# REFLECTION ON THE IMPACT OF THE EPIDEMIC SITUATION ON THE MASK INDUSTRY IN CHINA

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**Thematic Certificate**

**To**

**XIN ZHAO**

This independent study has been approved as partial fulfillment of the International Master of Business Administration's Requirement in International Business Management.

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# Abstract

**Title:** Reflection on the Impact of the Epidemic Situation on the Mask Industry in China

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This paper took ordinary people in China as the investigation object, adopted the methods of questionnaire and field investigation to study the satisfaction degree of Chinese people on the supply of masks during the epidemic period, and then formulated a questionnaire to understand the general situation of the mask industry through the aspects of service, demand, price, and supply. Using mean analysis and correlation analysis, the impact of the epidemic on China's mask industry was discussed. This paper summarized the theoretical research on mask production and national economic structure in China to form a theoretical research basis of this paper through research literature and related data. Objective, systematic and quantitative description and analysis of the news dissemination and collected information content. The study found that it was more difficult for Chinese people to buy masks during the epidemic period, and the price of masks also increased to varying degrees. It is hoped that this study can help China's mask industry to accumulate its own competitive advantages, optimize the allocation of resources, and provide adequate response measures in the face of major public health emergencies in the future.

**Keywords:** epidemic situation, Mask, SCP analysis, China.

# 摘要

**题目：** 关于疫情对我国口罩行业影响的思考

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本文以疫情期间中国境内的普通民众作为调查对象，采取问卷调查法与实地调查法研究中国民众在疫情期间对于口罩供应的满意程度，然后通过服务、需求、价格、供应量等方面制定问卷来了解疫情期间口罩行业的普通情况。并通过均值分析、相关分析方法，以中国普通民众在疫情期间的感受，探讨疫情对中国口罩行业的影响。通过研究文献和相关数据，对中国目前的口罩生产和国家经济结构进行理论研究方面的整合归纳，以形成本文的理论研究基础。对于目前新闻传播和收集到的资料内容进行客观，系统和定量描述分析。

研究发现，中国民众在疫情期间，口罩的购买难度都增加了，口罩的价格也出现了不同程度的上涨。希望通过本文的研究，能帮助中国口罩行业不断积累自身的竞争优势，不断实现资源的优化配置，在未来再次面对突发的重大公共卫生事件时，能有足够的应对措施。

**关键词：** 疫情　口罩　SCP 分析　中国

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ZhaoXin

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# 1. INTRODUCTION

## 1.1 Research Background

The outbreak of novel coronavirus infection in early 2020 spread rapidly, and the mask was promoted to the public view. In a short time, masks became the "hard currency" of the whole world. The demand for masks is "blowout." In the novel corona-virus pneumonia global war, countries take measures to cope with this difficult time combined with their actual situation. The protection materials are becoming tighter and tighter. China has a strong manufacturing capacity, sufficient production space, a sound quality control system, many high-quality talents, and a strong R & D and production system, which provides a solid foundation for mask production. In just one month or so, China's daily production of masks has increased from 8 million to 116 million. The outbreak of the novel corona-virus pneumonia and a series of measures taken by the state will definitely significantly impact the mask industry in the coming period. As an important protective product, the mask industry is related to people's safety and related to society's public health protection. The epidemic has slowed us down, but the necessary economic and social activities are still going on. Masks are already necessary travel equipment. At this time, travel without masks is actually exposing life to risk. Having a mask is actually the right not to be infected by the virus.

## 1.2 Research Problems

This article investigates the factors that affect Chinese mainland residents' purchase of masks during the epidemic, such as gender, geographical location, price, and channels.

## 1.3 Objective of the study

On the basis of combing the literature, this study studies the influencing factors of purchase intention in mask sales through the following six aspects of investigation:

（1）Through the investigation of merchants' own service, find out the factors affecting consumers' purchase intention.

（2）Through the analysis of the quality, style, color and size of mask products, the factors affecting consumers' acceptance are found out.

（3）Through the analysis of the quality, style, color and size of mask products, the factors affecting consumers' acceptance are found out.

（4）Through the investigation of what kind of trading platform to use, the reputation of the trading platform and whether there is security guarantee, find out the factors affecting consumers' purchase intention.

（5）Through the city and geographical location of consumers, find out the factors affecting consumers' purchase intention.

（6）Through the investigation of consumers' personal factors, find out the factors affecting consumers' purchase intention.

Based on the data collected by the questionnaire, by constructing the structural equation model between each factor and the judgment of consumer trust, the weight of each group of factors is sorted respectively, and the improvement measures to improve the sales of masks and enhance consumers' purchase intention are put forward according to the sorting results.

The impact of the epidemic on masks' purchase by mainland China residents and designed questionnaires and selected residents as the subjects. The data obtained from the survey were used to study the impact of the epidemic on masks' use by China's residents and explore the key factors that China residents bought during China's epidemic situation. The acquisition of the cover has a great influence.

## 1.4 Research Significance

The significance of this study mainly includes the following points:

（1）The survey data and analysis results have high reference value for mask sales.

（2）Through the investigation and ranking of the influencing factors, find out the key factors affecting the trust of consumers, and put forward relevant suggestions for mask sales to improve the trust of consumers, which is conducive to the mask industry to better win the trust of customers.

（3）In the graduate study of Siam University, I tried to use SPSS Amos 23

software to construct and analyze the structural equation model for the first time, which may be used as a reference and promotion for my future study or the writing of research reports of my classmates.

（4）In general, the survey in this area supplements the existing data and plays a guiding role in mask production and sales.

# 2. LITERATURE REVIEW

In this chapter, the focus is to sort out and summarize the literature, clarify the research stage and explain the theoretical basis for the construction of the article model. It can be divided into four sections, including the overview of mask and mask industry chain, SCP theoretical model, characteristics of epidemic situation and public health emergencies, and assumptions and inferences.

## 2.1 Overview of mask and mask industry chain

Behind the small mask is a chain of production and a complete industrial system. It is the complete industrial chain supply chain in the world.

The mask's raw material is mainly the nonwoven fabric made of polypropylene material. Medical masks generally adopt a multi-layer structure, in which the innermost layer and outermost layer are spun-bonded nonwoven fabric, and the middle layer is melt-blown fabric. Meltblown cloth is the key material for filtering in the mask and the "heart." In addition to blocking large dust particles, it can also absorb fine dust, bacteria, and virus droplets through the surface electrostatic charge. As a necessary raw material for filtering function masks, one common medical-surgical mask should use one layer of melt-blown cloth, and one N95 mask should use at least three layers of melt-blown cloth. One ton of melt-blown cloth can be used to make one million medical surgical masks. The production capacity of melt-blown fabric in China is not high.

According to the data, the actual output of melt-blown nonwovens in China in 2018 was 53523 tons, accounting for 1.8% of the output of web-forming nonwovens in that year. The outbreak of the epidemic, so that previously a small number of meltblown cloth became a favorite in the market. Facing the contradiction between the rapid expansion of demand and the shortage of mask raw materials, central enterprises have "cross-border protection." The research and development of melt-blown materials and meltblown cloth required for masks were taken as a major political task by China Petroleum and Chemical Research Institute. A series of research and production work was completed within one week. Lanzhou center of Sinopec completed the procurement and installation of key equipment in only 8 days and solved the relevant technical problems. On February 28, PetroChina successfully

developed its own polypropylene melt-blown special material with a daily capacity of 2 tons.

Around 24:00 on March 6, at Sinopec Yanshan Petrochemical Plant in the western suburb of Beijing, the huge melting nozzle continuously ejected white fibers, which instantly condensed into snow-white cloth. More than 600 employees of all parties involved in the construction worked hard for 12 days and nights. The Yanshan Petrochemical melt-blown nonwoven fabric production line jointly constructed by Sinopec and SINOCHEM Hengtian Group Co., Ltd. was successfully started, and qualified products were produced. According to the state-owned assets supervision and Administration Commission of the State Council's special working group on medical materials, as of 24:00 on March 6, the central enterprise's melt-blown cloth production on that day had reached about 26 tons. As the new production line is completed and put into operation, meltblown cloth production will be greatly increased in the future, effectively relieving the tension between supply and demand. Market regulators have also taken decisi

The reporter learned from the General Administration of market supervision on the 10th that given the illegal behavior of driving up the price of melt-blown fabric, the General Administration of market supervision and the Ministry of Public Security jointly investigated and dealt with the illegal acts of disturbing the market price order of melt-blown cloth according to law, and resolutely cut off the illegal chain of driving up the price of melt-blown cloth.

When making melt-blown fabric, it is necessary to melt high melt finger polypropylene through high-speed and high-pressure hot airflow and then pull it out from the spinning micropores. Under the airflow guidance, it is evenly laid on the collection device. With its own waste heat, it can be bonded into a net. Also, through electret treatment, the melt-blown fabric can be charged with a certain electric charge and adsorb the droplets by static electricity. In this way, the filtration efficiency of melt-blown fabric will be higher. Large investment, high technology, complex equipment installation, and high workshop requirements are the important factors restricting the expansion of melt-blown fabric production capacity. "It costs about 8 million yuan to build a meltblown cloth production line. The delivery time of domestic equipment is 3 to 4 months, and that of imported equipment is 6 to 8 months." Jiangsu, a science and technology company in charge, told reporters.

As the largest supplier of medical and health raw materials in China, Sinopec was originally the most upstream polypropylene raw materials producer in the mask industry chain. To ensure the price stability of the midstream melt-blown fabric and the supply of downstream masks, Sinopec decided to open up the industrial chain and fully intervene in the production of melt-blown materials, melt-blown fabrics, and masks. In Beijing, two melt blown cloth production lines of Sinopec Yanshan Petrochemical have been put into operation; in Jiangsu, Sinopec Yizheng Chemical Fiber Co., Ltd. has 8 melt-blown cloth production lines, which are expected to be completed and put into operation in mid-April. The total investment of 10 meltdown cloth production lines is about 200 million yuan, and the daily output can reach 18 tons of medical mask melt-blown cloth after all of them are put into operation. Mask machine is another link that affects the production of the mask, and it is also the shortboard of mask industThrough hot pressing, folding, ultrasonic welding, waste cutting, ear belt nose bar welding, and other processes, the multi-layer nonwoven fabric can produce various masks with certain filtering performance. Affected by the epidemic, mask machines are also in short supply. Many key enterprises and their supply chains, headquartered in Huangpu District of Guangzhou, have set up a plane mask machine research team. It took only one month to overcome the difficulties and produce 100 mask machines. According to the state machine intelligence company, the leading enterprise of the research group, the first flat mask machine was developed and pressure tested in 10 days, and 100 sets were produced in 20 days, which was completed without previous experience, difficult procurement of key parts, shortage of technical personnel and great pressure on epidemic prevention and control. The "1-out-2" high-end full-automatic mask machine developed by the aviation industry group has also been successfully offline in Beijing. This type of mask machine comprises 793 items and 2365 parts in total. One person can operate it with simple training. It is planned to realize the batch production of 20 sets, including 24 sets of the prototype. After putting it into operation, 3 million masks will be produced every day. Li Zhiqiang, President of China Aeronautical Manufacturing Technology Research Institute, said: "the 24 masks are expected to be put into operation by the end of March, and the daily output will reach more than 1 million in a short period of time." Simultaneously, SASAC urgently promoted the development and production of key equipment such as medical mask machine and protective clothing stripper and adopted the mode of "multiple enterprises, multiple schemes, and multiple paths."As

of March 7, six enterprises, including AVIC and China shipbuilding, have completed 574 slitting machines, 153 flat mask machines, and 18 stereo masks. China is the largest country globally in terms of mask production and export. Its annual output accounts for about 50% of the world's total. The Ministry of industry data shows that in 2019, mainland China's mask production exceeded 5 billion, and 54% of the medical masks that could be used for virus protection. Therefore, China's production capacity is of great significance to the global anti-epidemic. Take the United States as an example. The United States is asking four overseas enterprises investing in Asia's largest economy to return home to produce medical protection products such as masks to meet the United States' needs. However, U.S. Department of health officials pointed out that the raw materials for the production of related products need to be supplied by the Chinese market. In fact, in the United States, mask manufacturers almost all move their factories to the Chinese market, and 90% of the masks in the United States are imported from China.

The common medical mask comprises a spun-bonded nonwoven fabric layer, melt-blown nonwoven fabric layer, ear beltline, nose bar, and other parts. Filter cotton layer and activated carbon layer should be added according to different types. Seemingly ordinary components, however, involve chemical, textile, machinery, metallurgy, electronics, and other basic industrial categories, involving raw materials, equipment, plant, capital, human resources, access permits, production cycle seven elements, and only China has the complete mask industry chain, supply chain, and production factors. As of February 29, China's mask production reached a new high: the daily production of masks in China reached 110 million and 116 million, effectively meeting the needs of epidemic prevention and control. Behind the realization of the "double billion" goal is the "hardcore recovery" of the whole country.

The state has also established a temporary collection and storage system to clarify the government's procurement and storage of key medical protection materials; to implement the list system management of key enterprises for epidemic prevention and control, and to provide tax and financial support; to establish a temporary production scheduling system for key enterprises, and to send special personnel to expand production, and the market supervision department should "handle special cases and special cases" to speed up the approval process To create production

conditions for enterprises. The key to achieving the goal of "double billion" is to support China's perfect industrial system and complete supporting capacity of upstream and downstream industries. China has the largest, most complete, and complete manufacturing system globally.

It is understood that at present, China has 41 industrial categories, 207 medium industrial categories, and 666 industrial subcategories, which is the only country in the world with all the industrial categories listed in the United Nations Industrial Classification. At a press conference held by the Ministry of Commerce on March 12, Li Xingqian, director-general of the Department of foreign trade of the Ministry of Commerce, pointed out that China will help the countries concerned, especially the countries and regions with the difficult epidemic situation. The Chinese government will continue to support export enterprises in organizing the supply of medical materials such as masks to make due contributions to global epidemic prevention.

## 2.2 SCP theory

SCP theory is the theory of industrial organization analysis founded by Harvard University Scholars in the 1930s. Professor Mason of Harvard University first proposed it. As an orthodox theory of industrial organization, Harvard School, based on the price theory of neoclassical school, analyzes industries according to structure, behavior, and performance using empirical research and constructs a systematic analysis framework of market structure market behavior market performance. This theory has practical guiding significance for studying the internal market structure, the main market behavior, and the whole industry's market performance. It is the orthodox theory for analyzing industrial organization in industrial economics. In the SCP framework, the market structure's role is highlighted, and the market structure is the factor determining market behavior and market performance. The analysis procedure is that the market structure determines the market's enterprise. Therefore, improving market performance is to adjust market structure through industrial policy. This paradigm holds that industrial structure determines the competitive state within the industry, determines enterprises' behavior and strategy, and finally determines enterprises' performance.

Based on absorbing and inheriting Marshall's complete competition theory, Chamberlain's monopoly competition theory, and Clark's effective competition theory,

Bain (1958) proposed the SCP analysis paradigm. This paradigm has become the main tool for traditional industrial organization theory to analyze enterprises' competitive behavior and market efficiency. He believes that the complete competition model of neoclassical economic theory lacks reality, and enterprises are not completely homogeneous, and there are scale differences and product differentiation. The scale difference of different enterprises in the industry will lead to monopoly. Bain emphasized that different industries have different scale economy requirements, so they have different market structure characteristics. The relationship between market competition and scale economy determines the industry's concentration degree, which is the inevitable result of enterprises pursuing scale economy in market competition. Once an enterprise forms a monopoly based on scale economy, it will use its monopoly position to conspire with other monopolists to limit output and raise prices to obtain excess profits. Simultaneously, the monopolists in the industry make the excess profit long-term by constructing the entry barrier. Therefore, Bain's SCP paradigm regards exogenous industrial organizations (scale economy requirements) as the source of enterprises' long-term profits.

The SCP model analyzes the possible strategic adjustment and behavior change when the surface impacts the industry or enterprise. SCP model analyzes external shocks' impact from three aspects: industry structure, firm behavior, and business performance.

**2.2.1 External impact:** mainly refers to the changes of the external economic environment, politics, technology, cultural changes, consumption habits, and other factors of enterprises;

**2.2.2 Industry structure:** mainly refers to the possible impact of changes in the various external environment on the enterprise's industry, including changes in industry competition, product demand, market segmentation, marketing model, etc.

**2.2.3 Enterprise behavior:** mainly refers to the possible response measures taken by enterprises against external shocks and changes in industry structure, including the integration of relevant business units, expansion and contraction of business, the transformation of operation mode, and management change.

**2.2.4 Business performance:** mainly refers to the changing trend of business profit, product cost, market share, etc., under the change of the external environment.

## 2.3 Characteristics of the epidemic situation and public health emergencies

Public health emergencies (hereinafter referred to as emergencies) refer to the sudden occurrence of major infectious diseases, mass diseases of unknown origin, major food and occupational poisoning, and other events that seriously affect public health, which cause or may cause serious damage to public health.

The first feature is the diversity of causes—for example, all kinds of severe infectious diseases. Many public health events are also related to natural disasters, such as earthquakes, floods, and fires. For example, the Wenchuan earthquake in 2008, the most important thing is whether there will be a new and large epidemic after the earthquake. It is tough to ensure no major epidemic after the earthquake. Therefore, the Party Central Committee also attaches great importance to whether the earthquake causes a new epidemic situation. The government departments pay close attention to it to avoid it. There will inevitably be a serious epidemic after the disaster is avoided. Public health events are also closely related to accident disasters, such as environmental pollution, ecological damage, traffic accidents, etc. It is also an important cause of public health events, such as public health events. Also, there are animal epidemics, pathogenic microorganisms, drug risks, food poisoning, occupational hazards, etc.

The second characteristic is the distribution. The incidence rate of infectious diseases varies with time distribution, such as SARS often occurs in winter and spring, and intestinal infectious diseases occur mostly in summer. The regional distribution of infectious diseases is different. For example, the infectious diseases in the South and north of our country are different. Also, there are differences in the distribution of the population.

The third characteristic is the universality of communication. Especially at present, we are in the era of globalization. Certain disease can flow through modern means of transportation, and once it spreads, it will become a global spread. Once an infectious disease has three basic circulation links: the infection source, the transmission route, and the susceptible population, it may spread widely without borders. This is the third characteristic, that is, the universality of transmission.

The fourth characteristic is the complexity of the harm. In other words, major

health events have an impact on human health and have a great impact on the environment, economy, and even politics. For example, the SARS epidemic in 2003, although the number of patients was not the largest, it did cause great economic losses to our country.

The fifth characteristic is the comprehensiveness of governance. Governance needs a combination of four aspects. The first is the combination of technology level and value level. We should not only have certain advanced technology but also have a certain amount of investment; the second is the combination of direct tasks and indirect tasks, which are both direct wishes and indirect social tasks, so they should be combined; the third is the combination of responsible departments and other departments; the fourth is the country International and domestic integration. Only through comprehensive governance can public events be well managed. In solving public health governance, we should pay attention to solve some deep-seated problems, such as social system, mechanism, work efficiency, and population quality, so we should solve public health events through comprehensive governance.

The sixth feature is that new events are constantly emerging. For example, since 1985, the incidence rate of AIDS has been increasing, which seriously endangers people's health. In 2003, the SARS epidemic caused panic. In recent years, the epidemic of avian influenza has caused people to talk about the color change of birds; and some time ago, people infected with Streptococcus suis and hand, foot, and mouth disease all threatened people's health.

The seventh characteristic is species diversity. Many factors are causing public health events, such as biological factors, natural disasters, food and drug safety incidents, various accidents and disasters.

The eighth characteristic is that foodborne diseases and food poisoning are relatively serious. For example, hepatitis A broke out in Shanghai in 1988; food poisoning caused by Salmonella in Ningxia in 1999; enterohemorrhagic E.coli food poisoning in Jiangsu and Anhui provinces in 2001; tetramine poisoning in Nanjing in 2002; and inferior milk powder incident in 2004. These incidents are all caused by foodborne diseases and food poisoning.

The ninth characteristic is the frequent occurrence of public health events. There is a relationship between the construction of public health and the investment in

public health. The lack of funds for public health, the neglect of ecological protection, and the abuse and mismanagement of toxic and harmful substances will make public health events occur frequently.

The tenth characteristic is that public health events do serious harm. Public health events affect our health and affect social stability and economic development. There are many characteristics of public health events. Civil servants and relevant departments in charge of public health events must master these characteristics.

## 2.4 Related research hypothesis inference

In essence, the difficult situation now is the basic problem of Economics - how to allocate limited resources.

Support the view of price rise, and believe that the price formed by free market transactions guides demand and supply to achieve the effective allocation of resources. On the one hand, the rising price of masks makes consumers save the use of masks and inhibit the increase of demand. On the other hand, it improves the power of mask manufacturers to increase output and expand supply. The two work together to achieve a balance between supply and demand. In view of the recent rise in the price of masks, we must analyze it from the perspective of price cost and singleness of demand. First of all, in the current situation, the demand for counterpart volume is very large, so the demand elasticity of masks basically approaches zero. Such a low elasticity of demand, of course, creates a good external bad environment for the possibility of unfair competition. Thirdly, we should track whether the price rise is only caused by the price rise, not by the cost rise.

In the case of epidemic situation, it is reasonable for enterprises to directly say that the purchase cost is higher than usual. Therefore, we should expect the price of masks to rise slightly. However, if this price rise is completely divorced from the rate of cost change and becomes a complete price surge, there will be unfair competition, and some enterprises will take advantage of the fire and get rich. Generally, it is not difficult to produce protective masks. However, due to the Spring Festival holiday and isolation measures, employees cannot rework, the output of masks will not come up in the short term. At the same time, the epidemic situation makes consumers' demand for masks rigid, and the inhibition of price rise on demand is not obvious. Secondly, when

the price of masks rises to dozens of yuan or more, which is difficult for low-income groups to afford, it leads to the fairness of social ethics.

High price may be the most effective way to achieve the balance between supply and demand, but should the value of human life be determined by money price or willingness to pay? Assuming that masks play a great role in preventing the spread of the virus, if the price of masks rises sharply, some low-income people can't afford it, which will affect everyone. In this case, fairness and efficiency are unified. The unfairness caused by high prices (some people do not wear masks) reduces the epidemic prevention efficiency of the whole society.

Therefore, under special circumstances, all factors may not be able to organize consumers to buy masks, but consumers will develop the habit of saving use, which may also inhibit the sales of masks.

# 3. RESEARCH METHOD

This study aims to explore the transmission path of mask industry market through SCP theory and the special situation of major public health events. Analyze its current situation and differences. The main research methods of this study are questionnaire and questionnaire. The research related literature is based on papers, journals, magazines, books and other related literature as the framework of this research and the questions to be answered.

## 3.1 Theoretical framework

The "structure conduct performance" analysis paradigm of modern industrial economics is referred to as the SCP paradigm. This paradigm holds that industrial structure determines the competitive state within the industry, determines enterprises' behavior and strategy, and finally determines enterprises' performance.

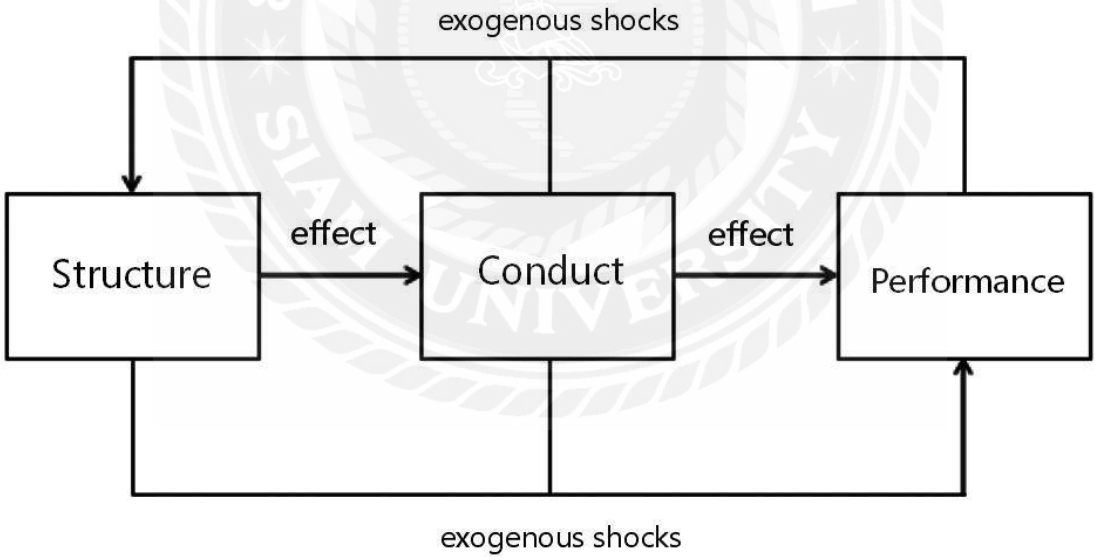


table 1 exogenous shocks

Direct path:

### 3.1.1 Market scale and capacity

From the perspective of market scale, China's mask industry's market scale from

2015 to 2019 is 6.318 billion yuan, 7.119 billion yuan, 7.910 billion yuan, 9.092 billion yuan, and 10.235 billion yuan, respectively. Since 2016, the annual growth rate has remained above 10%. Among them, the output value of medical masks will reach 3.254 billion yuan, 3.695 billion yuan, 4.121 billion yuan, 4.755 billion yuan, and 5.491 billion yuan respectively from 2015 to 2019, showing a sustained growth trend, accounting for 50% of the total output value of the mask industry. Recently, novel coronavirus pneumonia has been increasing rapidly. The demand for masks has increased dramatically. It is estimated that respirators' market size and output value will be far greater than 2019 in 2020.

In terms of production capacity, according to the Ministry of industry and information technology, the total production capacity of masks in China will be about 20 million in 2019. After a novel coronavirus pneumonia outbreak, the mask enterprises accelerate masks and production through technical transformation and alternate overtime work to support the relevant national policies. The total productivity of respirators rapidly rises. On February 25, 2020, the daily output of masks in China will reach 72.85 million. On February 29, the daily output of masks will reach 110 million, effectively alleviating the situation of "one mask is difficult to obtain."

### 3.1.2 Regional layout

December 31, 2019, 29629 mask enterprises (including upstream and downstream production and operation enterprises) in China (excluding Hong Kong, Macao, and Taiwan, the same below). The top ten provinces are Zhejiang, Shandong, Hebei, Guangdong, Jiangsu, Henan, Beijing, Shanghai, Chongqing, and Anhui. After the epidemic outbreak, 10880 new mask enterprises (including upstream and downstream production and operation enterprises) were established from January 1 to March 21, 2020. The top ten provinces are Jiangsu, Zhejiang, Guangdong, Shandong, Anhui, Fujian, Tianjin, Henan, Shaanxi, and Chongqing. In contrast, the regional distribution of mask related enterprises in China changed little before and after the epidemic, and they were all concentrated in the eastern region.

However, after the outbreak, Beijing, Shanghai, and other places ranked lower, while Fujian, Tianjin, and Shaanxi ranked in the top 10.

### 3.1.3 Barriers to entry

Because of the novel coronavirus pneumonia in protecting the new role of the difference, this article mainly discusses medical masks' entry barriers. For the medical mask manufacturers, the barriers to enter the market are mainly policy barriers, necessary capital barriers, and scale economy barriers. First of all, according to the current relevant policies, the production of medical masks needs to apply to the provincial food and Drug Administration for "medical device production license." Simultaneously, the State Food and drug administration also has strict requirements for producing medical protective masks.

In the policy document of "notice on strengthening the supervision of medical masks" (sfdbx [2009] No. 95), it is clearly pointed out that "medical masks can be divided into different types according to product standards, and different standards shall be implemented. Among them, medical protective masks and surgical masks shall comply with the standards with codes of GB 19083-2003 and yy0469-2004". Secondly, the necessary capital barriers to the production of medical masks also hinder new enterprises' entry to a certain extent. Overall, the core of medical mask production is melt blown PP nonwoven fabric production and electret treatment of melt-blown nonwoven fabric. Other production links' technical requirements are not high, so the technical barriers are not

. Overall, to produce masks that meet the requirements of policies and regulations and medical, technical smelt-blownmanufacturers must have certain financial strength. It is reported that the price of a melt-blown production line is between 2 million yuan and 10 million yuan, which is 10 times to 50 times the price of an automatic flat mask machine. Such a high cost of technology and equipment requires the mask manufacturer to have a certain production scale. Otherwise, it is difficult for the enterprise to control the production cost and the profit opportunity is small. On February 15, 2020, the State Administration of market supervision and the State Food and Drug Administration jointly issued the policy document of "ten articles on supporting the resumption of work and production," which pointed out that "for the production of emergency materials such as masks, the approval process of production qualification should be simplified; the registration and production license of medical masks should be combined.

As a result, policy and regulatory barriers are much weaker than before.

According to novel coronavirus pneumonia, the number of new medical masks approved by the State Food and Drug Administration (CDA) was 77. The number of new medical masks was 12.5%, up to February 20, 2020. The total number of new medical masks was 12.5% (the total number of medical posts in China was 614). The central region has the largest number of new approvals from the regional distribution perspective, accounting for 61% of the new approvals' total number (Figure 5). In contrast, the eastern and western regions are less, with 17 and 13 approvals.

### 3.1.4 Nonprice strategy

The nonprice strategy adopted by China's mask industry in the market competition is mainly reflected in the innovative behavior. By searching the patent examination information network of China and other countries, it is found that as of February 24, 2020, there are 580 patents related to masks in China. These patients mainly include "design," "utility model," and "invention patent." At present, the related patents of masks in China mainly focus on "design," while the innovation of "utility model" and "invention patent" is relatively small. As shown in Table 1, from 2017 to 2019, there were 103, 53, and 23 patents for design types, far more than the other two. From the perspective of development trends, the number of patent applications in China's mask industry has declined in recent years.

### 3.1.5 Organizational structure adjustment

Organizational structure adjustment refers to business restructuring, business expansion, and horizontal merger and acquisition. Before the outbreak of the epidemic, to enhance the market competitiveness, some mask enterprises carried out a series of organizational structure adjustment strategies, which mostly adopted the way of "horizontal merger and acquisition." After the outbreak of the epidemic, under the support of national policies, many domestic enterprises have transformed and expanded the mask business, mainly manifested in the fact that some nonmask manufacturers began to invest in mask production in different fields.

For example, on February 6, 2020, the famous automobile brand SAIC general Wuling announced the production of masks and successfully delivered 1 million masks on the 14th of the same month, and then produced Wuling's first mask machine; Beifa Group, a leading stationery enterprise, rapidly expanded the mask business after the outbreak of the epidemic, obtaining the domestic production license of the product,

supplying 1.5-2 million masks a day; Zhongshun Jizerou has purchased 5 medical mask production lines with a daily supply of 350000 masks.

### 3.1.6 Employment effect

With the expansion of the mask industry, the labor force's demand has also increased. According to the recruitment announcement released by China National Energy Corporation on March 6, 2020, a mask factory needs about 50 workers, including 40 workers in the mask spot welding area and 10 technicians in the mask cloth conveying area. As of March 21, 2020, there are 33848 mask manufacturing enterprises in China. Assuming that all enterprises are small and medium-sized enterprises, according to the estimated personnel size of 51-100 people in each enterprise, the number of mask enterprises in China is between 1726200 and 3384800. Therefore, after the epidemic, with the mask industry's continuous expansion, the corresponding employment effect will gradually appear.

As of March 21, 2020, there are 10865 new and existing mask enterprises in China, which is 3.38 times that in 2019 and 3.49 times in 2018. It is estimated that novel coronavirus pneumonia will bring about 55.41 to 1 million 86 thousand and 500 jobs for the domestic masks.

### 3.1.7 Import and export status

The impact of the epidemic situation on the import and export of China's mask industry is mainly reflected in the export volume of masks. With the epidemic in the global

With the rapid spread of the international market, the demand for masks increases. In the past 30 days, global buyers' purchase intention increased significantly, and the demand for medical mask buyers increased by 13769%. To help other countries jointly resist the epidemic, China supports the supply of masks. The export of medical materials such as masks and protective clothing has increased greatly. On March 16, 2020, China Medical and Health Industry Co., Ltd. and the Italian Government Civil Defense Department reached an agreement on the supply of 8 million masks, with a contract value of about 106 million yuan. Also, several domestic listed companies, such as Hanyu pharmaceutical, Shangrong medical, Ogilvy medical, Sanxin medical, and other companies, have begun to implement overseas orders for masks to achieve overseas sales.

Conduction pathway:

### 3.1.8 The impact of mask industry chain

From the industrial chain perspective, masks' industrial chain for epidemic prevention is mainly composed of raw materials such as polypropylene, nonwoven fabrics, melt-blown fabrics in the upstream, and mask production equipment midstream, and hospitals/pharmacies in the downstream. From raw materials to mask production to final sales and circulation, masks' industrial chain is highly mature. The outbreak of the novel coronavirus pneumonia has caused a great impact on the upper and lower enterprises of masks, which is reflected in two aspects: price and demand. For upstream enterprises, the price of polypropylene is stable, and central enterprises such as Sinopec promise not to increase the price and guarantee the supply. The demand for meltblown cloth increases rapidly, and the price is double rising.

Meltblown cloth is the core material of masks. According to the supply and demand docking platform for the production of key medical prevention and control materials of the State Council, the demand for meltblown cloth will account for nearly half of all demands, with about 650 demand information. However, the price of meltblown cloth on the market has risen from 20000 yuan/ton a year ago to 200000 yuan/ton. For midstream enterprises, the demand for mask machines is a blowout, and the price has risen several times. According to win-win technology, after the outbreak of the epidemic, as of February 20, 2020, there were 1700 orders; in terms of price, the price of an ordinary mask machine before the epidemic was about 120000 yuan, and after the epidemic, the price had risen to about 500000 yuan. For downstream enterprises, masks' market price has generally increased due to increased costs in upstream and midstream links.

### 3.1.9 The rise of mask price

According to the laws and regulations of price management in China, the price of masks is regulated by the market, and there is almost no intervention from the government. Producers and operators are free to set prices according to the market. Novel coronavirus pneumonia is a reasonable pricing strategy based on the mask's performance, quality, and brand. In the normal period of the outbreak of the "new crown pneumonia," disposable medical masks' price is between 0. 3 and 0. 8 yuan per person. For N95 masks with a better protective effect, the price is generally about 4-8

yuan/piece.

Since the outbreak of novel coronavirus pneumonia, there has been a lot of maliciously raising the masks' price in China. On January 23, 2020, a large pharmacy in Fengtai District, Beijing, sold a box of 3M masks at a high price of 4 times the price (200 yuan/box). On January 28, a drugstore in Heilongjiang Province sold disposable masks with 3 yuan/bag's original price for nearly 7 times the price. For this reason, the State Administration of prevention and control of these illegal behaviors in the market during the period of February 2020 has also issued a notice on severe market supervision and control of these illegal behaviors.

However, due to novel coronavirus pneumonia's impact on the mask industry chain, labor costs, and transportation costs, many enterprises have adopted strategies to increase the mask price. For example, the current price of the N95 mask with a price between 4-8 yuan/piece is between 15-30 yuan/piece; the current price of the disposable ordinary medical mask with a price between 0.3-0.8 yuan/piece is between 1-2 yuan.

### 3.1.10 Business status of masks

According to the wind database, company annual report, and company announcement, in 2018 and the first three quarters of 2019, Zhende medical's mask sales revenue was 54.25 million yuan and 51.88 million yuan, respectively, accounting for 3.83% and 4.07% of the company's main business income; From the end of June 2018 to the end of June 2019, the sales revenue of disease control and protection products (masks, protective clothing, etc.) of robust medical were 140 million yuan and 83.3068 million yuan respectively, accounting for 3.6% and 4% of the company's main business income, and the net interest rate from 2018 to 2019 was 11.08% and 10.94%; in 2018, the sales revenue of mask filter materials of Taida cleaning company was 29.7236 million yuan, accounting for only the main business of the company15% of the company's revenue; Ogilvy medical's mask sales revenue in 2018 was 50 million yuan, accounting for 2.5% of the company's revenue. Also, in 2018, the sales revenue of mask production equipment of Hanchuan intelligent company was 8.4319 million yuan, accounting for 1.93% of the company's main business income.

It can be seen that the proportion of mask products or their production equipment

in the main business income of each mask company is small, and the overall profit margin of the mask industry is low. However, during the epidemic period, the domestic and foreign demand for protective products such as masks and mask machines increased significantly, so it is expected to improve the business situation of mask enterprises in China.

### 3.1.11 Mask concept stocks soared.

Affected by the "novel coronavirus pneumonia" epidemic, the stock market has masked the trend of masks and medical devices. According to the wind database, as of March 9, 2020, there were 23 stocks with trading limits. According to the order of rising and fall, the top eight stocks were Xinxiang Chemical fiber (10.11%), Haiwang biological (10.07%), Huafang (10.05%), Xinlong holding (10.03%), Guanhao biological (10.03%), Yangpu medical (10.03%), Yanjiang (10.01%) and Zhende medical (10.01%).

From the cumulative rise and fall, from February 3 to March 6, 2020, mask concept stocks have been on a rapid upward trend and exceeded CSI 300 on February 28.

## 3.2 Research method

Based on the reading and sorting of a large number of relevant literature, this study uses the method of questionnaire and SPSS software to analyze the collected data, and finally obtains the research results.

### 3.2.1 Documentation method

Literature method is also called historical literature method. It is a method to select the required information based on the collection and analysis of various existing relevant literature and materials in order to achieve a certain research purpose. What it wants to solve is to select the data suitable for the research topic from a large number of data, and properly analyze and use these data.

By consulting the literature related to the mask industry, after understanding the basic situation of medical and health products in the academic community, this study analyzes, arranges and summarizes these data, and obtains theoretical support from the academic literature such as psychology, economics and sociology. This series of

preparations makes the results of this study based on previous studies.

### 3.2.2 Field investigation method

In this paper, China's mask production is selected as the research object, and the production and supply of masks are investigated when the epidemic situation strikes. The investigation data are sorted out for in-depth study and analysis of the mask industry's influencing factors through the production and flow direction of masks' medical materials.

### 3.2.3 Quantitative study

Quantitative research is generally carried out to obtain statistical results for the overall of specific research objects. Quantitative research is a research method to measure and analyze the quantifiable part of a thing in order to test some theoretical assumptions about the thing. Quantitative research has a complete set of operation methods, including sampling method (random sampling), data collection method (questionnaire method), digital statistical method (such as descriptive statistics), etc. The basic steps are: the researcher establishes hypotheses and establishes various variables with causal relationship in advance, selects samples by means of probability sampling, collects data by using tested standardized tools and procedures, analyzes the data, establishes the correlation between different variables, and then tests the researcher's own theoretical hypothesis.

### 3.2.4 Questionnaire survey method

Questionnaire survey is an important method for quantitative analysis in this study. Through the scientific quantitative processing of the survey data, we can provide accurate data for this study, and then analyze the basic characteristics of the research object, and on this basis, analyze the problems existing in the research scope. In order to understand what factors affect residents' willingness to buy masks, questionnaires are distributed to wechat and the Internet. The principle of questionnaire distribution is to cover as many residents in different cities and geographical locations as possible, and through online questionnaires. It is expected that a total of 150 questionnaires will be distributed. The time from distribution to feedback is expected to be about a week. At the same time, the collected

questionnaires are classified and sorted out.

The questionnaire will use Likert scale to classify and arrange the influencing factors summarized above, and set a five point scale according to the degree of influence. Each option corresponds to 1-5 points respectively. The respondents are asked to score according to their actual situation, data and analyze the collected questionnaire, and calculate the score of each option.

After the questionnaire feedback, the answers and data are sorted out, and the SPSS software is used for statistical analysis. The sorted data are combined with the research needs to determine the importance of the influencing factors of each maker education model.

## 3.3 Research framework

The structure of this study is divided into five parts:

Chapter one: introduction. This paper mainly expounds the research origin, development, current situation, research purpose and significance of this study.

Chapter two: literature review. It mainly includes the related concepts of masks and mask industry chain, the research on major public emergencies, the research on epidemic situation, and the literature review on the transmission path of mask industry chain in epidemic situation.

Chapter three: research methods and framework. This paper mainly uses the methods of literature and questionnaire, takes the five dimensions of masks as the antecedent, consumer attitude as the intermediary factor and consumer purchase intention as the dependent variable, and constructs the basic research framework of this study. Moreover, on the basis of discussing the concept, this paper will sort out the theoretical framework of the article, and then put forward assumptions.

Chapter four: data analysis and discussion. In this chapter, the scale will be explained first. And will write a questionnaire to make statistics and sort out the data. According to the actual situation, this paper analyzes the impact of specific factors on consumers' purchase intention, and arranges and analyzes the questionnaire survey results by using the software Excel2007 and SPSS statistical analysis software.

Chapter V: research summary and suggestions. According to the comprehensive

analysis, this paper puts forward suggestions on the targeted Chinese mask industry chain model, so as to promote the orderly development of China's mask industry, realize the optimal allocation of social resources, further enrich the relevant theoretical research of public health products, and provide some suggestions and opinions for China's social resource allocation.

## 3.4 Hypothesis

Hypothesis 1: the epidemic situation has an impact on the demand for masks;

Hypothesis 2: the epidemic situation has an impact on the production of masks;

Hypothesis 3: the epidemic situation has an impact on the price of masks;

Hypothesis 4: the epidemic situation impacts the difficulty of mask purchase.

# 4. THESIS ANALYSIS

Based on the above observation variables' design ideas, this paper finally designs a questionnaire including service, goods, environment, geographical location, and customer personal factors. The questionnaire has 31 questions, and the specific questions are shown in the appendix of this paper. To collect the data needed in this study, we recruited qualified survey objects through network channels. Through the above channels, 136 valid questionnaires were collected, and then the questionnaires were input into spss23.0 software for statistical analysis.

Data analysis results:

## 4.1 Sample analysis

To study Chinese residents' influence on-demand for masks during the epidemic period, the questionnaire collected was input into SPSS software. The characteristics of the samples were analyzed. The statistical analysis of this paper is based on SPSS 23.0. Among the 140 valid questionnaires, the structure of the respondents was as follows:

The first is the comparison between men and women. Among the 140 respondents, 59 were males, and 81 were females. Secondly, among the 140 respondents, 6 were under 18 years old, 88 were between 18 and 30 years old, 43 were between 30 and 60 years old, and 3 were over 60 years old. Thirdly, from the distribution of residential cities, there are 31 people in first-tier cities, 68 in second-tier cities (including new first-tier cities), 22 in third-tier cities, and 19 in fourth-tier cities. Then, during the outbreak, 31 people bought less than 50 masks, 73 people bought 50 to 150 masks, and 36 people bought more than 150 masks. Then, 32 people thought that masks were in short supply at that time, 74 people thought they were in short supply, and 34 people thought they were not in short supply.

Finally, in terms of the time for changing masks, 18 people would change their masks in less than 4 hours, 48 people would change their masks within 4 to 8 hours, 54 people would change their masks more than 8 hours, 17 people would change them as soon as they had used them, and 3 people would rarely replace them.

## 4.2 Statistical test of data

Spss23.0 was used as the statistical software of this paper, and the reliability of the scale design was checked with Cronbach's alpha consistency coefficient. At present, it is generally believed that if the final reliability coefficient is between 0.8 and 0.9, it means that the reliability of the scale is excellent; if the coefficient value is between 0.7 and 0.8, it means that the scale is designed well; if the coefficient value falls between 0.65 and 0.7, the scale can be accepted; if it falls below 0.65, it means that the scale is not credible. Through the test, it is found that the consistency coefficient of Cronbach's alpha is 0.781, which indicates that the reliability of the sample is good and it is a good questionnaire.

## 4.3 Analysis of the impact of the epidemic situation on the mask industry

This part attempts to analyze the impact of the epidemic situation. First of all, the statistics of five multiple topics are carried out.

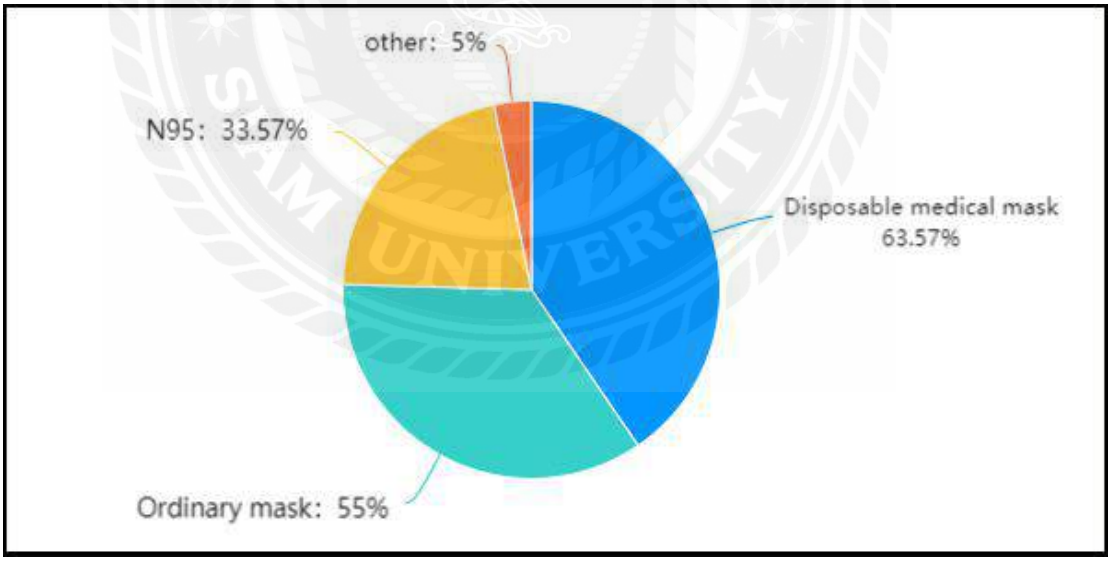


table 2 statistical chart of types of masks worn by residents during the epidemic period

Figure 1 statistical chart of types of masks worn by residents during the epidemic period

As shown in Figure 1, most residents wear disposable medical masks during the epidemic period, and some residents wear Ordinary masks; a small number of

residents use N95 masks.

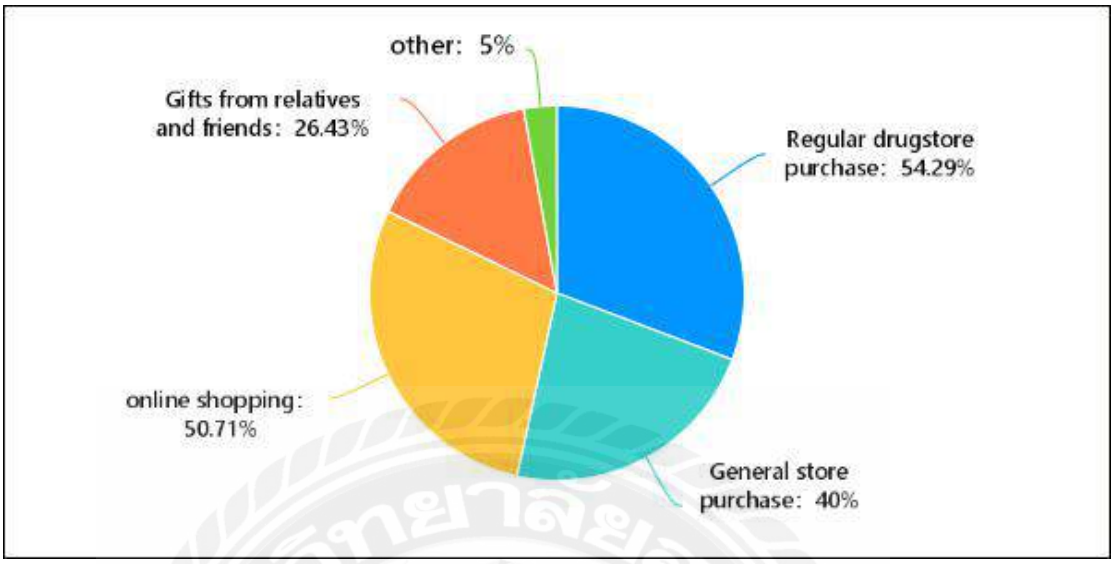


table 3 statistical chart of the way residents buy masks during the epidemic period.

Figure 2 statistical chart of the way residents buy masks during the epidemic period.

As shown in Figure 2, the number of regular pharmacies, ordinary shops, and online shopping is quite equal, and relatives and friends give a small part.

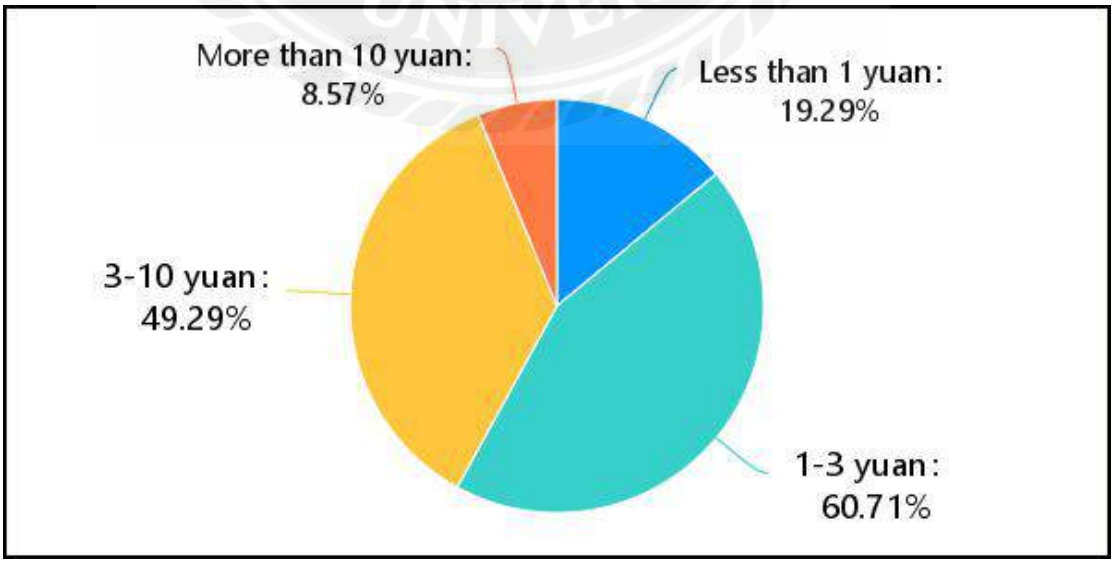


table 4 price statistics of masks purchased by residents during the epidemic period

Figure 3 price statistics of masks purchased by residents during the epidemic period

As can be seen from Figure 3, the prices of masks purchased by residents during the epidemic period are generally high, most of which are concentrated in RMB 1 to RMB 3, and nearly half of them are in the range of RMB 3 to RMB 10, and less than RMB 1 and RMB 10 or above.

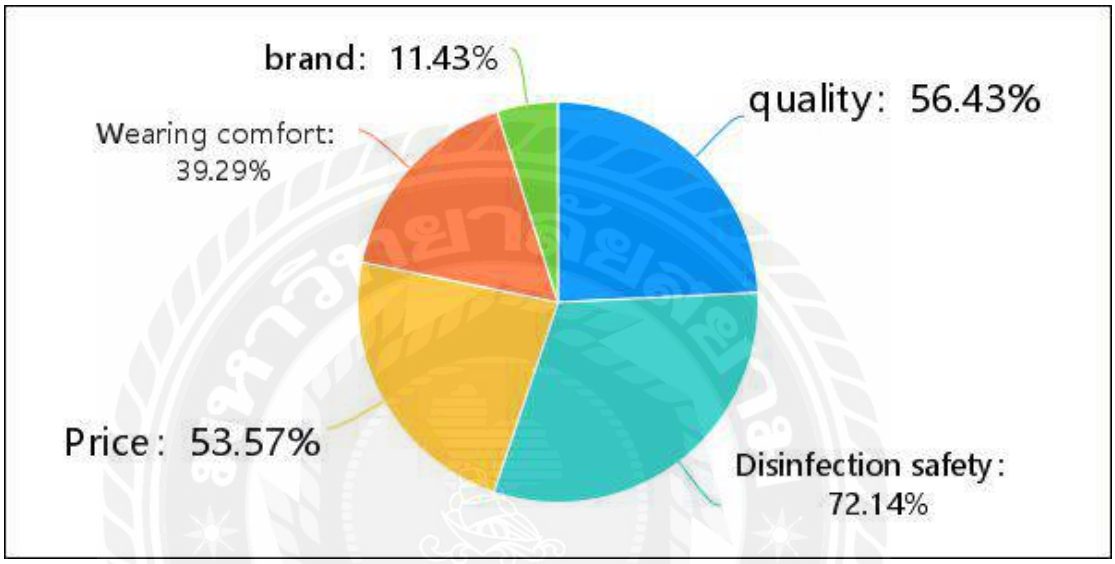


table 5 statistical chart of the most concerned masks among residents during the epidemic period

Figure 4 statistical chart of the most concerned masks among residents during the epidemic period

As shown in Figure 4, masks' disinfection safety was the most important during the epidemic period, followed by the quality and price of masks, and finally, the comfort of wearing masks.

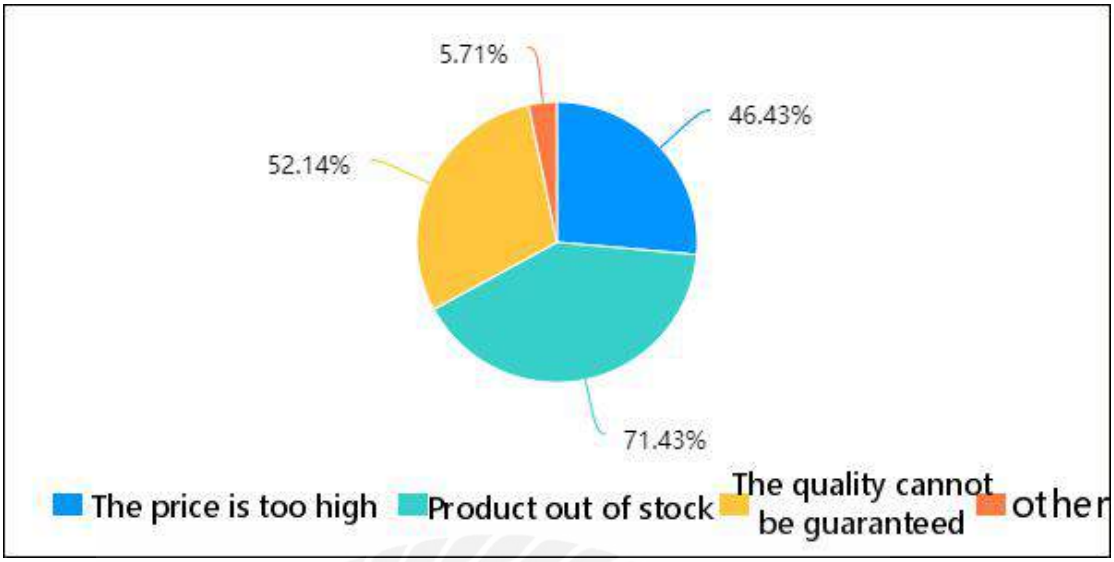


table 6 Statistics of the difficulty of residents in purchasing masks during the epidemic period

Figure 5 Statistics of the difficulty of residents in purchasing masks during the epidemic period

As shown in Figure 5, residents' biggest problem during the epidemic period was that masks were out of stock and could not be bought with money. Secondly, the mask's quality can not be guaranteed, and then the price of the mask is too high, which is very acceptable. The selection degree of these three problems is generally equal.

## 4.4 Frequency analysis

| Frequency analysis results | | | | |
|---|---|---|---|---|
| name | option | frequency | percentage(%) | cumulative percentage(%) |
| gender | male | 59 | 42.14 | 42.14 |
| | female | 81 | 57.86 | 100 |
| age | under 18 | 6 | 4.29 | 4.29 |
| | 18-30 years old | 88 | 62.86 | 67.14 |

| | | | | |
|---|---|---|---|---|
| | 30-60 years old | 43 | 30.71 | 97.86 |
| | over 60 years old | 3 | 2.14 | 100 |
| city | first-tier cities | 31 | 22.14 | 22.14 |
| | second-tier cities (including new first-tier cities) | 68 | 48.57 | 70.71 |
| | third-tier cities | 22 | 15.71 | 86.43 |
| | Fourth tier cities | 19 | 13.57 | 100 |
| total | | 140 | 100 | 100 |

table 7 Frequency analysis

It can be seen from the above table that 57.86% of the samples chose "female." Another 42.14% of the samples were male. Age, more than 60% of the samples, choose "18-30 years old". Besides, the proportion of 30-60 years old sample was 30.71%. Judging from the type of cities you live in, there are relatively more "second-tier cities (including new first-tier cities)" in the sample, accounting for 48.57%.

## 4.5 Descriptive analysis

| Basic indicators | | | | | | |
|---|---|---|---|---|---|---|
| Name | sample size | minimum value | maximum | average value | standard deviation | median |
| How many masks do you need during the epidemic | 140 | 1 | 5 | 4.079 | 0.857 | 4 |
| Your family's demand for masks during the outbreak | 140 | 1 | 5 | 3.971 | 0.996 | 4 |
| What do you think of the production of masks | 140 | 1 | 5 | 4.014 | 0.913 | 4 |

| | | | | | | |
|---|---|---|---|---|---|---|
| during the outbreak | | | | | | |
| What do you think of the price of masks during the epidemic | 140 | 1 | 5 | 2.807 | 1.351 | 3 |
| How easy is it to buy masks in physical stores during the epidemic period | 140 | 1 | 5 | 3.793 | 1.014 | 4 |
| How easy is it to buy masks online during the epidemic | 140 | 1 | 5 | 3.714 | 0.969 | 4 |

table 8 Descriptive analysis

The descriptive analysis describes the data's overall situation through the average or median. It can be seen from the above table that there is no abnormal value in the current data, so spssau suggests that the average value can be directly described and analyzed. It can be concluded that there is no abnormal value in the data, which can be directly described and analyzed for the average value.

## 4.6 Reliability analysis

| Cronbach Reliability Analysis | | | |
|---|---|---|---|
| Name | Correction item-total correlation(CITC) | Item deleted α coefficient | Cronbach α coefficient |
| How many masks do you need during the epidemic | 0.68 | 0.704 | 0.781 |
| Your family's demand for masks during the outbreak | 0.523 | 0.752 | |
| What do you think of the production | 0.491 | 0.761 | |

| | | | |
|---|---|---|---|
| of masks during the outbreak | | | |
| How easy is it to buy masks in physical stores during the epidemic period | 0.537 | 0.748 | |
| How easy is it to buy masks online during the epidemic | 0.567 | 0.737 | |
| Standardization Cronbach α coefficient: 0.785 | | | |

table 9 Reliability analysis

It can be seen from the above table that the reliability coefficient is 0.781, greater than 0.7, which indicates that the reliability quality of the research data is excellent. According to the "α coefficient of deleted items," the reliability coefficient will not increase significantly after any item is deleted, so it shows that the item should not be deleted. For the "CITC value," the CITC values of the analysis items were all greater than 0.4, indicating a good correlation between the analysis items and showed that the reliability level was good. In conclusion, the research data's reliability coefficient is higher than 0.7, which indicates that the data's reliability is high and can be used for further analysis.

## 4.7 Correlation analysis

| Pearson Related - standard format | | | | | | | |
|---|---|---|---|---|---|---|---|
| | average value | standard deviation | How many masks do you need during the epidemic | Your family's demand for masks during the outbreak | What do you think of the production of masks during the outbreak | How easy is it to buy masks in physical stores during the epidemic period | How easy is it to buy masks online during the epidemic |
| How many masks do you need | 4 | 0. | 1 | | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| during the epidemic | .079 | 857 | | | | | |
| Your family's demand for masks during the outbreak | 3.971 | 0.996 | 0.601** | 1 | | | |
| What do you think of the production of masks during the outbreak | 4.014 | 0.913 | 0.605** | 0.364** | 1 | | |
| How easy is it to buy masks in physical stores during the epidemic period | 3.793 | 1.014 | 0.366** | 0.315** | 0.283** | 1 | |
| How easy is it to buy masks online during the epidemic? | 3.714 | 0.969 | 0.417** | 0.334** | 0.281** | 0.649** | 1 |
| * p<0.05 ** p<0.01 | | | | | | | |

table 10 Correlation analysis

From the above table, we can use correlation analysis to study your demand for masks during the epidemic period: and your family's demand for masks during the epidemic period, the output of masks you think during the epidemic period, and the difficulty of purchasing masks in physical stores during the epidemic period, Pearson correlation coefficient was used to express the strength of the correlation among the four items of the difficulty of purchasing masks online during the epidemic period. The specific analysis shows that:

The demand for masks during the epidemic: the demand of your family for

masks during the epidemic period, the output of masks you think during the epidemic period, the difficulty of purchasing masks in physical stores during the epidemic period, and the difficulty of purchasing masks online during the epidemic period are all significantly different, with correlation coefficient values of 0.601, 0.605 and 0.366, respectively, 417, and the correlation coefficient values are greater than 0, which means that your demand for masks during the epidemic period is positively correlated with your family's demand for masks during the epidemic period, the output of masks you think during the epidemic period, the difficulty of purchasing masks in physical stores during the epidemic period, and the difficulty of purchasing masks online during the epidemic period.

# 5. CONCLUSIONS AND SUGGESTIONS

## 5.1 Summary of research conclusions

This study selected the impact of the epidemic on masks' purchase by mainland China residents and designed questionnaires and selected residents as the subjects. The data obtained from the survey were used to study the impact of the epidemic on masks' use by China's residents and explore the key factors that China residents bought during China's epidemic situation. The acquisition of the cover has a great influence. Chinese residents' main obstacles to obtaining masks during the epidemic period are the demand for masks, the output of masks, and the increase of mask prices, which are not affected by geographical location.

Based on the above conclusions, this paper puts forward the following suggestions: first of all, to increase the production of masks, the government should optimize the allocation of resources as a whole, and the upstream and downstream industries should cooperate effectively. Secondly, Chinese residents can reduce masks' consumption, do not go out, go out less, and reduce the frequency of changing masks. Thirdly, we should strictly control the price and end the starting price.

## 5.2 Suggestions for mask industry

This paper puts forward the following suggestions to promote the healthy development of China's mask industry and enhance the ability of epidemic prevention and control: first, promote the development of masks With the increase of industrial concentration, the government can issue relevant industrial policies and fiscal policies to guide the joint M & A among mask enterprises and make it reasonable Plan the layout of mask industry and optimize the industrial organization structure.The second is to introduce the capital market, eliminate high capital barriers and increase private investment.The introduction of capital will increase the scale of capital subsidies to mask enterprises in terms of equipment cost. Third, increase the investment of scientific research funds and improve the government.The government should formulate reasonable incentive policies to introduce high-tech talents, and give certain financial funds to promote China's mask industry.Promotion of innovation ability;Fourth, strengthen the reserve of protective materials such as masks. Government departments can purchase and reserve them by government,Support

mask production and sales.Fifth, do a good job in the follow-up treatment. The sharp increase in the production capacity of the mask industry is likely to cause short-term economic losses.For the problem of mask overcapacity, a plan should be made.

## 5.3 Shortcomings and future prospects of this study

The determination of consumers' willingness to buy masks is actually a very complex process, which involves many variables. Although this study tries to meet the theoretical requirements such as statistics in the empirical process, due to my limited ability, the research still has deficiencies:

Firstly, the random sampling method adopted in this survey, the respondents' understanding of the contents of the questionnaire and the seriousness of filling in the questionnaire will have a certain impact on the authenticity of the questionnaire data, thus affecting the results of this study;

Secondly, due to the lack of familiarity with SPSS Amos 23 software, the analysis is relatively weak. Due to the limitations of individual's current level, the final model adaptation index has not reached the best, so it needs to be further optimized to make RMR and NFI equivalent meet the standard requirements. In the future study and research, it is expected to continue to systematically study qualitative and quantitative research methods, make more comprehensive and accurate data analysis, and make the research content more convincing.

It is hoped that this paper can play an effect of throwing bricks and attracting jade, and it is expected to trigger more scholars to think about the trust of purchasing by foreign students from different angles and at a deeper level, put forward more correct and beneficial effects for this behavior, and promote the standardized development of the industry.

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