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SERVICES FOR SCIENCE AND EDUCATION

How is the Wine Consumers Behavior Changing After Pandemic: A Descriptive Analysis of the Chinese Wine Market

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ABSTRACT

The COVID-19 pandemic had a substantial impact on the global wine industry, leading to dramatic changes in consumer behavior as well. Although the pandemic has significantly impeded the global economy, international trade, and social development, it has given an impetus to the process of digitalization, digital market has been growing prosperity, especially in China, a country as the bellwether in digitalization. The China wine market is one of the most potential markets in the world, Per capita expenditure of wine in China has increased quite significantly after 2021, compared to the Asia Pacific and global levels. Therefore, understanding how the changes in the Chinese wine consumer occurred after the pandemic will help wineries better enter the Chinese market and develop a digital marketing strategy. After the United Nations proposed the 17 Sustainable Development Goals in 2015, sustainability has become a primary theme of the world's concern. Therefore, the wine industry has also regarded sustainability as its primary goal. Digital transformation is an inevitable trend that foreign wineries have to face, which is also in conformity with the SDG targets. This paper aims to provide an in-depth understanding of the wine consumer behaviors' existing circumstances after the pandemic through an exhaustive descriptive analysis, which helps foreign wineries lay down a new business strategy and realize digital transformation in the Chinese wine market.

Keywords: Consumer behaviors, Sustainability, Digitalization, Wine, Pandemic

INTRODUCTION

The environmental degradation has given rise to numerous negative impacts on human beings, including natural disasters and the transmission of illnesses such as Covid-19. Even though the economy is at a rapid recovery nowadays after the Covid-19 crisis, the repercussions of this global crisis extend beyond economic implications and affect society at large, resulting in drastic changes in both business and consumer behaviors [1]. Despite some studies investigating certain aspects of its impact, there remains a deficiency in extensive research examining the impact of the COVID-19 crisis on wine business and wine consumer behaviors [2].

Various countries have implemented quarantines lasting more than 14 days for incoming travelers, resulting in adverse effects on international business, particularly for traditional industries such as the wine industry. Therefore, during the COVID-19 pandemic, individuals increasingly turned to social media platforms and online sources, as well as engaged in online shopping, in response to the imposed social restrictions [3]. As a consequence, social networking sites have gained increasing prominence, thereby promoting digitalization and online activities in response to COVID-19 [4]. Moreover, the pandemic has likely heightened people's awareness of the importance of health coverage [5]. The diversity of the environment significantly influences consumer behaviors, leading to an increasing preference for environmentally friendly choices as consumers increasingly prioritize their health [6].

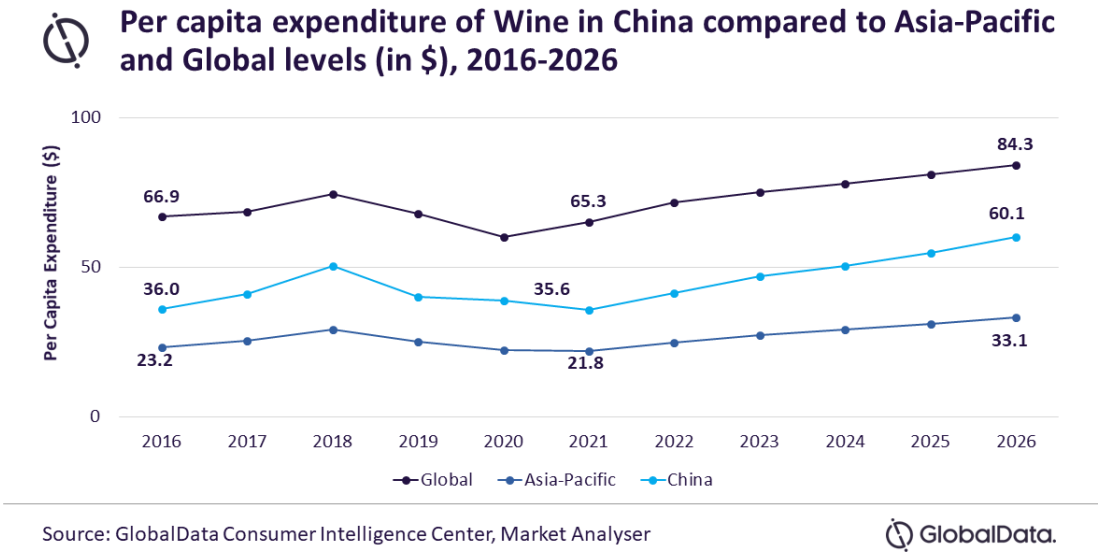


Figure 1: Per Capita Expenditure of Wine in China, Asia Pacific and Global [7]

It is obvious that people would like to pay much more money for wine after the pandemic as Figure 1 shows. In comparison with Asia Pacific and Global, the most significant of which is China. As one of the most potential wine markets in the world, the famous international wine-producing regions attach great importance to the Chinese market. Meanwhile, as China is the Bellwether in the digital market, people in China are known for their adoration of new technology and there is no doubt that a great number of Chinese citizens have heavy smartphone usage for both business-related purposes as well as posting and surveying social media networks [8]. Therefore, understanding Chinese consumer behavior can help wineries better realize the transformation of the digital market.

Moreover, the sensory experience associated with wine has traditionally relied on in-person interactions, where consumers assess their preference based on sight, smell, and taste. However, consumer behavior has been significantly impacted by mandatory shutdowns and pandemic restrictions, compelling wine companies to embrace innovation and sustainability. Amid these challenging circumstances, digital transformation has emerged as a viable solution, albeit a complex undertaking for French wineries [9]. The global wine industry is currently

undergoing a transition from a producer-driven approach to open innovation and consumer-centricity.

Since the outbreak of the Covid-19 crisis, the wine business has been grappling with its ramifications, with numerous company reports highlighting substantial disruptions in sales activities [10]. Sales growth through diversification strategies contributes value to companies and helps them navigate challenging periods, ultimately leading to new business opportunities [11]. Consequently, businesses and policymakers must prioritize the strengthening and development of healthy and safe work practices in the post-pandemic period [12]. Therefore, wineries and wine firms must enhance and adopt new business models and strategies to confront the challenges that have emerged during the pandemic [13]. With the rapid development of the internet and the advent of the 5G era, innovation and technology have emerged as crucial factors in enhancing business competitive advantage across various industries. Consequently, the transformation of traditional industries driven by innovation has assumed a pivotal role, enabling organizations to create value and survive within an unpredictable environment.

According to the studies conducted by Dr. Mohsen Attaran and Dr. Sharmin Attaran in 2020, "5G represents a fundamental transformation of the role that mobile technology plays in society. As 5G becomes a reality, it will impact us on a massive scale, especially in the workplace " [14]. The digital technology revolution is a transformative force affecting industries and society as a whole in the present era [15]. The advent of 5G technology and digital transformation not only signifies a generational shift but also presents new opportunities across all industries. Inspired by the concept of the fourth industrial revolution put forth by Klaus Schwab, our world is transitioning into digital realms, where innovative connected technologies such as artificial intelligence (AI), robotics, the Internet of Things (IoT), Web3, blockchain, 3D printing, genetic engineering, quantum computing, and other advancements collectively shape indispensable products and services that underpin modern life [16]. For instance, IoT-based platforms exemplify how data gathering can expedite and enhance decision-making processes. Data-driven decision-making is poised for even greater development and prospects [17]. Furthermore, E-business demonstrates a significantly positive impact on operational performance, particularly when key suppliers are willing and prepared to participate [18]. The outbreak of the Covid-19 crisis has compelled numerous organizations to undergo digital transformation in order to adapt to social restrictions and traffic limitations. The effects of digital transformation extend to the structure and governance of ecosystems, with the imperative for digitalization becoming even more pronounced during the epidemic period. In a digitalized world, organizations must compete and strategize for innovation [19].

Furthermore, the connection between digitalization and sustainability has garnered increasing attention among scholars, as these two domains are intertwined and serve as indicators of today's world. A recent concept, "digitainability," has been proposed to highlight the potential cross-fertilization effects between digitalization and sustainability [20]. In addition, digitalization has emerged as an inevitable trend in the development of various industries and has played a significant role in advancing the SDGs targets.

As a result, remote work became the norm, placing greater reliance on digital operations and management within organizations. Many companies were compelled to undergo digital transformation to effectively adapt to this new reality, characterized by social limitations and restrictions on movement. The Covid-19 pandemic has acted as a catalyst for accelerating the process of digitalization [21]. "Present Businesses now are turning their attention to this avenue of communication to reach their customers more vigorously compared to the past, in which they might not have paid much attention, and businesses that never used social media or thought of it as unnecessary are now learning how and experimenting with new technologies," noted Emily Lester, a renowned online Key Opinion Leader (KOL) in the wine industry, widely known as The Paris Wine Girl, during an interview.

In addition, digital communication technology is revolutionizing brand communication. French wineries have duly recognized the significance of innovation and digitalization and have begun implementing innovative and digital-based sustainable project management methods across various domains such as viticulture, brewing, environmental and soil testing, management, and tourism [22] [23] [24]. It is imperative to chart a course that ensures both stability and the exploration of new markets. This entails increasing production capacity, investing in internationalization, prioritizing innovation-driven segmentation, and diversifying products and business strategies [25].

Simultaneously, digitalization technologies present new opportunities for wine organizations to expand their market presence [26]. Notably, digitalization is not only a prevailing business strategy trend embraced by a growing number of enterprises, but it also enhances their supply chain and operational performance [27]. China, recognized as one of the most promising wine markets globally, has become an attractive destination for major wine merchants. The ensuing descriptive analysis will thus focus on developing a profound understanding of Chinese wine consumer behavior, thereby facilitating foreign wineries in acquiring comprehensive insights into the Chinese market and attaining enhanced distribution value. The paper gave an in-depth analysis of Chinese wine consumer behaviors through online surveys conducted in the first-tier cities in China, Beijing, Shanghai, Shenzhen, and Guangzhou.

THE RESEARCH METHODS

Descriptive analysis, also known as a descriptive statistic, is a summary statistic that quantitatively describes or summarizes features from a collection of data [28]. The descriptive analysis is to obtain consumer behavior status in the Chinese wine market, which would be a critical factor for successful project management implementation. Therefore, a descriptive analysis was employed with bivariate and multivariate analysis. In addition, cross-sectional online surveys were conducted in the first-tier cities in China with a multistage cluster sampling method in July 2022.

Draw the Objectives

Here is no doubt that the current environment including Macro- and Micro- environment has made conspicuous impacts on viticulture, wine production, and consumer behaviors, which are not only critical to business success but also the factors that have to be considered for digital transformation success. The purpose of the descriptive analysis was to obtain consumer

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behavior status in the Chinese wine market, which would be a critical factor for successful marketing strategy formulation.

Data Collection and Data Cleaning

Cross-sectional online surveys were conducted in the first-tier cities (Shanghai, Beijing, Shenzhen, and Guangzhou) in China in July 2022. A multistage cluster sampling method was used to improve the data's accuracy and feasibility. The questionnaire consisted of 21 questions in total concerning multiple topics that reflect consumers' perspectives on wine consumption and sustainability. A total of 788 questionnaires were taken back and the number of questionnaires in the four first-tier cities which are 190 (Beijing), 187 (Shanghai), 181 (Guangzhou), 174 (Shenzhen), and 56 (other cities). To ensure the authenticity of the data source, the IP address of all participants were displayed. As the irrelevant information or noise in the working data set would cloud the results, The data of the four first-tier cities and the data from incomplete answers to the questionnaires have been cleaned up and deleted. Data with less than 40 seconds of answering time of the questionnaire considered invalid data were deleted. Finally, 160 surveys of each first-tier city were collected randomly and then analyzed.

Data Analysis

After cleaning the data, different analysis techniques were applied. The basic features of data were described by a detailed summered description. The surveys consisted of three sections: Section 1 contained questions that related to personal information (age, sex, employment status and location), section 2 included questions that related to consumption preference (type of wine consumed, purchasing habits, brand and channel preference, wine region, vintage, etc.), the final section was related to consumers' perspective on sustainability (sustainable viticulture, organic wine, etc.).

The transcription of data was in process. The survey contains 21 questions, assigned to the three sections as shown in the table. The data from each section was analyzed by IBM SPSS Statistics 26.0. The example was shown in Fig. 2.:

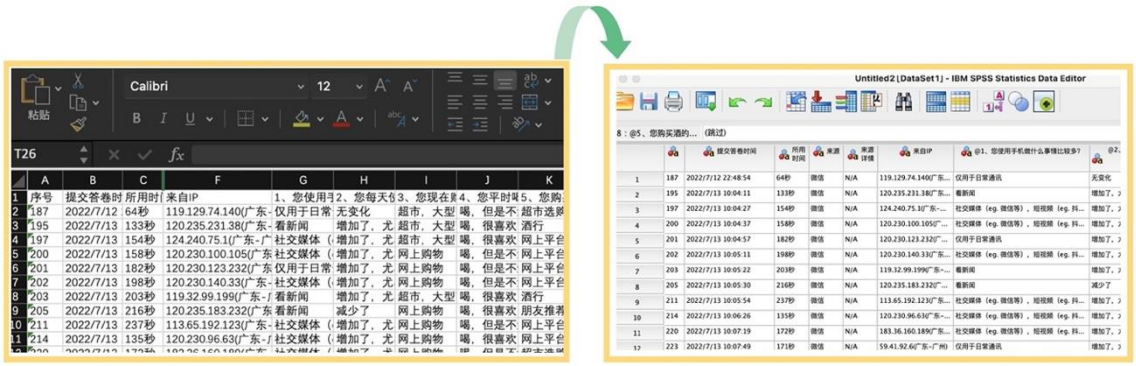


Figure 2: Example of Data Transformation from Excel to IBM SPSS

Since the questionnaire is conducted in the Chinese market, the language is Chinese. After data analysis was completed, the language was converted to English as Fig. 3. shows below.

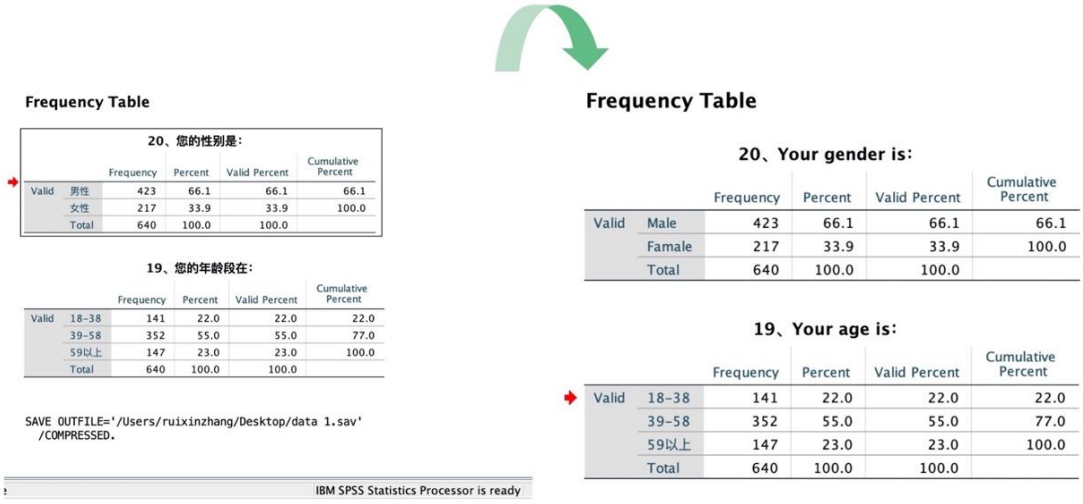


Figure 3: Example of Language Translation

In order to better display the intuitiveness of the data, the data analyzed by SPSS was made into fan charts, bar charts, and other charts and tables by using EdrawMax. The example is showed in Fig. 4.:

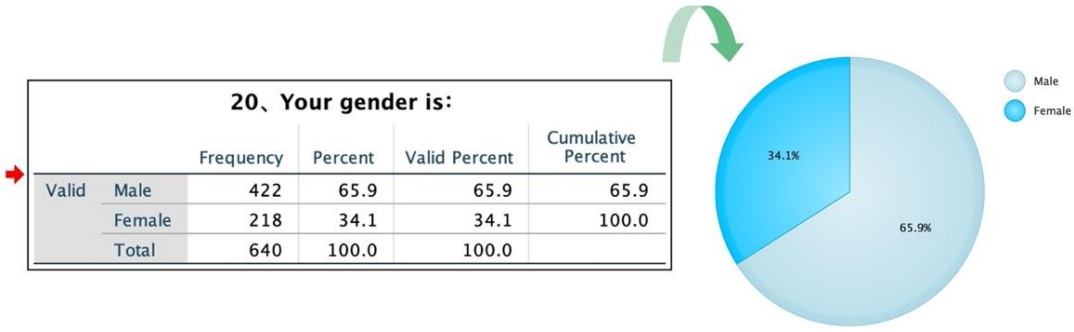


Figure 4: Data Displayed in The Different Modality

Univariate analysis was chosen for the first stage of analysis which involves describing the distribution of a single variable, including the central tendency such as the mean, median, and mode. The graphical and tabular formats displayed is more common in the study, such as pie chart, bar chart, histograms, and so on. Furthermore, bivariate and multivariate analysis was used for the second stage that describes more than one variable. Bivariate and multivariate analysis is one of the tools in descriptive statistics, which is usually used to describe the relationship between pairs of variables [29]. Crosstabulations and bivariate correlations were analyzed in this study.

DISCUSSION AND CONCLUSION

Identified Sections

The findings of the analysis of collected data were interpreted in detail in three sections that showed in Fig. 5. The questions in the survey were all exclusive-choice questions except Q18 which was a blank-filling question related to the location.

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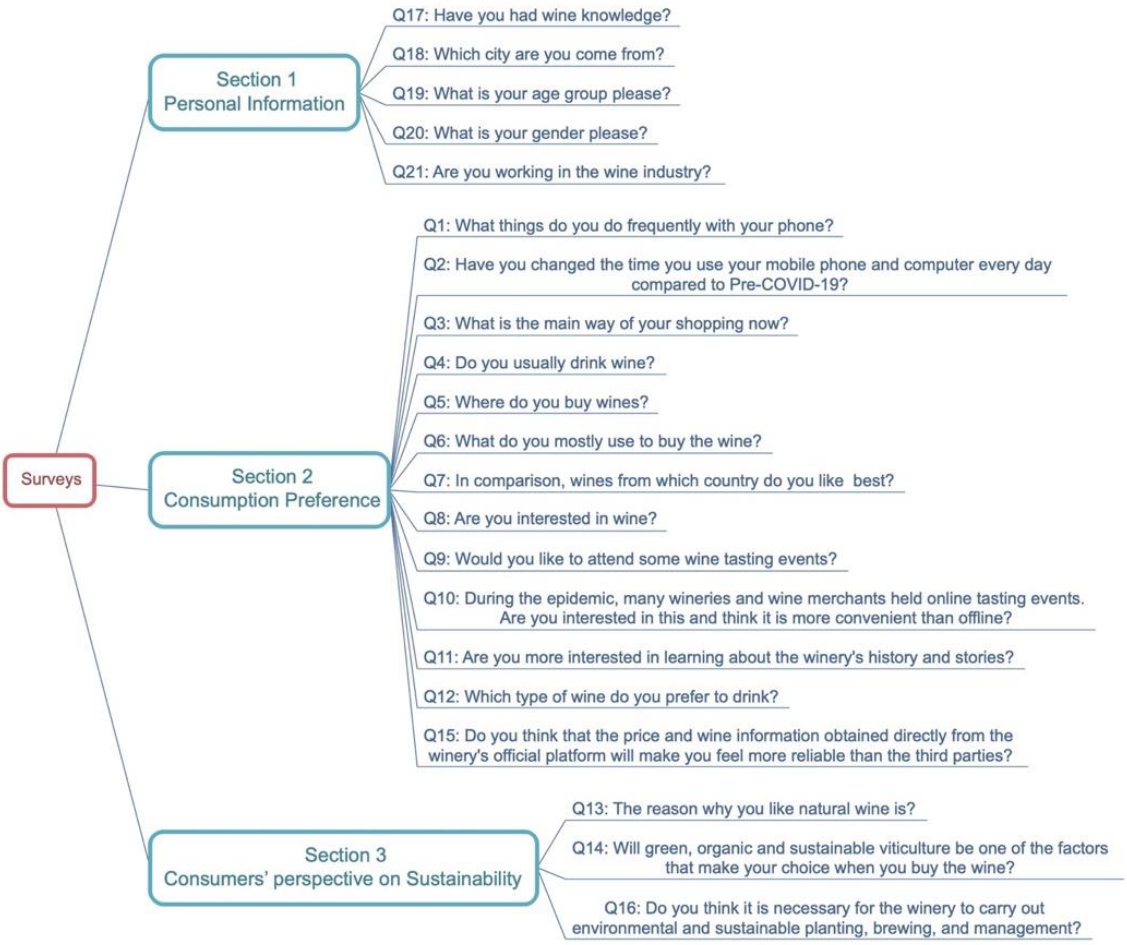


Figure 5: Surveys Interpretation in Three Sections

Interpretation of Findings

The First Section: Personal Information:

Lorem The SPSS was used to do ratio statistics and frequency analysis of participants' gender and age group (n=640), and EdrawMax was used to make a clearer pie chart. Fig. 6. shows that participants are twice as many males as female's ratio, people are mainly from 39 to 58 years old that accounting for 55.2%. The two age groups that 18 to 38 and above 59 years old account for 22% and 22.8%.

Ratio Statistics

Case Processing Summary

		Count	Percent
19、Your age is:	18-38	141	22.0%
	39-58	353	55.2%
	Above 59	146	22.8%
Overall		640	100.0%
Excluded		0	
Total		640	

20、Your gender is:

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	422	65.9	65.9	65.9
	Female	218	34.1	34.1	100.0
	Total	640	100.0	100.0	

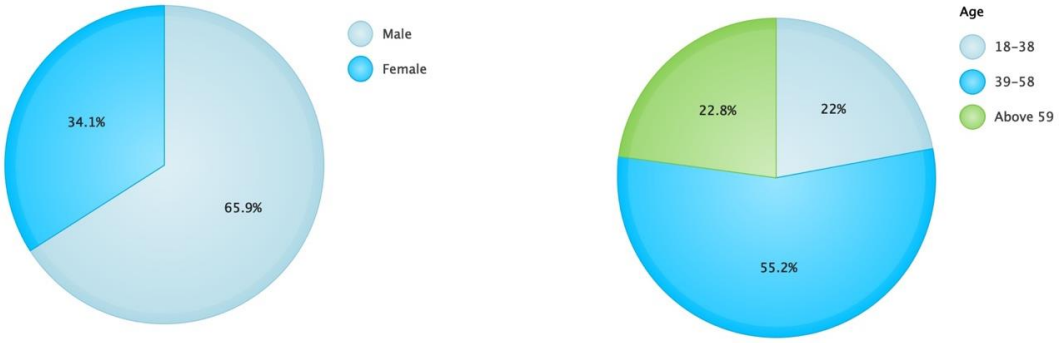


Figure 6: Proportion of Gender and Age

Meanwhile, of all the participants (n=640), 93.9% are mass consumption groups and just only 10% are working in the wine industry. Fig. 7. shows the occupational relevance and wine knowledge reserve level of the participants.

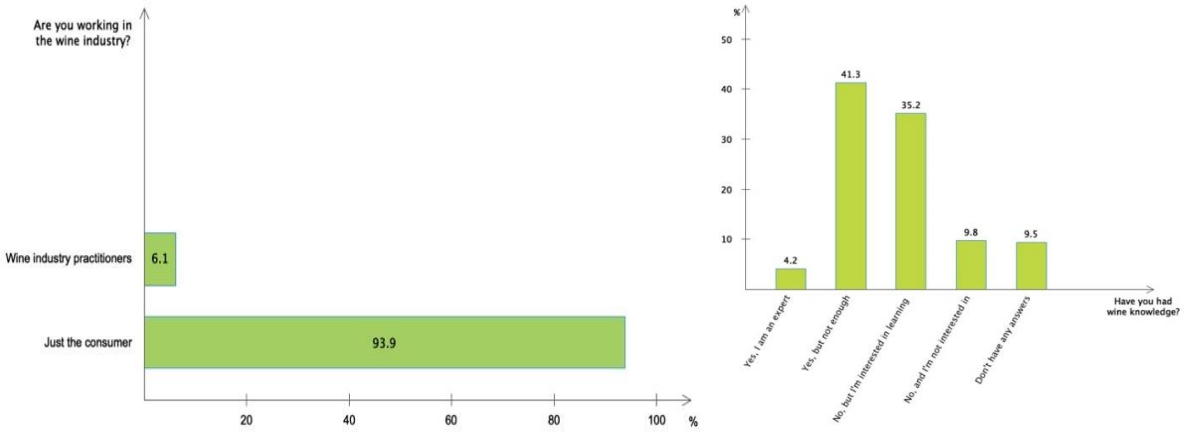


Figure 7: Participants' Occupation and Wine Knowledge Reserve Level

However, participants' stock of wine knowledge was surveyed that only 4.2% of the population with rich wine knowledge reserves, meanwhile, those who are not interested in this question and those who did not answer this question accounted for 9.8% and 9.5% of the total respectively. In addition, the participants who have some wine knowledge but not too much account for 41.3% of the total, and those who have no related knowledge about wine but are very interested in learning and understanding account for 35.2%. Therefore, 80.7% of those who are interested in wine and are willing to learn about wine, account for the majority of the total.

The Second Section: Consumption Preference:

There are 70.5% of the total participants using mobile phones for social media platforms, such as WeChat, Weibo, Douyin, Taobao, and so on. Just 22.3% of the participants used their mobile phones only for daily communication, and the remaining 7.2% of the participants used their mobile phones only to watch the news, as Fig 8. shows.

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Figure 8: Consumer Preference for Smartphone Utilization During the Covid-19 Period

The questionnaire also conducted a survey on the frequency of people's mobile phone usage, of which 83.1% expressed that the time spent on mobile phones has greatly increased due to restrictions and controls on movement and social activities during the epidemic. However, the Fig. 8. shows that 14.8% of participants stated that the time spent on mobile phones has not changed during the epidemic period, only 2% of participants thought that the time using phones has decreased.

Furthermore, crosstabulation was analyzed by SPSS and indicates (Table. 1) that the number of people who use mobile phones increased significantly during the epidemic period, most of the time was spent on social media platforms, and then on daily communications.

Table 1: Crosstabulation of People's Smartphone Utilization

1、What things do you do frequently with your phone? * 2、Have you changed the time you used your phone and computer everyday compared to pre-Covid-19? Crosstabulation

			2、Have you changed the time you used your phone and computer everyday compared to pre-Covid-19?			
			Increased especially during the Covid-19	Decreased	No change	Total
1、What things do you do frequently with your phone?	Social media	Count	400	4	47	451
		% within 1、What things do you do frequently with your phone?	88.7%	0.9%	10.4%	100.0%
	Watch news	Count	26	3	17	46
		% within 1、What things do you do frequently with your phone?	56.5%	6.5%	37.0%	100.0%
	Daily communication	Count	106	6	31	143
		% within 1、What things do you do frequently with your phone?	74.1%	4.2%	21.7%	100.0%
Total		Count	532	13	95	640
		% within 1、What things do you do frequently with your phone?	83.1%	2.0%	14.8%	100.0%

However, people whose mobile phone using time reduced during the pandemic period were clearly less engaged with social media. The group without any changes on the time of mobile phone using was usually watching the news and communicating. Therefore, due to the impacts of Covid-19, more people were using mobile phones for a longer time, and much more time would be spent on social media platforms and communication, which were related to the policy of social restrictions during the epidemic period.

A survey on the shopping habits of the participants was also conducted and was described in Fig. 9. The questionnaire data shows that 69.7% of the participants were accustomed to and

routinely buy online. However, 30.3% of people were still used to buying offline, such as in supermarkets or shopping malls.

3、The main way of shopping?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1. Supermarkets or shopping malls	194	30.3	30.3	30.3
	2. Online	446	69.7	69.7	100.0
	Total	640	100.0	100.0	



Figure 9: Participants' Shopping Habits

Participants who were asked about their perception of wine expressed that 59.4% of them drink wine but not very often, 36.3% of them would like to drink wine very often with enthusiasm, but 4.4% of them never drink wine. It can be concluded that the number of participants who drink wine in daily life accounted for 95.7% of the totals (Fig. 10).

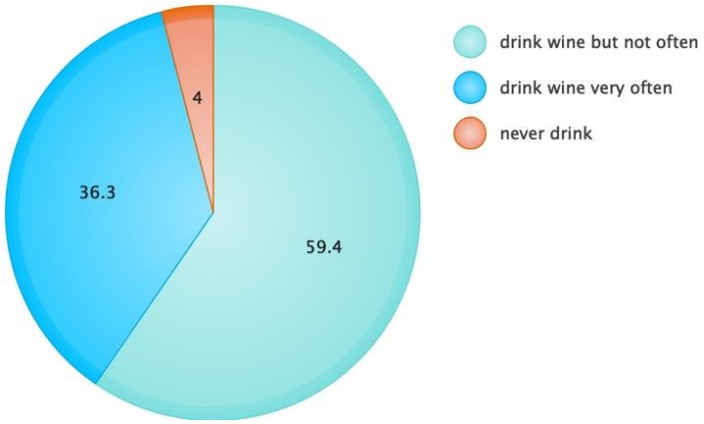


Figure 10: The Perception of Participants' Wine Drinking

The participants who had never drunk wine would not have the opportunity to participate in the survey on wine consumption behavior analysis. Excluding the never-drink simples, the number of valid questionnaires in "wine buying channels", "the main application of wine buying" and "wine region preference" is 612 in total.

The frequency analysis table and histogram graph were analyzed by SPSS which directly displayed on the left side of Fig. 11. It obviously expresses that 43.3% of participants would like

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to purchase wines online, and offline purchases such as supermarkets and wine shops account for 21.9% and 26.8% respectively. Only 8% of purchases from private channels and related mini programs were recommended by their friends.

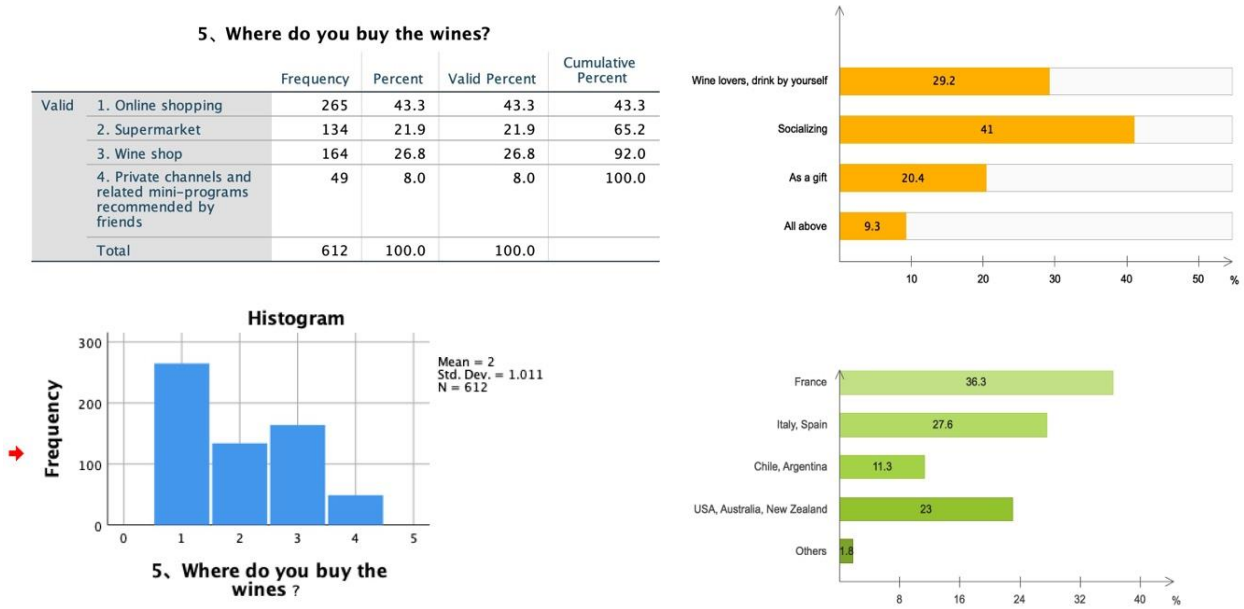


Figure 11: Participants' Buying Behaviors Preference

Meanwhile, the data from "the main application of wine buying" and "wine region preference" were shown in the bar chart on the right side of Fig. 11. It is indicated that people buy wines usually for socializing or drinking by themselves, and French wines are usually their first choice.

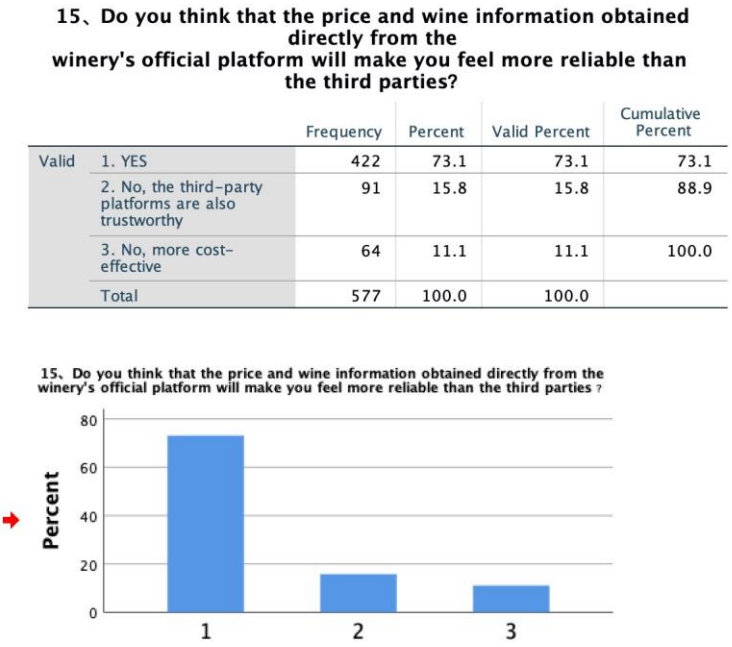


Figure 12: People's Preference for Access to Wine Information Sources

The data relating to peoples' preference of purchase channel reflected that 73.1% of people preferred to acquire prices and information from wineries directly, however, the people who thought the third-party platforms were also trustworthy account for 15.8%. Moreover, people who did not care about which channel would be more trustful but considered which platform would be more cost-effective account for 11.1%. Therefore, people still preferred to obtain relevant information directly from the winery (Fig. 12). Among all the samples (n=640), 90.2% of participants were interested in wine, which would be the data set of the next stage and 76.8% of 577 valid data shows that they were willing to participate in wine tasting events. The Fig. 13 shows that, among the 76.8% of participants who were interested in the wine tasting, 71.4% of them were interested in online tasting events. However, the 33.9% of them supported online tasting events in routine, but 37.5% of them still preferred offline tasting events. Moreover, 23.9% of participants were not interested in online wine tasting events and prefer to offline-tasting events. Finally, people with no interest and no desire to participate in online tasting events account for only 4.7%.

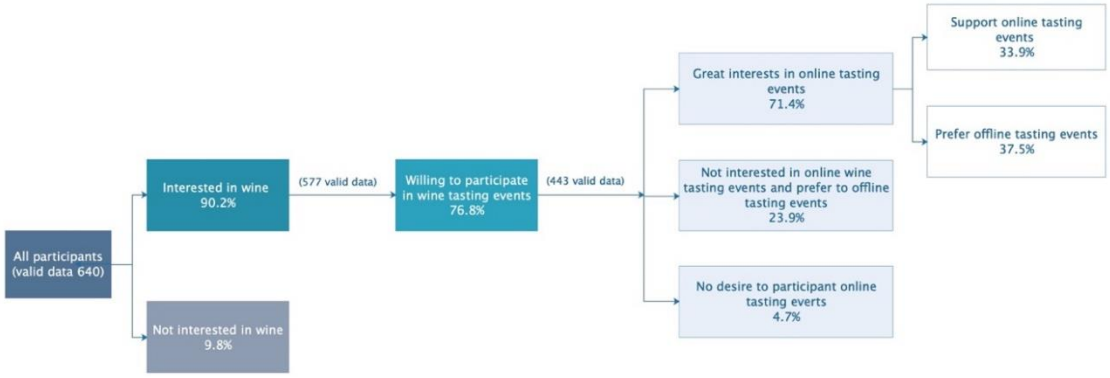


Figure 13: The Detailed Classification Process

The Third Section: Consumers' Perspective on Sustainability:

The participants who were interested in wine (n=577) represented that 76.6% of them were willing to know more about wineries history and story, and 23.4% of them did not show any interests in it. Meanwhile, except for a small number of people who liked natural wine (7.6%), in comparison, people preferred to drink red wine (37.1%) in daily life, white wine and champagne were basically the same percentages (27.4% and 27.9% respectively). However, a small sample group (n=44) liked natural wines. The data shows that 61.4% of natural wine lovers liked this type of wines because of their excellent and special taste, and 30% of them liked natural wines since it is popular and environment friendly (Fig. 14).

13、The reason why you like natural wine:

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1. Popular and environment-friendly	17	38.6	38.6	38.6
	2. The taste perference	27	61.4	61.4	100.0
	Total	44	100.0	100.0	

IBM SPSS Stat

Figure 14: The Reason for Natural Wine Preference

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Moreover, the crosstabulation analyzed by SPSS represented the relationship between the reason of natural wine preference and the wine knowledge level the participants have had, which expressed in the Table 2 below.

Table 2: Crosstabulation with Row Percentages of Natural Wine Preference and Wine Knowledge Level

13、The reason why you like natural wine: * 17、Have you had wine knowledge? Crosstabulation

			17、Have you had wine knowledge?				
			Have enough wine knowledge	Have some wine knowledge but not enough	Do not have wine knowledge but would like to learn	Do not have wine knowledge and have no interests in	Total
13、The reason why you like natural wine:	Popularity and environment-friendly	Count	2	8	3	4	17
		% within 13、The reason why you like natural wine:	11.8%	47.1%	17.6%	23.5%	100.0%
	The taste perference	Count	4	7	7	9	27
		% within 13、The reason why you like natural wine:	14.8%	25.9%	25.9%	33.3%	100.0%
Total		Count	6	15	10	13	44
		% within 13、The reason why you like natural wine:	13.6%	34.1%	22.7%	29.5%	100.0%

Through the crosstabulation table, it is obviously found that people who had some wine knowledge but not enough liked natural wines because of their popularity and environment-friendly, meanwhile, the people who did not have any wine knowledge but expressed great interest in natural wines since the special taste. The wine experts who have had enough wine knowledge and wine freshman without any knowledge and have no interest in wine, have no clear distinction between the two reasons of natural wine preference. It was because wine experts liked natural wine as two reasons for both sides, they both like the taste and feel that environmental protection was worth promoting. For people who had no knowledge and were not interested in learning about wine, the two reasons can only be selected randomly, so there is not much difference. Furthermore, the survey obtained people's perspectives on sustainability concepts. Data analyzed by SPSS directly showed (Fig. 15) that 84.1% of the wine-interested sample group (n=577) thought that green, organic, and sustainable viticulture would be the important factors that influenced their purchase habits and decision-making.

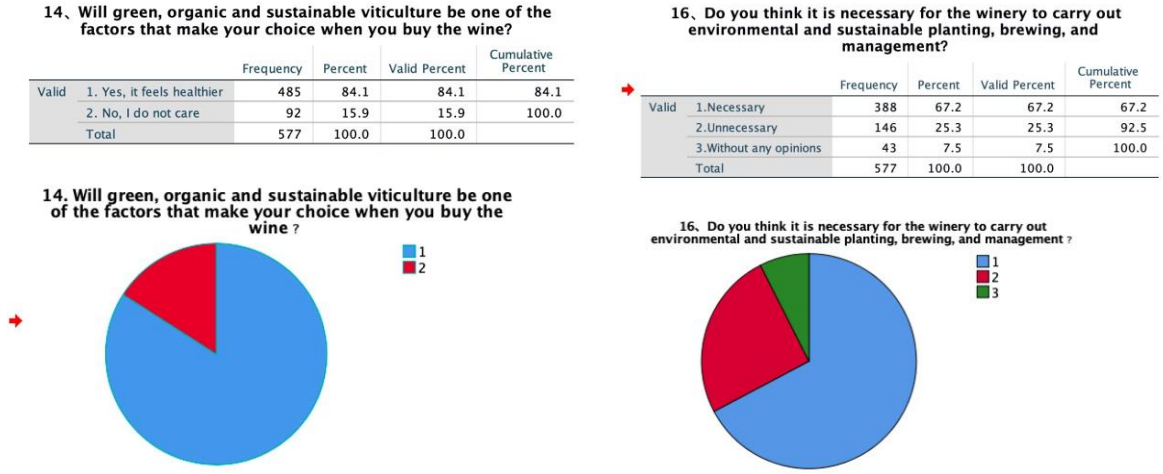


Figure 15: People's Perspectives on Sustainability Concepts

In conclusion, it can be summarized that although Baijiu occupies a critical proportion of the Chinese beverage market, wine consumers are increasing dramatically year by year, especially in the younger groups.

Secondly, Chinese wine consumer behavior is becoming more focused on healthy, green, and organic consumption concepts after the pandemic, and there is also an upward trend in the choice of wine quality and price.

Moreover, the use of innovation and new technologies has made China's digital market develop more rapidly, such as real-time updates of logistics, timely responses from sellers' backends, and big data utilized to collect and monitor consumer preferences. The new technology of the Internet is more convenient for consumers' daily lives.

Furthermore, the Chinese market is friendly to wine exhibitions, trade fairs, tasting events, and other marketing and brand promotions, and although most consumers are still novices, they show a desire to learn wine knowledge. Finally, and most importantly is that consumers rely more on mobile phones after the pandemic. Online shopping such as live streaming sales has become a new shopping channel they prefer, and takeout services have become an indispensable life tool. The frequency of using social media is particularly high, and consumers prefer to directly learn about information of wine products and wineries through social media platforms such as TikTok, Xiao Hongshu, WeChat, and others.

LIMITATION

- First, even though an adequately descriptive analysis was conducted, there is a limitation in sample size. Compared with the huge population base in China, the finite-sized sample from just four first-tier cities cannot cover all possibilities.
- Second, the complexity of geography and ethnic culture in China made the data cannot be absolutely representative. For example, there are great cultural differences between the North and the South in geographically, and the fifty-six nationalities in China have their own cultures, which will lead to deviations in the results of data analysis.
- Finally, there is a great difference in wine-producing regions. Thus, the analysis of Chinese wine consumer behavior cannot be applied to all wine-producing regions around the world.

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