would be at least as severe as the global financial crisis of 2007-2008 and was unsure if it would zai recover in 2021 (Georgieva, 2020). (Georgieva, 2020).

2.3.2 The Impact of the COVID-19 Pandemic on the Consumer Behaviour

According to the research of Jagdish Sneth (2020), the impact of the COVID-19 Pandemic on the Consumer Behaviour can divided into immediate effects and indirect effects. Immediate effects include eight aspect which is ① Hoarding, ② Improvisation, ③ Pent-up Demand, ④ Embracing Digital Techonology, ⑤ Store Comes Home, ⑥ Blurring of Work-Life Boundaries, ⑦

Reunions with Friends and Family, ⑧Discovery of Talent. All of these are the results of the blockade, the expansion of social distance, and the restriction of consumers' choices of shopping places.

Figure 5 - Immediate Impact of Covid-19 on Consumption Behavior



Source: Jagdish (2020)

The research institute Kantar also conveyed significant changes in consumer attitudes, behaviors and expectations in a report entitled "COVID-19: Market Dynamics during Indian Consumer Sentiment Analysis" (2020). The survey also reported that both physical and online expenditures have been greatly reduced. The survey also showed that the original purchase was delayed and that the new study could be lived with less money.

As community life has become the survival mode of most people, in addition to changes in spending methods, during the pandemic, consumers have increasingly used e-commerce touch points as various digital platforms (i.e. products, social media and mobile platforms) Official website) for shopping (Deloitte, 2020). With the emergence of physical distance rules, traditional outdoor advertising and

shopping opportunities in shopping centers will decrease, and this kind of consumer shopping journey will become more and more digital. It is expected that these technology platforms will achieve a powerful role in consumer establishment, awareness, transaction and retention after COVID and word-of-mouth communication (Accenture, 2020).

In order to control, prevent, deal with or respond to fears and perceived risks, consumers need to continuously gather relevant information. These risks lead to a highly interactive and social presence on e-commerce platforms (Jiaming et al., 2020). However, in the United States, and especially in Europe, the digital world is still not as well developed as in China. Although large retailers (e.g. Carrefour) and start-ups (e.g. Deliveroo) are developing the "last mile" of logistics capabilities, their ability to prepare and meet customer needs is weak (Harvard Business Review, 2020).

2.4 The Medical Product Industry in China

2.4.1 The Medical Product Situation in China

In the "World Preview 2018, Outlook to 2024" released by Evaluate MedTech, the 2017 global medical device market's sales were 405 billion dollar, a year-on-year increase of 4.6%. Under such an international background, China’s medical device industry has also ushered in good development opportunities. According to the data analysis of the Institute of Medical Devices, the market size of China’s medical devices in 2018 was about 530.4 billion Yuan, a year-on-year increase of 19.86%. Market development The potential is huge (Dong et al, 2020).

China has a large number of medical device companies. In 2018, my country had about 18,700 medical device manufacturers, and the number of listed companies was about 52. Among them, there were 1997 companies that can produce Class III products and 7,518 companies that can there are 9189 first-class products. Among

the 18,700 medical device manufacturers, more than 90% are small and medium enterprises (Lian et al, 2020).

By the end of 2019, the total number of health care institutions nationwide had reached 1,007,545, including 34,354 hospitals (1516 tertiary A hospitals), 954,390 primary medical and health institutions, and 15,924 professional public health institutions (National Health Commission, 2019). A large number of medical and health institutions can not only provide strong technical support for the research and development of medical devices, but also provide a broad market for their product consumption (Ye, 2020).

2.4.2 The Impact of the COVID-19 Pandemic on the Medical Product Industry

As a result of the global spread of the epidemic, demand for medical equipment such as respirators, medical masks and protective clothing surged, with exports experiencing reverse growth during the epidemic. In terms of product types, due to the decline in the number of outpatient visits and surgeries in hospitals, the demand for related equipment such as pharmaceuticals and clinical equipment is decreasing, but the demand for epidemic prevention-related medical equipment such as ventilators and medical gloves is saturated, and the medical equipment industry as a whole has shown explosive growth in stages (Wang, 2020).

Zhu et al. (2020) found that the COVID-19 pandemic poses many difficulties for China's export-oriented enterprises, will increase the supply gap for exports in the short term, and adversely affect the global production system.Song (2020) argued that the impact of the COVID-19 epidemic on corporate supply chains is mainly reflected in the raw material supply chain, logistics, production recovery, corporate procurement management , and supply chain market in five aspects, and proposed some stable supply chain policies from the perspective of government and enterprises.

From the perspective of market size, the market size of my country's mask industry from 2015 to 2019 was 415.02 billion yuan. Since 2016, the annual growth rate has remained above 10%. Among them, the output value of medical masks reached 3.254 billion yuan, 3.695 billion yuan, 4.121 billion yuan, 4.755 billion yuan and 5.491 billion yuan respectively in 2015-2019, showing a continuous growth trend, accounting for 50% of the entire mask industry output value. Recently, affected by the COVID-19 epidemic, the demand for masks has skyrocketed. It can be expected that the market size and output value of masks in 2020 will far exceed 2019 (Xu, 2020).

3 Methodology

According to Larnencs (2014), qualitative methods have been frequently used in market research, proving their value in understanding consumer motivations, testing advertising communications, exploring the meaning of consumer vocabulary, and developing new products and services.

Due to the exploratory nature of this research and the series of psychological and behavioral changes brought to consumers by the COVID-19 pandemic, the author believes that qualitative methods are better. In addition, in-depth interviews can more directly face consumers' inner thoughts, thereby obtaining more meaningful and diverse information. Specifically, semi-structured interviews are used to understand their preferences and behaviors, instead of providing specific choices like questionnaires, which may be inaccurate because consumers' initial ideas will be confused and given Guided by the choice. In addition, since most of the relevant research is conducted with quantitative methods and little exploration is conducted in the context of the Chinese market, in-depth interviews can be regarded as an exploratory stage and provide deeper understanding and details. To lay the foundation for further quantitative research on this profitable market.

As for the interviewees, since everyone is concerned about their own health, and the COVID-19 virus attack target will not be divided into a specific occupation, gender, age, etc. In addition, the past experience of consumers will have a greater impact on future behavior (Solomon, 2015). Therefore, we will select respondents who have been in China in the past year (2019/12~2020/12) and experienced the COVID-19 pandemic first-hand. In order to ensure the authenticity and objectivity of the interview, we will cover as many interviewees of any condition as possible. Such as consumers of all ages, various types of work, and different living habits.

3.1 Data Collection

The qualitative method consists of interviews and three decision-making areas. The three areas are participants and background, data collection and data analysis (Gatfield et al, 1999). Interviews are the most common of the receipt data methods (DiCicco-Bloom and Crabtree 2006). Taking into account the effectiveness and completeness of the research methods and interview questions, in order to more accurately identify the subject, first conduct a research on 10 people (divided into two groups). After appropriate revisions to the interview questions, complete research interviews (excluding 10 trial research interviewees).

Polit and Beck (2006) define an interview as "data collection usually by one person asking questions of another person, with the interview being conducted either face-to-face or by telephone." After having a preliminary understanding of the length of the interview and the pace of the interview process, we can better inform the interviewee before the interview. Before the interview, the interviewee will be informed of the purpose of the research and the need for the interviewee's answer to be recorded. In addition, the personal information of interviewees will be protected, and names and private information will be hidden. The interview will start after the interviewees agree, and the venue will be a relaxing and comfortable environment to increase the authenticity and reliability of the answers.

In addition, interviews will be conducted with residents of mainland China through We Chat video calls. All interviews will be recorded with the interviewee’s permission. Since the research is conducted in English, the interview content will be transcribed verbatim before translate into English to provide further analysis.

3.2 Data Analysis

Since the qualitative data of the text is non-digital and semi-structured, coding and subject analysis of the data is an important step in qualitative analysis. The interview data was subject to thematic analysis, and the original data was independently and manually coded according to the process proposed by Bazeley (2013), starting from an author. Open coding is the first stage of coding and consists of the process of decomposing statements, validating theories, comparing conceptualizations and classifying data (Anselm, 2009). When open coding, consistency in the same category needs to be attended to, as does the mining of new categories and attributes, and the need to maintain a balance between consistency and new attributes (Strauss, 1997).

Table 3 - Partial data and open coding

Data	Code
After the government promulgated various anti-epidemic measures, I began to purchase medical products, mainly masks, because there are more requirements for masks in anti-epidemic measures. For example, you must wear a	Epidemic prevention measures Procurement of medical products Face mask Take public transportation Cinema Workplace No policy no purchases increase

mask all the time when you take public transportation, you must wear a mask all the way to a movie theater, and you need to wear a mask in various workplaces. Without these policies, I would not increase the purchase of masks.	
The epidemic in my impression does not last for so long and the scope is not so wide. Moreover, this epidemic feels that the increase in death toll is reported every day. I have also read many personal stories on Weibo, which is very miserable. No one noticed that kind of death at home for several days, and I still felt scared when I saw them.	Long lasting Wide range The number of deaths increases every day Weibo platform Personal story Tragic Lonely death Scared
Vaccines are not a panacea, right? Who knows if there will be new changes in the virus? Maybe the vaccine can suppress COVID-19, but if something like COVID-21 comes, it may be completely useless. I don't know when the situation will get better. I'm desperate, so I should try my best to protect myself.	Vaccine Not a panacea New virus New changes Don't know when the situation will get better Despair personal protection

In this study, taking into account the size of the sample size and the time cost of learning automatic coding software, the data was manually coded after being fully familiarized. Similarly, in order to achieve cost research purposes, note cards, tables, frequency tables and different percentages will be created through EXCEL. The framework of this research will be based on the extracted coding topics and the literature of previous researchers.

4 Results

4.1 Demographic Analysis

In total, there are 30 interviews, with 13 Male and 17 Female. As Table 4 shows, 26.7% of the interviewees were below 30 years old, and 63.3% were over 30 years old, also there are 10% of the interviewees were over 50 years old. 53.3% of the interviewees had achieved Bachelor Degree, and about 36.7% had only high school education background or below, 10% had achieved Master Degree. Moreover, more than half of them (73.3%) are married, and 26.7% remain single. The majority of them work full-time (60%), followed by unemployed status (30%) and retired status (10%). About half of them (46.7%) had a monthly income lower than 5000 RMB (1000 RMB =125 Euros), 43.3% between 5001 to 10000 RMB, and only 10% above 10000 RMB.

Table 6 - Demographic Characteristics of the Interviewees (N=30)

Characteristics	Percentage (%)	Characteristics	Percentage (%)
Gender		**Occupation**	
Male	43.3	Student	13.3
Female	56.7	Businessman	10.0

Age		Manager	6.7
18-23	10.0	Civil Servant	13.3
24-30	16.7	Professional	10.0
30-40	36.7	Clerk	20.0
40-50	26.6	Housewife	16.7
50 above	10.0	Retired person	10.0
Education Level		**Disposable Income**	
High School or below	36.7	0-5000	46.7
Bachelor Degree	53.3	5001-8000	26.7
Master Degree	10.0	8001-10000	16.6
Marital Status		10000 above	10.0
Single	26.7	**Family Structure**	
Married	73.3	Married without childbearing (2 person)	23.3
		Married with childbearing (3-4person)	43.4
		Live with parents (5-6person)	20.0
		Single (1 person)	13.3

4.2 Result Framework

In the second stage of code-axis coding, also known as correlation logging. The researcher in this phase will deeply analyze and compare different conceptual levels, as well as different categories of deep relationships, and focus on the correlations between them in order to adjust the classification so that the categories are organically linked together to form the main categories (Charma, 2002).

Table 5 - Mentioned Frequency of the Interviewees (N=30)

Impact Factor	Mentioned Frequency (Impact Factor)	Mentioned Frequency (Result)	Impact Result
Daily Behavior Changes	Reduce outdoor (20) Workplace change (22) Online purchase (15) Increase purchase (18)	Purchased at any Price (25) Purchased even Price increase (23)	**Not Affected By Price**

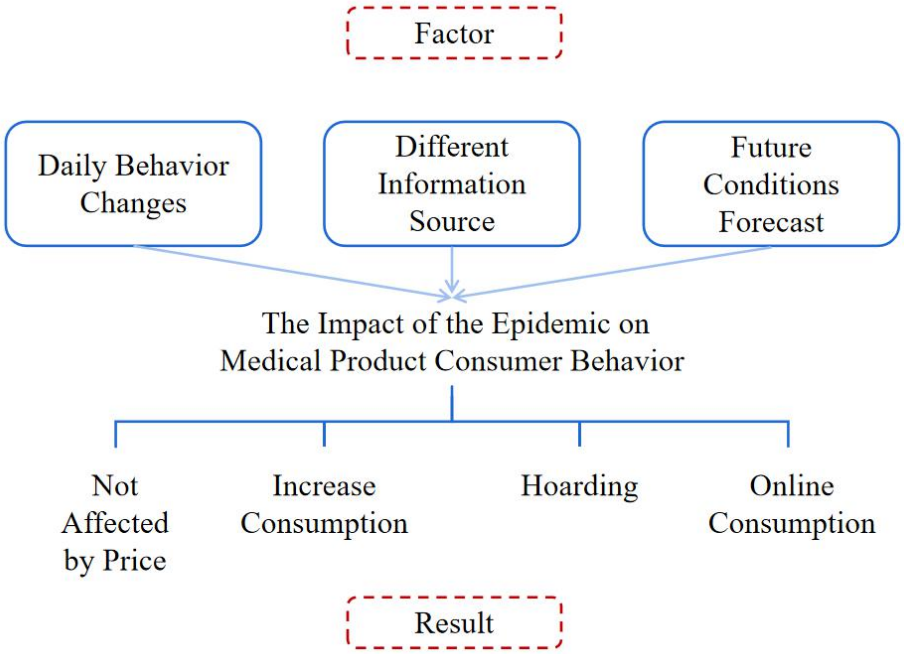
Different Information Source	Official News (28) Rumors (14) Personal experience (12) Social Media (23)	Purchased more than before (22) Increase spending (16) Changes in spending structure (10)	**Increase Consumption**
Future Conditions Forecast	Normalize (25) More limitation (17) Strict Control (11)	Buy a lot at one time (20) Purchase with stock (13) Unnecessary purchase (16)	**Hoarding**
		Purchase from Alibaba (22) Community group buying (12) Remote booking and purchase (16)	**Online Consumption**

Note: Numbers in the brackets refers to mentioned frequencies during the interview.

After secondary coding the original data, there can sum up the following eight themes, according to the different nature of the subject, as the causal relationship between them, we can divide the themes into "Factors that affect people's consumption of medical products during the epidemic" and "Consumers' behaviour results after being affected." For example, because of "Daily Behavior change", people change into "Online Consumption", or we can say, because of "Future Conditions Forecast" turn into positive or negative, people tend to "Hoarding" or "Increase Consumption".

The impact factors are relatively divided into three themes, namely: Therefore, these three themes: "Daily Behavior Changes", "Different Information Source" and "Future Conditions Forecast" are divided into "The impact factors"; and the others are divided into "Impact Result", which is "Not affected by price", "Increase Consumption", "Hoarding" and "Online Consumption". The frequency of the corresponding node being mentioned in the interview is shown in Table 5. The theoretical framework based on this is shown in Figure 4.

Figure 6 - Result Framework and Impact Factor



4.3 Main Findings

Table 4 - Summary of the Research Findings

Main Themes	Related Concepts	Interviews' Text
Daily Behavior Changes	Time, places, method, routine	The lockdown measures during the epidemic caused me to change my working hours and locations... After that, my consumption method was also changed... To a large extent, I no longer live according to the routine before the epidemic. (Interviewee #8, 32 years old, female) Most of the time I am still used to getting information from social media. Other times I read

Different Information Source	Social media, newspaper, radio, TV shows	newspapers or radio. The source of information on TV shows makes me unsure, so I don't read it very much. (Interviewee #3, 57 years old, female)
Future Conditions Forecast	Rate, death, vaccine	When the epidemic first started one month ago, I predicted that the prevalence rate would get higher and higher, and so would the mortality rate, but these rates will definitely drop with the development of vaccines. (Interviewee#28,34 years old, male)
Not Affected By Price	Buy, price, quality	...I bought a lot of masks and didn't care about their high prices at all, because in this special period I care more about their quality, that is, whether they can really effectively prevent the virus. (Interviewee#27,49 years old, male)
Increase Consumption	Purchase,many,consume	During this period, the number of masks and other personal protective equipment I purchased increased a lot, and consequently my overall consumption expenditure in this area also increased. (Interviewee#26,20 years old, female)
	Buy, stock	During this period, whenever I buy something, I always want

Hoarding		to stock it unconsciously. Especially medical protection products, this is one of the things I stock up the most. (Interviewee#1, 31 years old, male)
Online Consumption	Alibaba,package, delivery	When I was self-isolating at home, I bought a lot of things on the Alibaba platform. I will sterilize every package delivered to my door with alcohol. Even in this period of lack of human resources, I still don't feel much impact on logistics. (Interviewee#20, 35 years old, female)

5 Discussion

5.1 The Impact Factor of Consumer Behavior Change During the Epidemic

Theme 1: Daily Behavior Changes
(Related Concept: Time, places, method, routine)

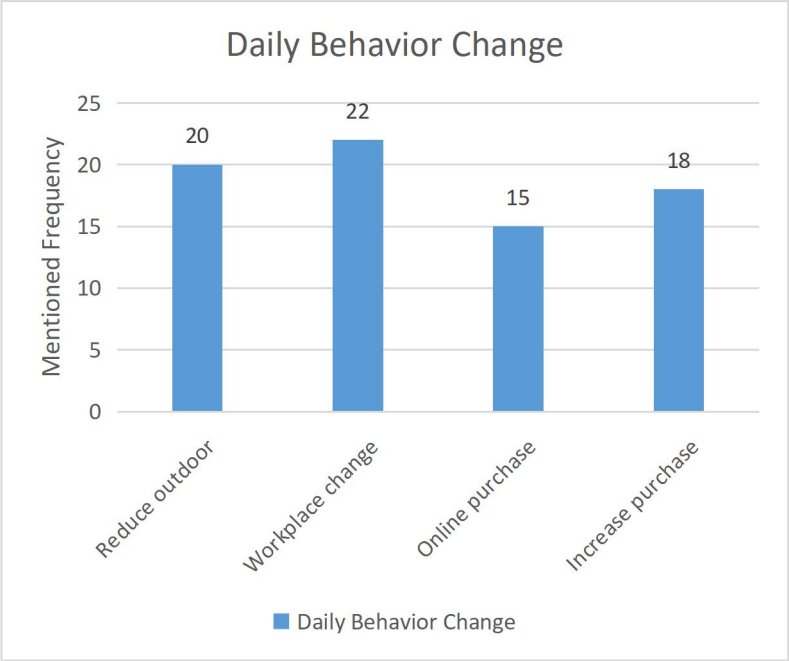
From the result, we can indicate the related concept as “Time” “places” “method” and “routine”, which was the most mentioned concept by the interviewees. From this we can think that "Daily Behavior Changes" is reflected in these aspects and indirectly feeds back on changes in consumption performance. The change in the workplace was mentioned up to 22 times by the interviewees, which shows that the change in the workplace is indeed an important factor that makes daily behavior affect consumption. From this we can think that time and place are a universally important

consideration in the process of consumer decision-making. There is a high probability that people will change their shopping decisions due to changes in commuting hours and changes in shopping venues.

Reduce Outdoor activities is the second most frequently mentioned node among interviewees. This is one of the results that must be accompanied by the stay-at-home policy. In addition to online shopping, reducing out-of-home activities also greatly reduces people's shopping opportunities. If it is in an area with underdeveloped logistics areas, it is inconvenient for people to shop online, and the total expenditure is will be reduced accordingly. Interestingly, most of the interviewees (16 person) said that even if the frequency and time of their outings were reduced, they would not give up buying masks or other medical supplies, because it gave them the unanimous belief that “there is no unnecessary item in the times of crisis”.

The blockade caused by the prevention and control measures of the epidemic has led to drastic changes in people's daily life behaviors. In China, at the beginning of the outbreak, the government implemented two main types of control: traffic control and crowd contact control (Junwei Tao, 2021). According to (Interviewee #22, 26 years old, female) recalled, “Community workers will take coercive measures to keep residents at home, reduce outdoor activities, and deliver daily necessities to their doorsteps. The work style has also been changed to work at home. Business establishments large and small have also been closed.” As (Jagdish, 2020) mentioned before, all consumer behavior revolves around time and places, traffic restrictions have led to restrictions on shopping locations, and the control of social distancing has also led to changes in people's consumption patterns. As (Interviewee #14, 33 years old, male) described, "Because I need to wear masks in all kinds of places, masks have become one of the items that I must purchase every day, and my shopping method is more inclined to online shopping, which makes me buy more disinfection water, because I think there will also be viruses on express parcels."

Figure 7 - Different Factor Mentioned Frequency of Daily Behavior Change



Valaskova et al (2015) express the consumer behavior approaches in their research, that the consumer behavior impact factor can be divided into three group, which is psychological factors, social factors and economic factors. From the descriptions of the interviewees, we can know that changes in daily behavior are social factors that affect consumer behavior. Because this is neither a spontaneous psychological factor of consumers, that is, staying at home because of control measures is not their voluntary behavior, and it is not a behavioral change caused by consumers' economic reasons.

Regarding the consumption of medical products, (Interviewee #11, 52 years old, female) mentioned that their home life has led them to purchase more household blood pressure monitors, household thermometers and household blood glucose meters, which they had never purchased before medical products. Let us understand that during the epidemic, consumers purchase medical products in addition to disposable consumables, as well as medical equipment.

Theme 2: Different information sources
(Related Concept: Social media, newspaper, radio, TV shows)

The results show that people's information sources during the epidemic are still diverse, but the credibility is not consistent. Therefore, people's positive or negative emotions are different due to the influence of information sources. During the interview, people mentioned the channels for receiving information during the epidemic: newspapers, TV news, social media, word of mouth, online website and slogans in public places. The most mentioned information channel is social media (28 times). When the interviewees were asked about the emotions that the received information brought to them, completely negative emotions were mentioned up to 24 times, including: anxiety, irritability, depression, panic, and despair. Among them, the most frequently mentioned emotion was "panic".

In this era of advanced information exchange, people have a lot of opportunities to access various information about the epidemic through various channels. As Valaskova et al (2015) stated in their research, everyone's consumer behavior will be affected by more or less internal or external factors. The information about the epidemic will affect their views on the situation, and then affect their consumer behavior on the relevant product.

Table 7 - Mentioned Frequency of the Information-induced emotions (N=30)

Information-induced emotions	Mentioned Frequency (N=30)
Positive	6
Negative	24

According to Garfin D.R (2020), if the media repeatedly reports on public health crises (including pandemics), it will aggravate the psychological distress of the public. And the resulting pressure will increase the behavior of seeking help, these behaviors may not be commensurate with the actual needs, resulting in increased burden on medical institutions. As (Interviewee #21, 38 years old, female) described in the interview, "The pandemic symptoms promoted in the news have given people a sufficient understanding of the disease, but they can’t help constantly compare some

of minor problems with it. During my stay at home, I had a little headache and brain fever and suspected that I had COVID-19, so I ran to the hospital. Although the final examination result was normal, the hospital was crowded with people, maybe most of them are as suspicious as I am."

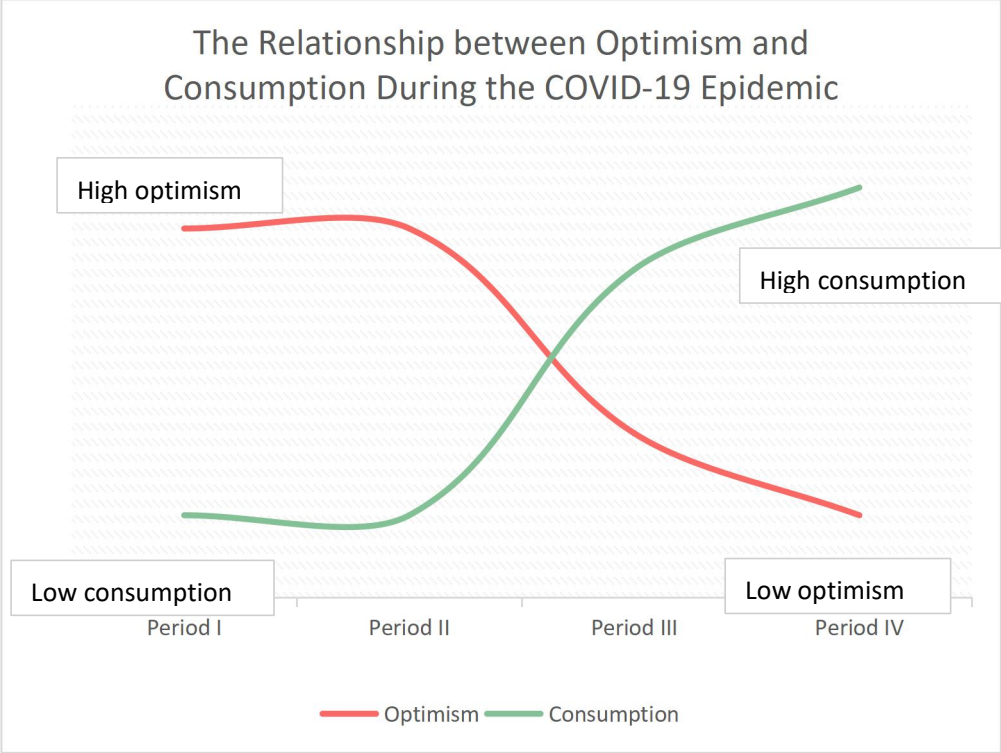
In fact, in times of health, people rely on up-to-date information from a variety of media sources to make decisions, including their health-protective behaviors and judgments made by consumer behavior. However, in times of uncertainty and crisis, people will rely more on media messages (DeFleur ML, 1976). In decision science, people tend to develop an accurate understanding of current risks when the media effectively communicate facts to them (Fischhoff B, 2018). In the context of H1N1, the same increase in uncertainty has aggravated public anxiety (Taha SA, 2014). (Interviewee #4, 24 years old, male) described: "During the pandemic, I check media news more frequently, and will determine my purchase list based on the supermarket inventory reported in the news... News it did bring me anxiety, and this anxiety did affect my buying behavior. I don't know if I was a little defensive (when I went to the supermarket to snap up a purchase), but at that time I thought I was right." It should be noted that when vague media reports are combined with the invisible threat of the virus, fear and anxiety may intensify and encourage people to spread misinformation.

Theme 3: Future conditions forecast
(Related Concept: Rate, death, vaccine)

The analysis confirms that, regarding the trend of the epidemic period in the future, people are more concerned about whether the growth trend of morbidity and mortality is decreasing or not. After all, this is a relatively intuitive indicator of the results of the fight against the epidemic. At the same time, the development of vaccines is also the main item that people expect, or it can be said that it is a "sign" of the end of the epidemic blockade. Although most people have mentioned vaccines, few people pay special attention to the effectiveness of the vaccine, the experimental process, and the real protective effect. Most people still stay on a very superficial level of the COVID-19 vaccine.

During the interview, it was discovered that most people had a period of optimism at the beginning, but the time point for the transition from optimism to pessimism is different for everyone, and the reasons are also different. Some people have seen the gradual increase in mortality and infection rates. Some are because of gradually strict control measures, and some are because of unemployment and work stoppage. However, the overall feature is that even if they invariably reduce their total expenditures and increase deposits (for the sake of resistance to risks in a special period), people’ s consumption of medical products (especially personal protective equipment) has not decreased but instead Increased, so we can understand that people's expenditure on medical products accounted for other needs. What's interesting is that in China, the time for reducing expenses has been kept very short. With the development of online shopping and other platforms, people soon began to regain optimism and purchase various items online to maintain their living standards during isolation at home.

Figure 8 - The Relationship between Optimism and Consumption During the COVID-19 Epidemic



In the survey of Binder (2020), most consumers in the United States are worried about the impact of COVID-19 on the economy, especially the concern about the unemployment rate, which has also greatly affected consumption. For China, in the survey of Chen et al. (2020), daily offline consumption dropped by 32% during COVID-19, as 18.57 million RMB per city. Under the impact of COVID-19 on the economy, people who are pessimistic about the future should reduce consumption and increase savings (Berger, 2014). As (Interviewee #13, 34 years old, male) described, "When the epidemic started, everyone felt that it would not last long, so the things they buy every day have not changed, but they have only become online purchases. For a long time. After that, many people stopped working and couldn't get their salaries, so they started to cut their expenses. The pessimism also strengthened with the strengthening of control."

According to the belief-based utility of Brunnermeier and Parker (2005), decision makers are subjectively active in changing their beliefs and are overly optimistic when they are uncertain about the extent of the impact. In the process of forming expectations, decision makers will face a trade-off that will allow them to

achieve a balance between optimism and anxiety. For example, when people form certain beliefs about the cure rate (or the length of time to calm down) of a general epidemic, optimistic beliefs will alleviate people's concerns about prolonged lockdowns (so no action has been taken to deal with this situation). What followed was that the decision makers found themselves inadequately prepared when faced with the sold-out shelves. (Interviewee #6, 28 years old, male) described, "My risk awareness is very low, and I didn't realize the seriousness of the situation. Fortunately, my wife responded and bought what I needed at home when the supplies were sufficient items, especially masks, and also planned our family's expenditures and consumption, so that we will not be so panicked and anxious later." As the main findings show in the research of Li and Huang (2020), some people continue to maintain optimistic expectations, while a large number believe that the shock will be permanent. They plan to reduce consumption and increase savings. Due to the lockdown measures and high prevalence, people expected high unemployment and low consumption, and decided to reduce investment and reduce risks.

5.2 The Impact Result of Consumer Behavior Change During the Epidemic

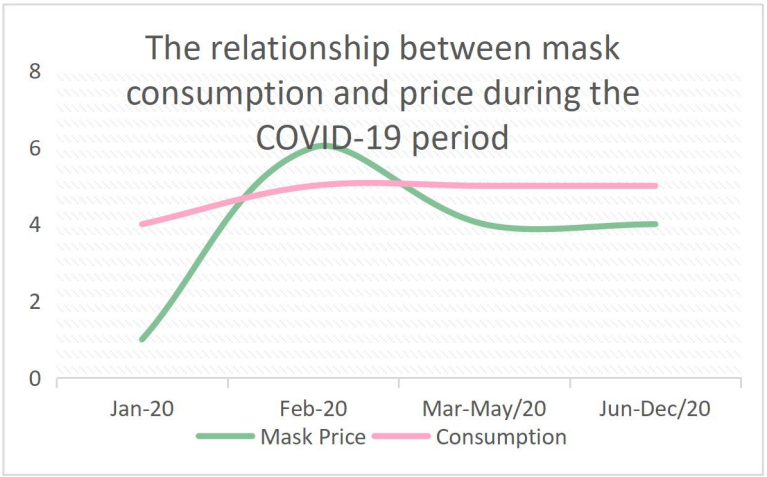
Theme 4: Price-independent purchase (Related Concept: Buy, price, quality)

For this theme, the related concepts are few and single. The reason is also very simple. As a necessary product during the epidemic, consumers will naturally ignore its price. If you only look for the cause from an objective level, the related concept is "quality." That is, consumers ignore price because they care about product quality. In this part, we will not discuss consumer psychological factors and environmental policy factors for the time being.

This part will mainly take masks as the case, because the product of masks fluctuates significantly in medical products during the epidemic. Due to the infectious characteristics of COVID-19, that is, the main way of transmission is through

respiratory droplets and contact transmission, and the Chinese New Year is the most important traditional festival in China, returning home and family reunion is a tradition passed on from generation to generation, so the flow of people during the Chinese New Year maximum. As a result, masks, especially disposable medical masks, have become a daily necessity for 1.4 billion people to go out, which has led to a sharp increase in the market demand for masks (Jintao, 2020). In this context, the price of ordinary disposable masks has risen from 0.5RMB/piece to 5RMB/piece, and N95 masks have also risen from 3RMB/piece to 40RMB/piece. The masks were sold out and even sold out in pharmacies. Except for masks. In addition to the cut-off of commodity supply, there is also a great shortage of meltblown nonwoven fabric as an important raw material for masks. Before the outbreak, the market price of meltblown nonwoven was 18,000 yuan/ton, and just two months later, the price has doubled 20 times, rising to 400,000 yuan/ton today. Such profits are comparable to arms and drugs (Yuxin, 2020). (Interviewee #15, 33 years old, female) described: “Before COVID-19, I never even paid attention to the price of masks because I rarely use them in my daily life. The price of disposable consumables like masks should be about the same as Band-Aids or gauze. However, when I really needed it, I found that its price was far beyond my expectations, and I didn’t know when it happened.”

Figure 9 - The Relationship between Mask Consumption and Price During the COVID-19 Epidemic



Although the price of masks has increased at an alarming rate during the epidemic, in the interview, none of the interviewees said that they had not bought/reduce their purchases because of the increase in the price of masks. (Interviewee #16, 23 years old, female) said, “ I watched the price of masks go from single digits to double digits. Even if it hurts me very much, but in order to protect myself from the virus, I still will buy it.” Similarly, (Interviewee #12, 36 years old, male) thought, “The price increase of masks is reasonable. In the past, people didn’t need to use masks to protect themselves most of the time, but now Masks have become a life-saving existence. Just like hard currency, if you don’t wear a mask, you will get sick, you will need to take medicine and be hospitalized, and spend more money. To a certain extent, the high price of masks can help you avoid more losses. So I am willing to pay this price for masks." According to Mingyi (2020), as a symbol, consumer behavior can help people balance their inner panic in the anxiety of death fear and form a self-defense. The sudden major epidemic is a psychological stimulus that brings people a sense of death threat. Therefore, the review of consumption behavior of the epidemic can clearly find this consumption law based on self-protection psychology and defense mechanism.

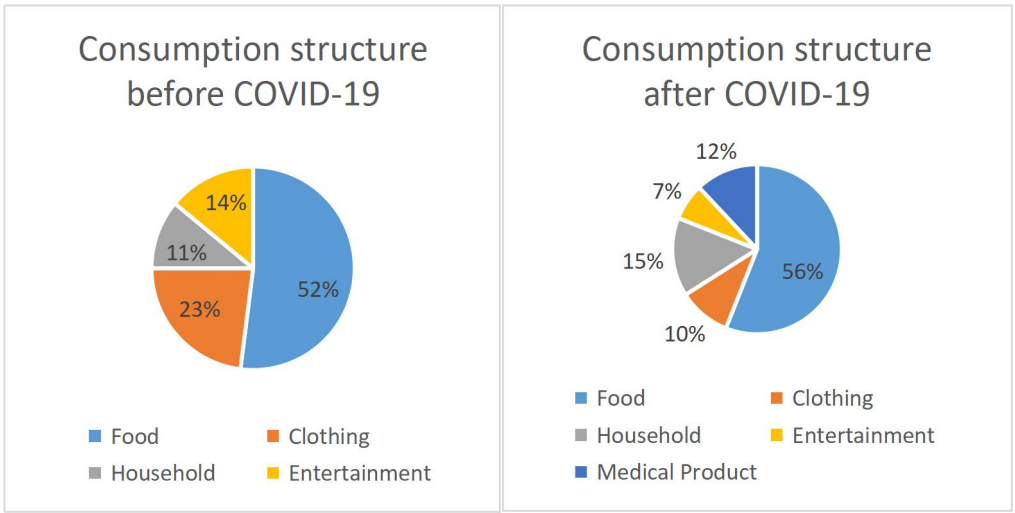
Theme 5: Increase consumption
(Related Concept: Purchase, many,consume)

As a result of an intuitive theme, related concepts are mainly focused on "purchase", that is, people's main descriptions of their shopping behavior are scattered. Even so, the result is the same. Here we will mainly discuss the increase in medical products in order to better answer our research questions and focus on the increase in consumption.

In the interview, we found that the general household expenditure structure of the interviewees was roughly the same. Then their expenditure structure changes during this period are almost the same. The general trend is selected here to make a pie chart. It can be seen from the figure that because people are isolated at home, the chance of going out shopping is reduced, so food storage is very necessary. During

this period, the family's food expenditure increased slightly. The reduction in opportunities to go out directly leads to a significant reduction in the expenditure on buying clothes and the expenditure on daily entertainment. The most obvious is that there is an additional expenditure on medical protection products, such as masks, gloves, and face masks, etc., which is a large category that has never or rarely appeared in the household expenditure structure before. Household expenditure refers to more water and electricity expenditures or service expenditures due to people staying at home longer than in the past. As (Interview #3, 29 years old, male) described and said, "In those few months, I made a rough calculation. Although our family went out less frequently, the overall expenditure did not decrease. I thought that buying so many foods for storage, such as rice, flour, and cooking oil, would cost a lot more. The cost of buying masks was also quite large, but on the other hand, our other expenses were also reduced. "

Figure 10 - The Consumption structure in the family before and after the COVID-19 Epidemic



As mentioned in the previous section, consumers have begun to purchase medical protection products such as masks without price fluctuations during COVID-19, so the increase in purchases is another result that accompanies them. According to the research of Mathur, Moschis, and Lee (2003), we know that in order

to cope with the demands, stressful events in life will cause people's consumption habits to start, intensify or change. We already know that annual natural disasters will lead to a decline in associated economic activity (Fortin and Onkeles, 2011), as well as a change in utilitarian and hedonistic shopping motives (Larsen and Shin, 2018). Practical purchases include necessities and supplies, while hedonistic components include a sense of freedom, addressing boredom, celebrating the end of a blockade, and reuniting with family and friends. The results of the survey showed that there was an increase in purchases immediately after the disaster, but in the long run it was consumption reduction; some interviewees said that they are no longer willing to overspend, the possibility of overspending is reduced, and they are more cautiously when making purchase decisions (Kennett-Hensel, Sneath, and Lacey, 2012).

Theme 6: Hoarding
(Related Concept: Buy, stock)

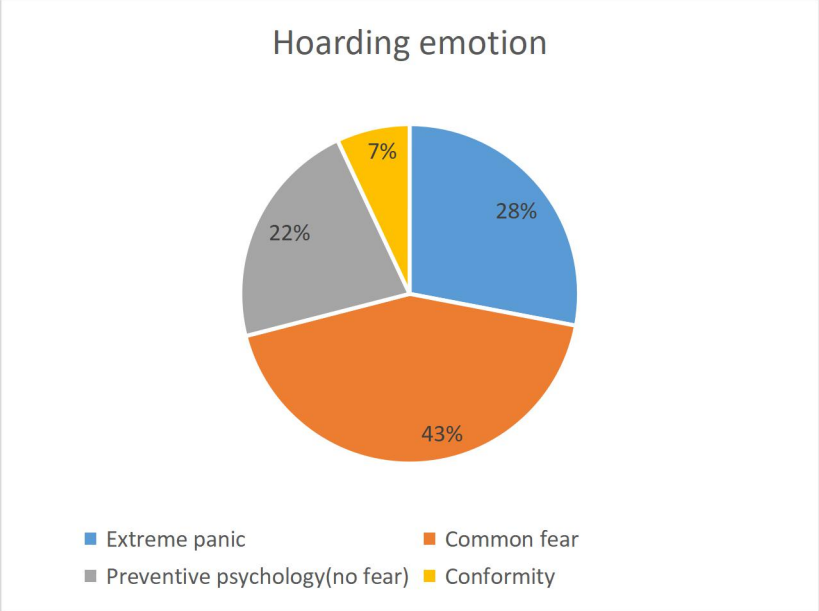
Regarding hoarding, people usually describe it as a simple process that is buying - hoarding. The economic reasons for hoarding are rarely mentioned, but the psychological reasons are mainly focused on panic and herd. We can conclude that hoarding is the result of most purchase behaviors during the epidemic, and it is also the common orientation of multiple behaviors and psychological factors. From the statistical results of the pie chart summarized in the interview, we can conclude that most people’s hoarding behaviors are based on general panic psychology, but we can also see that even people without panic psychology are still out of prevention psychology or herd psychology.

Hoarding is the most common consumer behavior during the COVID-19 period, and it is also how people respond to disasters. During the interview, we found that almost every interviewee had a hoarding of psychological thoughts during the COVID-19 period and put them into action. Hoarding behavior is also called panic

buying. However, in the interview, we know that not all hoarding behaviors are panic-conscious. When demand changes suddenly, such as panic buying and inventory, product supply is susceptible to fluctuations (Upton & Nuttall, 2014). In general, panic buying exacerbates consumer concerns about supply shortages and makes the situation worse (Allon & Bassamboo, 2011). For example (Interviewee #18, 33 years old, female) described in the interview, "My first reaction when I saw the news was to go to the supermarket to stock up more things, everything is good, food, clothes, daily necessities...especially Seeing the empty shelves makes me even more anxious and want to stock up more." As we mentioned in the previous chapter, news does have a certain impact on people's hoarding behavior, or news directly leads to people's hoarding behavior to a certain extent.

Figure 11 - The Hoarding emotion percentage

During the COVID-19 Epidemic



The act of hoarding goods has led to drastic changes in demand. In the research of (Lucy, 2020; Yap, 2020), hoarding is not synonymous with impulse and panic, but rational forward planning. For example, to deal with the shortage of goods in the

future, because anyone will be full of uncertainty about the future in a disaster period. A rational hoarder will weigh the costs and benefits of hoarding, and predict when he will not continue to hoard. According to the research of Michelle Baddeley (2020), hoarding behavior is divided into two types, namely, special hoarding and massive hoarding. Although traditional economics usually interprets hoarding as the hoarding of household savings, the hoarding of goods during the COVID-19 period has been particularly pronounced. Among them, in terms of medical products, the hoarding of masks is a special kind of hoarding. Excluding those speculative businessmen, that is, buying a large amount of masks in advance during the low-price period of masks, causing a shortage, and selling the export masks to obtain the difference after the price rises. The reason most ordinary people hoard masks is for personal protection and to deal with the pressure of future uncertainty. (Interviewee #23, 19 years old, female) explained her hoarding behavior as follows: "Because at that time it was not sure how long the epidemic would last, and masks were a must-have item, regardless of whether it was really effective against the virus. Effective, you will need to wear masks for a long time in the future. The price of masks is another uncertainty. Maybe something will happen someday to double the price of masks again."

Theme 7: Online consumption
(Related Concept: Alibaba,package, delivery)

The most relevant concept of online consumption theme is alibaba, which should refer to the consumption platform most frequently used by people in mainland China and the largest number of users. And this consumer platform played a huge supply chain advantage during the epidemic, whether it was a B2C model or a B2B model. The second most mentioned concept "package" can also refer to products that people buy online. So this conceptual chain is very clear, that is, the elements of people's online shopping behavior during the epidemic are: online consumption platform --- express --- package. Any factors related to these three concepts will affect consumers' online purchases, such as the convenience of express delivery, timeliness, and package delivery services. Although these people pay little attention to shopping and

consumption on weekdays, we can think that people have relatively more other requirements (such as contactless delivery services) during the epidemic.

From Table 8 we can see the approximate content and frequency of online consumption by the interviewees. Most people buy groceries and daily necessities through online channels every day, and the frequency of others is about once a week. With regard to other consumer products such as clothing and cosmetics, the frequency has been reduced to once a week or once every two weeks. Service subscriptions are defined here as membership subscriptions for streaming media, or recharges for online games. Due to the nature of subscription services, the frequency is the highest once a month, but the number of people who consume each day is zero.

Table 8 - Main online consumption content and frequency (N=30)

Online Consumption Content	Frequency
Grocery shopping	Everyday(24), twice a week(2), once a week(3),Once a month(1)
Daily necessities purchase	Everyday(18), twice a week(2), once a week(8),Once a month(2)
Clothing, cosmetics, household appliances	Everyday(2), twice a week(10), once a week(12),Once a month(6)
Service subscription (stream media,game)	Everday (0), twice a week(4), once a week(3),Once a month(23)

Compared with the previous pandemic period, in 2020, the most significant change is the development of electronic technology. This technological change has changed all aspects of people's lives, and it is also reflected in the isolation period of people at home during the pandemic. According to the research of Sheth (2020), embracing digital technology is one of the direct impact on the consumer behavior during the COVID-19 period. A very straightforward example is the use of ZOOM. In the context of the policy of advocating that everyone has no direct contact, in order to meet this absolute demand, electronic virtual remote access came into being. Whether

it is work meetings or contact with family and friends, or even remote classrooms in schools and remote consultations with doctors, the need for meeting people is just a need. In the research of Mehta et al. (2020), during the pandemic, people have more opportunities to access digital platforms, which leads to more online shopping behaviors. With the decrease in going out, people's exposure to outdoor advertising and offline shopping malls also decreases, and online shopping will become more frequent. As (Interviewee #2, 45 years old, male) described in the interview, "In China, online shopping is too developed, and logistics is also very developed. Even in such a severe period of the epidemic, it seems that it has not been greatly affected. Impact. Take our home as an example. We are very afraid of going out, so most of the things we need are ordered online and delivered to our homes, and they can be delivered within half an hour at the fastest."

6 Conclusion

6.1 Main Conclusion

During the blockade phase, when there was no mobility of people, people relied only on the connectivity of digital media platforms, which made people realize that the sudden and widespread blockade would change the dynamics of their behavior and redefine the personal tendencies of consumers (Seema Mehta et al, 2020). According to the existing literature, this paper aims to explore the impact of the epidemic on Chinese consumer behavior through the various behaviors of consumers in the post-epidemic era, especially when it comes to the choice of medical products. The data collected from 30 interviewees was designed to discuss the topic of the paper and draw conclusions about the framework. For data discovery, EXCEL was used for conceptual analysis.

The results mainly reveal the factors that mainly affect consumer behavior during the pandemic, that is, during the pandemic, the main factors that make consumer behavior change are the changes in people's daily routines, the comparison of different sources of information, and people's predictions of future conditions; and the results of these effects, for example, when people buy medical products, they will no longer be affected by prices, consumption will increase sharply, the phenomenon of hoarding, and the rapid spread of online consumption. Through the conceptual analysis in the interview, the specific reasons for these factors and the specific explanation of the results are emphasized.

Therefore, in response to the research question of this article: What is the impact of the Covid-19 pandemic on the Chinese consumer behaviour, especially to the medical product industry? We can think that in the emergency situation of the pandemic, the implementation of a series of blockade measures and the change of people's mentality of the pandemic, including the uncertainty of future expectations, have largely changed the past consumption environment of Chinese people and Consumption habits, so that people make consumption decisions different from the past. Judging from the interview records, literature reviews and the current general environment so far, these changes in consumer behavior will continue for a long time, or even be permanent. The impact on the medical product industry is also profound, which means that it will not only be only a superficial phenomenon such as an increase in consumption in a short period of time.

6.2. Practical Contribution

This article explores the correlation between the existing COVID-19 literature and consumer behavior.

The previous author has acknowledged the impact of the COVID-19 pandemic on consumer behavior in all aspects, both psychologically and environmentally (Deloitte et al, 2020). Nevertheless, this article emphasizes the specific changes in

consumer behavior in the medical product industry, and specifically studies the factors and results of changes in consumer behavior. Therefore, it is recommended that people from institutions related to this industry pay more attention to the changes in consumer behavior during this period, especially the reasons behind the phenomenon, and be prepared to respond to changes at any time.

In addition, manufacturers and suppliers in the medical product industry should focus on events that affect people's daily routines, such as closure of premises or changes in working hours. Although they do not seem to be related to the product, they have an impact on consumers. The influence of the behavior will affect the production and sales links of the product to a certain extent. As well as the subsequent hoarding phenomenon, if there is a mistake in the business decision, there is likely to be insufficient inventory or raw materials to deal with the hoarding phenomenon, or the price drop after the hoarding will affect the cash flow.

What's more, investors in the medical field should seize the opportunity to enter and expand production at an appropriate time. For example, when consumers expand their consumption and are not subject to price control, they can appropriately invest in upstream R&D and production companies and increase production input; when consumers switch to online consumption, investors can invest in related online shopping platforms or advertise products more on the web. Some medical service organizations that mainly face individual consumers should pay more attention to the information channels that consumers are concerned about and their predictions for the future, so as to make timely adjustments to the organization's marketing plans and publicity plans.

6.3. Theoretical Contribution

The findings of this article endorse the conclusions of the previous literature, indicating that the COVID-19 pandemic does have a clear impact on consumer behavior (Junwei Tao, 2021). In addition, this article uses qualitative research

interviews to further verify the behavioral changes of Chinese consumers during the COVID-19 lockdown.

In the study of Jagdish Sheth (2020), the author admits that he lacks empirical research on the economic aspects and psychological aspects of consumer behavior regarding hoarding behavior. In the qualitative research process of this article, through interviews with different consumer groups, the collected interview data is further classified to verify its original theory. That is, hoarding behavior is generally based on panic, and it is also a way for most people to meet their basic needs when dealing with special disasters.

In Seema Mehta's research, the research on market changes during COVID-19 mainly stays on a global scale and a broad level, and mainly refines the situation of the Indian market. Through qualitative research interviews, this article summarizes the observations of Chinese consumers on the Chinese medical product market during the COVID-19 period, and more on the side reflects the measures and methods adopted by Chinese consumers to deal with such market fluctuations.

Furthermore, most of the previous literature used quantitative research methods to analyze consumer behavior changes, such as specific statistics on the number of consumers increasing purchases during the COVID-19 period, the growth rate of spending, and the changes in product sales in various industries. In this article, considering that consumer behavior is caused by a series of different changes such as specific psychological changes and environmental changes of each individual, it is considered that COVID-19 is a special experience for all human beings who experience collective trauma. Therefore, this article adopts a semi-structured interview method to capture as many personal experiences and feelings of consumers as possible during this period.

7 Limitations and Future Research

7.1. Limitations

The research is aware of four main limitations of this study.

First of all, compared with Dimitris K. et al's (2020) consumption response to British residents, which uses a quantitative method to assess the level of consumer consumption indexes, this paper uses a qualitative method, which leads to the lack of relevant accurate data interpretation of the research conclusions. Secondly, the selected interviewees are people well-known to the author, so the interview results lack the universality of the sample, and there will be a certain degree of personal deviation. In addition, Chinese was used throughout the interview process, and the results of the interview data were analyzed and deconstructed and then translated into English for presentation in this article. There was a certain cultural deviation in the translation process. Finally, the time limitation is that the interview process is from March to April 2021. However, the COVID-19 pandemic has not ended so far, so it is impossible to fully observe the process of consumer behavior changes. This interview data it can only reflect a part of the entire blockade cycle.

7.2. Future Research

The purpose of this article is to further understand the changes in consumer behavior under the COVID-19 pandemic, so as to better help relevant industry practitioners to face this situation in an orderly manner in the future. That is, predict their next actions from consumers' information collection channels and daily routine changes.

In addition to helping to understand the factors that contribute to changes in consumer behavior during the COVID-19 pandemic, this study also needs to further explore the impact of these changes. Since the research basis on the impact of changes in consumer behavior is based on the current situation that has been reflected, we need to predict the impacts that have not yet been reflected through other

circumstances, or data changes in other industries can also be derived related conclusions. In addition, we should also consider whether these influences have commonality among different industries, not just limited to the medical industry.

Similarly, short-term industry changes are usually related to long-term industry changes. Through this pandemic, the importance of participants in the Chinese medical industry has become more prominent. Therefore, it is necessary to consider the possibility of accelerating the pace of China's medical reform and any major opportunities for industry development that may arise. In addition, the development of consumer digital behavior and the accelerated development of digital medical care are also the reality that China's medical industry needs to face. The future research direction can also study the substantial growth of this process after the COVID-19 pandemic.

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Appendix A -Interviewing Schedule – Individual Consumer During the Pandemic

Issues of Interest *(Based on The Literature)*	**Source**	**Reframed Question**
Global aging	(Peterson,2002)	What do you think is the connection between global aging and the COVID-19 epidemic?Will global aging make you pay more attention to your own health?
The views of consumers (or patients) are often blurred toward the healthcare system.	(Mark.J, 2007)	Do you have a clear overview to the healthcare system during the COVID-19 epidemic?
How much does a profit-driven medical system add to consumers?	(Mahar, 2006)	How much did the price of the medical products you buy increased during COVID-19?
What changes will happen to personal behavior during a special period?	(Forbes, 2017)	How has your personal behavior changed during COVID-19?
At what level of the hierarchical system do consumers usually meet first?	(Forbes, 2017)	During COVID-19, what needs are your consumption usually used to meet?
Panic buying	(Yoon et al, 2017)	Did you panic buying during COVID-19? why?
Herd mentality	(Kameda and Hastie, 2015)	During COVID-19, do you often follow others to buy?
During the crisis, in which aspect did the media incite anxiety?	(Kilgo et al, 2019)	What channels of media information did you often receive during the epidemic? What impact does media information during the epidemic have on your buying behavior?
Will the vaccine change people's attitudes towards the COVID-19 pandemic?	(Moderna website, 2020)	Do you think things will get better after the COVID-19 vaccine appears?
The fatality rate of MERS and SARS is many times higher than that of COVID-19.	(Hirano, 2020)	Does COVID-19 scare you more than other epidemics? why?
The disease spread rapidly from Hubei to other provinces in China within 2 weeks.	(Li et al, 2020)	What do you think are the reasons for the rapid spread of COVID-19 in China in the early stage?

Mortality number	(Chan et al, 2020)	Does the death rate figure you know aggravate your buying behavior?
What is the impact of the Chinese government's epidemic control measures on consumer behavior?	(Junwen Tao, 2021)	What medical products have you increased your purchases with the Chinese government's epidemic control measures?
What restrictions do emergency measures impose on consumption?	(National Health Commission of China,2020)	How do restrictions on places and social distance affect your consumption of medical products?
How will the widespread spread of the COVID-19 pandemic outside of China affect Chinese consumers?	(Ghosal S, 2020)	How has the epidemic situation abroad affected your purchase of medical products?
Will the national economic downturn caused by the epidemic affect personal consumption?	(Silvio, 2020)	How will the economic losses caused by the epidemic affect your purchase of medical products?
What impact will the increase in production costs brought about by the epidemic have on consumer behavior?	(WarWick & Roshen, 2020)	Do you accept the increase in production costs in all aspects brought about by the epidemic? To what extent?
Does good health policy promote consumer purchases of medical products?	(Levine and McKibbin,2020)	What kind of health policy promulgated by the government has promoted your consumption of medical products?
The COVID-19 pandemic will plunge the world into recession in the future.	(Georgieva, 2020)	How does the global recession affect your consumption of medical products, including changes in methods?
How do social distancing and restrictions on shopping venues affect consumers?	(Jagdish Sneth ,2020)	Are restrictions on places and changes in living habits necessary to increase your consumption of medical products?
Will changes in the market make overall spending less?	("COVID-19: Market Dynamics during Indian Consumer Sentiment Analysis" ,2020)	Will physical expenditures, planned delays, and new shopping methods reduce your consumption expenditures?
Is community life necessarily accompanied by electronic platform consumption?	(Deloitte, 2020)	How did you use the electronic platform for shopping during the epidemic? In what environment?
What role do digital platforms play in consumers' consumption process during the epidemic?	(Accenture, 2020)	Did online shopping promote your consumption during the epidemic? Or which new products have you left a deep impression on?
What are the risks of e-commerce platforms?	(Jiaming et al, 2020)	What are your concerns when you use electronic platforms to shop during the

What capabilities of digital platforms affect consumers' shopping needs?	(Harvard Business Review, 2020)	epidemic? Can the various capabilities of China's e-shopping platform meet your shopping needs during the epidemic?