LOVE WINE CHAIN

Decentralized Liquor Storage and

Transaction Service Platform

Project White Paper

1. Market Analysis of Global Liquor Industry

In 2017, the United States remained the world's largest liquor market, and Italy remained the world's largest liquor producer.

In 2017, China's beer production continued to be the world's highest, completing 15 consecutive top.

On January 15, 2018, Kweichow Moutai's stock price approached RMB 800, its market value broke the RMB 1,000,000,000,000, and it became the world's highest market capitalization liquor company

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From the second half of 2012 to 2017, after five years of adjustment, the global liquor industry is recovering. In the coming years, the global liquor industry will enter a relatively stable period of development. At the same time, the rise of concepts such as "new consumption", "new retail", "internet+" and "blockchain" have made people see the possibility of a higher level of the liquor industry. Once it is settled down, the liquor industry will be able to achieve a decade of glory.

1.1. Spirits industry

Spirits are liquor with high concentration, also known as distilled spirits. World spirits are generally divided into eight categories: Gin, Whisky, Brandy, Vodka, Rum and Tequila, Chinese Spirit and Sake.

Figure 1 Global Spirits Market

Local spirits such as Chinese spirits and Indian whisky currently account for

47% of global consumption. It is expected that it will rise by 25 million cases from 2016 to 2020, accounting for more than half of the global increase.

The consumption of Vodka in 2016 reached 459 million cases, which is the highest consumption of spirits in the world, but it is expected to decline by 4.3% by 2020. The main reason for the decline is due to the reduction in consumption of spirits in the CIS countries, with entry-level Vodka being the most affected. On the contrary, high-end Vodka is expected to grow strongly in the international market.

Bourbon and Scotch whiskey will grow by 13.9% and 10.4% respectively during 2016 to 2020. Cognac exports reached a record high in 2016. According to the research report of VINEXPO/IWSR, the consumption of Cognac/Y Armagnac is expected to continue to increase in the next five years, from 12 million boxes to 13 million boxes.

Tequila will continue to grow in the next few years, mainly driven by the increase in consumption of the American continent; Locally, Margarita cocktails made with Tequila are becoming increasingly popular. The United States will become an important growth market for international spirits such as Bourbon whiskey, Cognac and Tequila.

In particular, the top four liquors in the international spirits market share are all Chinese brands. Liquor has a long history and a broad customer base in China with its unique manufacturing process and taste. It has formed a unique Chinese liquor culture and is irreplaceable. Although Whisky, Vodka and other spirits are gradually accepted in the market, the status still cannot be compared with liquor.

1.2. Red wine industry

According to the preliminary estimate of the International Organization of Vine and Wine (hereinafter referred to as OIV), global production in 2017 is expected to decrease by 8.2% from the previous year to about 24.67 billion liters due to frequent bad weather, becoming the lowest point of the last fifty years. To be precise, since the 1960s, there have been no lower figures than this. The only close figures were 25.16 billion liters in 1991 and 24.94 billion liters in 1994.
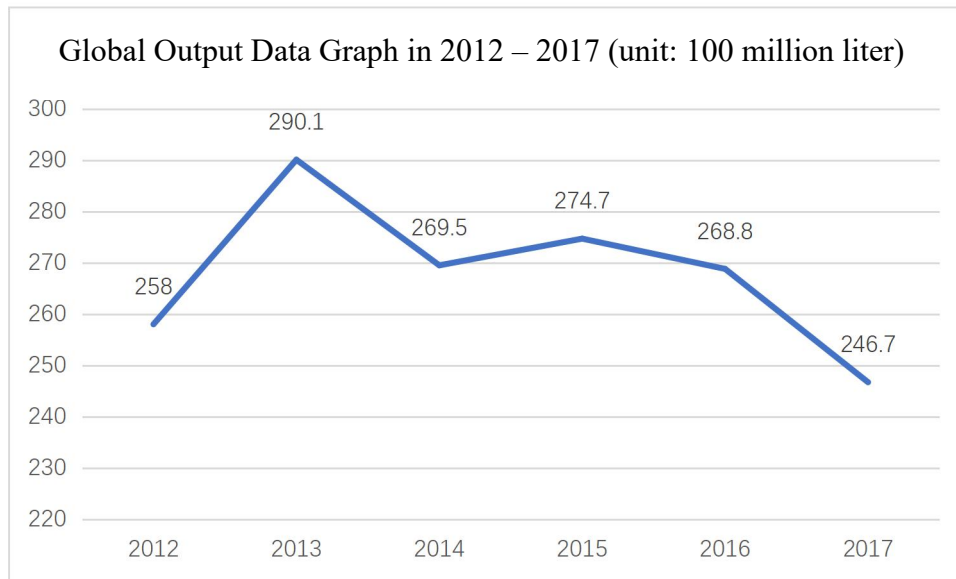
Figure 2 Global Red Wine Productions from 2012 to 2017

Although influenced by climate, European and American financial crisis and other factors, the liquor industry has been affected by certain impacts, the development trend of the world's liquor industry is still good, the grape planting area has gradually stabilized, the production of high-quality liquor has been slowly rising, and the liquor consumption has been steadily increasing. Liquor consumption and production tends to be high-quality and high-end. Emerging economies have a strong growth in liquor production and consumption, and have a significant role in the global liquor offer. Asia will become the fastest growing region for liquor consumption.

Figure 3 Global Productions from 2012 to 2017

As to the red wine market, North America and Asia will be the main market of

red wine in the future, Asian and North American policies are promoting the import of red wine. China has successively lowered the tariffs on red wine imports from Australia and other places in the past two years, and the future development can be expected. In red wine consumption, more than 60% of red wine is still consumed in Europe every year. At the national level, the United States is the world's largest liquor market, Italy maintains its position as the world's largest liquor producer, and China's grape production ranks first in the world.

In general, the overall world red wine market is in the doldrums. South America, France, and Italy are affected by the weather. The output has fallen sharply. Eastern Europe has risen rapidly. Countries headed by Romania are expected to achieve a leap in growth in red wine production. At the same time, the liquor receptions in the small countries are getting more and more attention, such as Malvazija wines and Teran liquors in Croatia, and Bikaver Blends and Furmint in Hungary. Australia will play an increasingly important role in the market because of customs, shipping and other reasons. In 2018, it will be a year for the world's red wine to seek change in the overall decline.

1.3. Beer industry

According to statistics of 171 countries and regions conducted by the Japanese Kirin Company, world beer production decreased for two consecutive years in 2014 and 2015. In 2014, the world beer production was 190.71 billion liters, a slight decrease of 0.7% over the previous year's 192.05 billion liters; In 2015, the world beer production once again decreased by 1.1% to 188.64 billion liters below 190 billion liters. With the exception of Africa, beer production in the rest of the world is decreasing without exception.

Area	2014	2015	2016	Growth in 2015	Growth in 2016	Market share in 2016
Asia	646.6	638.1	625.3	-1.30%	-2.01%	37.0%
Europe	520.2	517.1	510.0	-0.60%	-1.36%	26.0%
South America	321.6	314.1	306.0	-2.33%	-2.57%	13.5%
North America	245.0	241.8	236.7	-1.29%	-2.13%	17.0%
Africa	139.8	141.9	143.3	1.57%	0.92%	-

Oceania	21.1	20.4	19.4	-3.40%	-4.67%	-
Middle East	13.0	12.9	12.7	-0.11%	-1.71%	-
Total quantity around the world	1907.1	1886.4	1853.4	-1.09%	-1.75%	100%

Table 1 Changes in Beer Production in Major Regions of the World from 2014 to 2016 (Unit: Billion liters, %)

From a regional perspective, Asia, Europe, and South America are the major producers of global beer, while the major consumer markets are concentrated in Asia, Europe, and North America.

Looking ahead, it is expected that as the North American region gradually emerges from the financial crisis, the beer market will recover again. However, in the future, beer competition in North America will be more refined, that is, premium beer will gain more market, and the popularity of draft beer will continue to decline. The regions with the most intense competition in the global beer industry will remain concentrated in Asia, especially the Chinese market. Latin America and Africa will gradually intensify competition with the penetration of international beer giants. As the market scale continues to grow, profit margins will shrink.

Judging from the beer producing countries, China, the United States, Brazil, Germany, and Mexico are global TOP5 countries in terms of beer production, accounting for 51% of the world's total. The top ten countries account for 65% of the total output. Among them, Chinese beer has become the country with the highest beer production for 15 consecutive years. Behind the fifteen consecutive championships is during the Spring Festival, the Big Three beer industry completed its first collective price increase after 10 years.

Let's look at the group data again. As shown in Table 2, from January to December 2017, the cumulative output of the Chinese beer industry was 44.015 million kiloliters, which was a year-on-year decrease of 0.7%. From January to November 2017, China imported 663,446 kiloliters of beer with an increase of 10.9% year-on-year. According to a study by Statista, the average beer consumption in the Czech Republic in 2017 was 137.38 liters, which was far higher than the 98.06 liters of Polish for the second, while the average Chinese beer consumption was 35.77 liters.

	Total (ten thousand kiloliters)	The rate of increase on a year-on-year basis	Import amount (RMB 100 million)	The rate of increase on a year-on-year basis
Total beer production in China	4401.5	-0.7%	-	-
Imported beer (January to November)	66.3446	10.9%	46．6874	4.56%

Table 2 Chinese Beer Annual Report in 2017

From the data point of view, although the beer industry in China is brilliant, the per capita consumption of alcohol is only at an average level. The average consumption per capita in Russia is 15.1 liters. The fighting nation has an amazing drinking talent. The per capita consumption in Eastern Europe is more than 10 liters. People consume most of the beer in Europe. Similar to the situation in Eastern Europe, Canada, with a per capita level of more than 10 liters, is still a major market for beer consumption in the world.

In summary, looking at the entire global liquor industry's market, whether it is the beer that occupies half of the country, the red wine that the development is stagnant, or spirits with cultural characteristics, in recent years, they have come to the bottom, but as the economic situation improves, the liquor industry may experience a new round of outbreak after a brief period of silence. However, before the outbreak, we still have to face the current problems in the liquor industry. It can be said that the turbulence in the past five years has caused the problems in the liquor industry to be better exposed to the public. This also gives the liquor industry an opportunity to upgrade and reform. The trillion-dollar consumer market and the wave of new technology, how to better resolve the current pain point of the industry, is the key to whether to stand on the top of the wave in the future.

2. Pain Points of Global Liquor Industry

Through the above analysis of the liquor industry market, we have come to the conclusion that the global beverage industry must solve many problems if it wants to

achieve better development. Here, we mainly introduce the main problems in the current beverage market.

2.1. The cumbersome trade links restrict the development of the liquor industry

No matter whether it is spirits, red wine or beer, their production areas are all over the world. Because of the differences in climate, variety, and crafts, the taste of the same liquor will be different. Consumers want to drink different flavors of liquor and they can only rely on such channels as import and there are no other ways.

Imported liquor has gradually occupied the Chinese market, especially the red wine industry. Red wine has always been regarded as an imported product by Chinese consumers. Consumers will naturally consider imported liquor to be more representative of the original flavor of red wine, so imported red wine is easily accepted by consumers in China.

However, due to information asymmetry and cumbersome trade details, the import of liquor is a very complicated process. At the same time, the imported liquors that consumers directly purchase can only be purchased through these methods through dealers, e-commerce platforms, and duty-free shops. The authenticity of the product is difficult to guarantee, and the after-sales service is difficult to be handled. With a wide variety of currencies and varying exchange rates, most people are unable to hold currencies at any time, and exchange rate calculations are also daunting. In May last year, the exchange rate of the euro was close to the RMB 8, which caused industry officials to have serious concerns about the price increase of red wine. Not only has the exchange rate, the freight also constrained the trade link. European shipping giant Ocean Rig filed for bankruptcy protection in the United States, and the form of liquor transport is further severe. Affected by this, many shipping companies plan to increase prices.

In summary, various factors in the trade link have restricted the circulation of liquor products in various countries of the world and have constrained the development of the global liquor industry.

2.2. Difficult to trace information and distinguish authenticity

The problem of the authenticity of liquor products has been plaguing consumers all over the world. Let's review what happened in 2017 worldwide: A Bordeaux liquor merchant has filled 420 thousand liters of the original Languedoc liquor, affixed with

a Bordeaux liquor label, and several large businesses have been deceived; Hongkou District Public Security Bureau in Shanghai tracked down a criminal of producing and selling counterfeit branded red wines that crossed the borders of Shanghai and Fujian and seized more than 14,000 counterfeit "Penfolds"; Guangdong Heyuan false liquor caused 4 people to enter the ICU, 22 people were poisoned, two whiskeys involved were suspected of counterfeiting the methanol blended products produced by other companies and offered to many places; Dalian Public Security Bureau in Dalian detected a case of extraordinarily big production and sales of counterfeit red wine. It involved 15 provinces and involved 69 people. The amount involved was over RMB 300,000,000.

The identification of authenticity is already a very serious public issue, because fake liquor will not only bring economic losses to consumers, but will also threaten our life Current alcoholic products bought from the market, mass consumers are difficult to judge from the label on whether the liquor is true or false; not just consumers, many dealers are not very clear of the status of liquor. The unclear year of liquor, winery information, logistics information, the tastes and the crowd suitable for, which has caused consumers to find it difficult to buy safe liquor. The problem lies in the traceability of information. If consumers do not know the past and present of a bottle of wine, it is difficult to identify the authenticity of the liquor. Healthy drinking and scientific drinking are even the night talk.

2.3. How can we buy a safe liquor?

If it is difficult to trace the source, consumers cannot identify the authenticity of the liquor; the chaos of price has completely lost the trust of consumers. Look at a group of general phenomena in the market: An original liquor price of RMB 199 declined to RMB 20 a bottle due to manufacturer promotions; the scan code price of a bottle of imported liquor is RMB 1,399, and the actual price is RMB 11.5. Although there are many varieties of red wine in the world and the price ranges are uneven, when the facts are in front of us, we can't help asking how much the cost of a bottle of liquor is. How can we buy a safe liquor?

The price, as the first level of consumer purchase, has caused consumers to lose confidence in the liquor market, and the entire industry is experiencing such a crisis of trust.

2.4. The function limitation of e-commerce platforms cannot

meet the deep needs of customers

The current e-commerce platform is mostly a centralized, profit-driven platform. Most of them do business in the liquor business. However, with the development of the industry, alcohol lovers, liquor collectors, bartenders, tasters and other occupations gradually emerged, and trading on traditional platforms could no longer meet their needs. More people began to value the fields of liquor storage, collection, and secondary transactions.

For these real wine lovers, a decentralized, open and transparent trading platform with community attributes is on the horizon.

3. Existing Solutions in Liquor Industry

3.1. Empirical method

Such methods are applicable to a wide range of consumers. The specific methods are various and they mainly come from experience in life. The main methods include irreversible temperature change point identification, random lithography multicolor digital identification, and special edition holographic text open skylight security line identification. true color positioning hot stamping recognition, viewing color, smell, contrast liquor stopper and liquor bottle labels, paper towel method, watching bottom, security cover red line, etc. The advantage of these methods is that they can effectively identify the true and false of liquor, the quality is good or bad, and the disadvantages are obvious. These methods are applicable to the purchase of liquor, that is, if you find that you have bought fake liquor, you can only recover the previous loss of money through the follow-up means.

3.2. Obtaining information from QR code

The finely planned QR code is attached to the bottleneck on the outer bottle and the back of the liquor. The QR code label accurately records the detailed history of the liquor and is resistant to interference and difficult to remove. The consumer obtains all the information of the liquor by scanning the QR code.

The advantages of QR code are quick scanning speed and precise; The information recorded in the scan of the fake liquor is conducive to the progress of the cracking success rate; Anti-counterfeit cost is not high, only need to increase the cost of 5 cents per bottle of liquor.

The shortcomings are also very obvious. In this era of popular Internet information, the QR code is not a sophisticated technology. It takes only one minute to generate, and it cannot be used as an anti-counterfeiting mark. Even if the QR code on the bottle is swept out, it cannot prove anything, but the feeling of deceiving themselves.

3.3. Authenticity services on E-commerce platforms

In the Internet age, more and more e-commerce platforms have emerged. In the alcohol market, there are large e-commerce platforms such as Amazon, eBay, Allegro, Taobao, and JD. There are also vertical e-commerce platforms such as Jiuxianwang and 1919. The advantage of the centralized platform is that the product categories are complete and the quality is guaranteed; the disadvantage is that the quality of platform products and merchants can only be controlled by the platform. Consumers can only blindly believe in the platform. For the sake of benefit, it is very likely for the small platforms to disregard product quality.

At the same time, the e-commerce platform model is only one-way sales, and does not promote the secondary sales of alcoholic beverages with storage value, alcohol storage, is not conducive to the spread of alcoholic culture, the establishment of a trust system, and not comprehensive to the ecological system of the entire alcoholic beverage industry.

3.4. Alcohol courses

Many people will spend thousands of dollars, spend a few days, listening to the teacher's knowledge of various liquors with a group of like-minded people, to learn liquor tasting, bartending, and can taste dozens of different types of liquor during class.

This requires consumers to invest a small amount of money first, but it does help consumers save a lot of time, but also save the cost of many blind selection of liquor. The disadvantage of this method is that the quality of liquor education in the country is uneven. At the same time, no matter whether bartending or liquor tasting, it requires a lot of practice and cannot be done overnight. It is not easy to find a good curriculum and a good teacher that suits the needs of the consumers themselves.

3.5. Individualizing products to solve the problem of single category

In is different from the crude consumption upgrade that "does not require the

best, but is more expensive" in the past, the consumption demands of the 80s and 90s are more important to experience and personality: Shows unique tastes, suits individual temperament, and shows their pursuit of quality life and fun socialization. If liquor companies want to meet the needs of young people's consumption upgrades, they must first achieve product personalization.

Today's young consumers have a lighter taste for beer, low-alcohol beer like soft drinks, and various types of beer such as fruit flavors, puree, vegetable flavors, and mixed spice desserts are constantly being developed, unlike the dull taste of beer in the past, they can give young people more personalized choices. The young women's share of the market will increase from 20% to 30% in recent years. In order to meet this group's light taste preferences, Heineken launched a low-calorie, low-monohydrate compound beer in Australia with alcohol concentration only. 3.3%. This low-calorie beer addresses young women's concerns about bittersweet taste, flatulence and other annoyances after drinking, and also meets their healthy and stylish drinking appeal.

In addition to taste, personalized packaging is another key to attracting young consumers. There is a personalized packaging that enables young people to photograph and share on social networks and become brand communicators. Beer companies can start with the visual and material improvement of packaging, and change the traditional common glass bottles into lightweight cans, tinplate cans, small packages, transparent glass bottles, slender waist bottles, and bright and lively colors. The rigid appearance of beer is packaged into a distinctive product. Beer companies can also use the "feelings" card on the packaging to add some theme elements that are likely to arouse the 80s and 90s generations' sympathy, such as fairy tales, party friendship, youthful blood, animation games, and red Chinese style, to be emotionally approved by a young consumer group, and the product is naturally more likely to be popular.

3.6. Others

There are also some common methods, such as participating in the Red Wine Promotion Conference. Many organizations such as the liquor producers' liquor merchants association regularly hold regional liquor promotion conferences. These liquor exhibitions are generally free admission (although the nominal requirements are actually insiders, but they are actually easy to be mixed in). They will provide

liquors that reflect local characteristics, and often there are many different types, which is very convenient for comparison. If you have the opportunity to go with a professional, listening to him while listening to the mystery, the harvest will be very large.

Learn liquor culture through WeChat and other social networks, such as Official Accounts, Mini Program, Zhihu, or paying groups, etc., often through one or two articles, you will get started, have a certain understanding of liquor selection, liquor tasting, but only separate from the "green hand", it takes more practice to get started.

In summary, the development of the Internet has made it easier for us to obtain information, which has, to a certain extent, alleviated the problems exposed by the industry. However, it's a temporary action instead of total solution, the problems of traceability and trust in the fundamental problems of the liquor and liquor industries cannot be solved. The centralized e-commerce platform cannot obtain the full trust of consumers, nor can it achieve the popularization of liquor and red wine culture. The market needs a truly open and transparent, information traceable, and disintermediary, intelligent trading platform.

4. Development Opportunities of Liquor Industry Blockchain Application

Through the consolidation of the above-mentioned pain points and existing solutions, we have come to the conclusion that the existing solutions can only partially solve certain single problems, and they cannot do anything about some pain points. What we need is a comprehensive solution from product to industry and then to culture. It is the sublimation version of e-commerce and it is the reconstruction of the entire liquor industry ecosystem.

The development of blockchain has brought us the possibility of solving the below problems.

	Experience method	QR code	E-commence platform	Major courses	Personalized products	Others	Blockchain
Trade links are tedious	×	×	Partially solved	×	×	×	Perfect solution
Difficult to trace information, difficult to distinguish the authenticity	×	Partially solved	Partially solved	×	×	×	Perfect solution
Price chaos, lack of trust	×	Partially solved	Partially solved	×	Partially solved	×	Perfect solution
Unitary function of e-commerce platform	×	×	Partially solved	×	×	×	Perfect solution

Table 3 Matching Table for Alcohol Industry Pain Points and Existing Solutions

First of all, the blockchain technology has a natural advantage in information traceability. For the liquor products on the chain, the platform can record information on the origin, region, year, and transaction of liquor, and every time the consumers buy a bottle of liquor, they can obtain all of its information through scanning the QR code. All information from the factory to the drinking process can be traced back to ensure that the information is open and transparent.

Secondly, the blockchain consensus mechanism naturally creates a trust platform that allows everyone to gain mutual trust due to the consensus mechanism and avoid the problems that the centralized organization's trust is difficult to establish. At the same time, blockchain asymmetric cryptographic technology can better protect consumers' information and assets. It can not only improve the service level of the platform, but also increase the credibility of the platform.

Compared with the e-commerce platform, the LWC platform based on blockchain technology has unmatched advantages in liquor trading. The LWC platform can perform currency exchange through coins, also supports liquor and liquor transactions, and supports liquor storage and other functions. That not only meets the needs of high-end customers, but also avoids the trade risks caused by the cumbersome trade. Therefore, LWC is not just a trading platform for consumers. At the same time, it is a collection and social platform for amateurs. It is an online, open and transparent liquor bank.

In summary, based on decentralized, traceable, distributed, tamper-resistant, transparent, and other characteristics, "liquor + blockchain" can solve problems such as traceability of product information, lack of trust, and transaction. The goal of LWC is to become a liquor bank with the integration of liquor circulation, trading and warehousing all over the world. The use of coins (LOVC) as a license for LWC issuance can not only reduce the risks of cross-border trade, but also facilitate consumption around the world. The settlement will help the global information flow of liquor products, optimize the supply chain system of the industry, rebuild the consumer trust system, and finally become an internationalized and intelligent large ecosystem of the entire industry.

5. LWC Technical Details

5.1. Blockchain technology

In recent years, blockchain technology has been gradually applied to the Internet, especially having played a very prominent role in the field of financial Internet. At the same time, First Rand Bank of South Africa offered *The Advent of Crypto Banking*. According to the research progress of major central bank and related blockchain technologies in the world, the report pointed out that blockchain technology can create a new era of monetary policy. The Bank of Korea applied blockchain technology to the central bank's settlement system and provided a detailed implementation plan. According to Janet Yellen, chairman of the Federal Reserve, blockchain technology has a potential impact on the global financial system and is "an important technology" The development of blockchain technology and its broad application prospects have attracted wide attention and high regard all around the world.

The concept of blockchain was first proposed by Satoshi Nakamoto in the Bitcoin system. A blockchain is a data structure in which data blocks are organized in chronological order in a similar manner to a linked list, and cryptographic techniques are used to ensure that they are unforgeable and falsified distributed decentralized ledgers. The data stored in the blockchain is data that has successive relationships that can be verified within the system. Each node in the blockchain is equal in status, has the same rights and obligations, and negotiates, manages, and audits the operation of the entire blockchain, and maintains the public ledger.

Blockchain technology is decentralized, and can use core strengths such as data encryption, time stamping, distributed consensus, and collaborative incentives. Decentralized peer-to-peer transaction, negotiation and cooperation can be implemented in a distributed system where each node does not need mutual trust, thereby overcoming the problems of high cost, low efficiency, and insecure data storage in the centralized system.

5.2. Application of Blockchain in LWC

The characteristics of blockchain technology are similar to those of LWC to a certain degree, as shown in Table 4. The specific description is as follows.

Characteristics	Blockchain technology	LWC
Decentralization	Node rights and obligations are the same	Each subject is equally decentralized
Traceability	Block data traceability	The data of each subject can be traced, fair and transparent
Marketization	No need for third-party trust mechanisms	No need for middlemen
Intelligent contract	Be able to execute contracts automatically	Automatic transaction

Table 4 the linkability between Blockchain and LWC

(1) In the blockchain system, there is no centralized database, and each node saves all the information of the blockchain, and the nodes have the same rights and obligations; The LWC requires that "consumers and suppliers directly interface", emphasizing that the individuals conduct fair transactions and reduce transaction costs.

(2) The block chain passes the hash value of the block header as the unique

identifier of the block, thereby realizing the traceability of the block data; In the LWC, it is emphasized that the information of each bottle of liquor can be traced, fair and transparent, and convenient for consumers to inquire and purchase.

(3) Blockchain technology does not require a third-party trust mechanism. It can use blockchain technology to establish a fair and open market mechanism. It can also serve other financial products well. The LWC requires the establishment of an open liquor trading market without the need for middlemen, and will also promote the formation of financial derivatives related to liquor trading.

(4) Blockchain system realizes the automation and intelligent execution of contracts through intelligent contracts or "programmable currency"; There will be a large number of intelligent deliveries, transportation, transaction, and storage links in LWC, and a series of intelligent contracts are needed to ensure the automatic execution of LWC transactions.

The application model of Blockchain in LWC is shown in Figure 3. Under this model, consumers and suppliers contact each other directly to conduct liquor trading activities. They no longer need middlemen as a trading medium, and consumers can place orders on their own.

LWC distributes liquor orders, later delivers liquor to consumers after liquor production and transportation, and intelligent contracts guarantee the automatic execution of each transaction. Liquor information is traceable and transactions are fair and transparent.
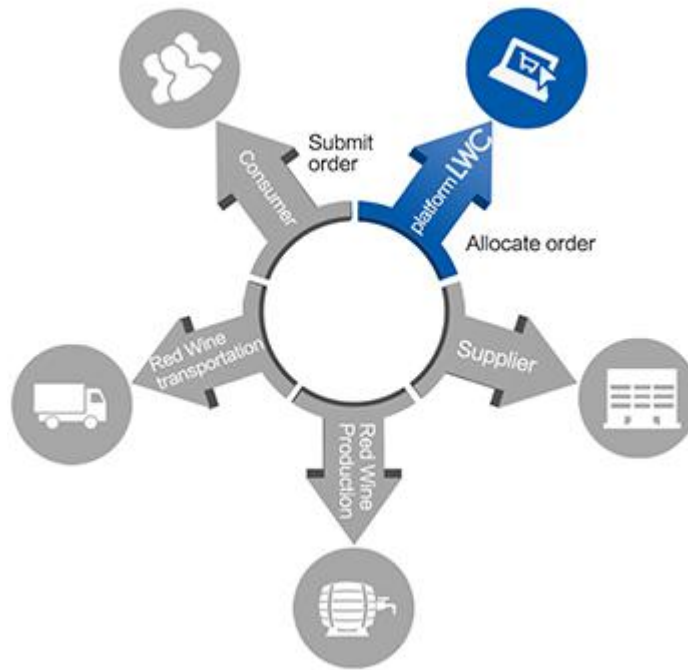
Figure 3 Application Model of Blockchain in LWC

5.3. Overall Framework of LWC platform

The LWC platform mainly includes a source data acquisition subsystem, an intelligent contract subsystem, a blockchain subsystem, a certificate center subsystem, and a supervision query subsystem. The specific architecture thereof is shown in Figure 4.
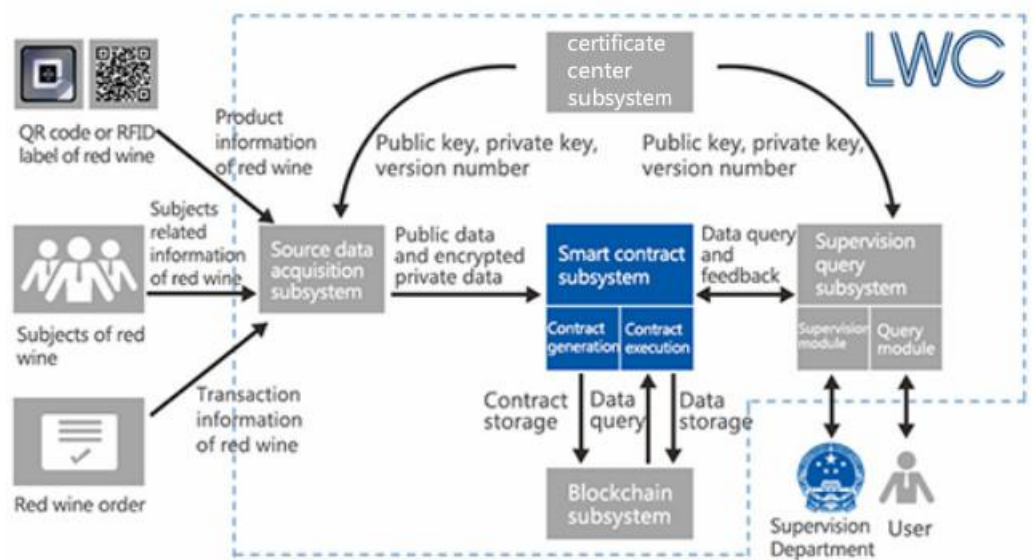

Figure 4: The overall architecture of the LWC platform

5.3.1. Introduction to LWC platform sub-modules functions

The source data acquisition subsystem is responsible for collecting and uploading liquor product information, liquor related information, and liquor trading

information. Liquor product information is automatically obtained by scanning liquor QR code or RFID tag, which mainly includes liquor number, liquor name, liquor production area, production time, production raw materials, etc.; The relevant information of each subject of liquor is provided by the subject of liquor (mainly including liquor suppliers, liquor producers, liquor transporters, etc.), and mainly includes the company name, company address, company legal representative, source of raw materials for liquor production, and start and arrival time of the liquor transport., etc. The liquor transaction information is obtained through the order between the liquor consumer and the liquor supplier, which mainly includes the liquor transaction number, liquor transaction price, buyer's personal information (mainly including name, contact information, address, etc.), seller's information, etc. Liquor product information belongs to public data; Part of the relevant information of each subject of liquor belongs to public data (such as the company name and company address of each subject), and part of it belongs to privacy data (legal representative of the company, sources of raw materials for liquor production, starting time and arrival time of liquor); Liquor trading information belongs to private data. Public data need not be encrypted, and private data needs to be encrypted through the public key of the certificate center subsystem. The processed data is uploaded to the blockchain subsystem for storage through the interface provided by the intelligent contract subsystem.

The intelligent contract subsystem is responsible for providing interfaces for interacting with each sub-module, including two modules for contract generation and contract execution. The contract generation module is responsible for submitting the intelligent contract to the blockchain subsystem for storage; the contract execution module is responsible for running intelligent contracts to implement the function of storing or querying data from the blockchain subsystem. The intelligent contract subsystem applies intelligent contracts based on blockchain technology. The contract code, execution process, and execution results are open and transparent to all system entities. The results cannot be tampered with, improving the credibility of the system and facilitating regulatory and traceability management.

The certificate center subsystem is responsible for generating the public key, private key, and version number, which are sent and pushed to the source data acquisition subsystem and the supervision query subsystem, respectively. In order to prevent the key from being cracked, the key can be updated dynamically. For example,

a timer is set to periodically update the key. This version number is used to identify the updated version of the key.

The regulatory inquiry subsystem includes a supervisory module for regulatory authorities and an inquiry module for general users. The supervision inquiry subsystem sends a request for querying liquor related data through the interface provided by the intelligent contract subsystem, and receives liquor related data fed back by the intelligent contract subsystem. The query module for general users can only inquire about the public data related to liquor. The supervisory module for the supervisory department can simultaneously search for public data and privacy data related to liquor. Therefore, on the one hand, the privacy of the data can be improved, and on the other hand, the supervision to liquor of the supervisory department can be improved. When the supervisory department searches for private data, the encrypted private data stored in the blockchain subsystem is fed back to the supervisory department through the intelligent contract subsystem. The supervisory department needs to use the private key provided by the certificate center subsystem to decrypt the private data before viewing, effectively improving the security of data. In addition, because the blockchain subsystem is designed based on the blockchain technology, according to the characteristics of the blockchain, the data of each node in the blockchain is the same and cannot be tampered with, thus ensuring the reliability of the query results and facilitating the tracking of the liquor.

The blockchain subsystem is the core part of the LWC platform. It mainly implements two functions. One is to store intelligent contracts and liquor related data, and the other is to query and respond to liquor related data according to intelligent contracts. Blockchain subsystem is based on blockchain technology. Blockchain is a chain block structure in units of blocks. New blocks are generated at regular intervals, and each block in the blockchain records all the data generated during the creation time. Using this feature, the blockchain subsystem permanently stores the system's intelligent contracts and liquor-related data in the blockchain. The blockchain structure is shown in Figure 5.
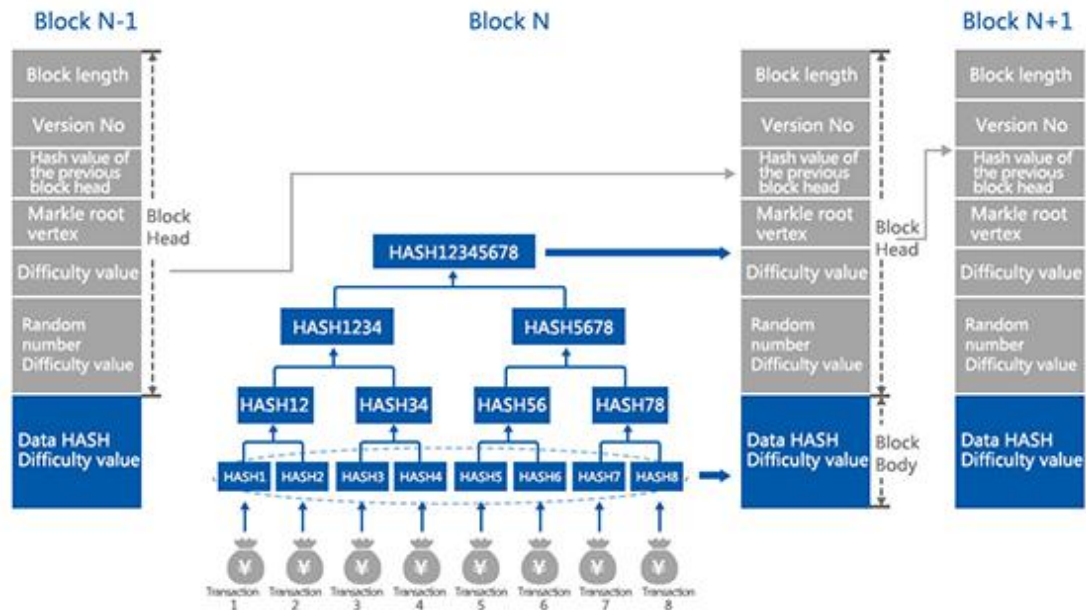
Figure 5: Blockchain structure

As can be seen from Figure 3, the blockchain is essentially a series of linked data blocks. The link pointer is a block header hash value generated by processing a block header using a cryptographic hash algorithm. Each block contains two parts: a block header and a block body. The block header contains the information of the entire block, which can indicate the block's position in the blockchain, and the block body contains the information of the entire transaction, which stores the hash value of all transactions. In the block header, it mainly contains the block length, the current version number, the hash value of the header of the previous block, the Merkle root node, the timestamp, the difficulty value, and the random number. The Merkle root node is calculated recursively by using the hash value of the transaction of Merkle tree pair. Taking Figure 3 as an example, HASH1 is obtained by performing a SHA-256 hash operation on transaction 1, HASH2 is obtained by performing a SHA-256 hash operation, and so on. In the recursive calculation, the two hash values are concatenated to obtain a new hash value. For the first recursion, HASH1 and HASH2 are subjected to a SHA-256 hash operation to obtain HASH12, and HASH3 and HASH4 are subjected to a SHA-256 hash operation to obtain HASH34, and so on, and then in the second recursive, HASH12 and HASH34 are subjected to SHA-256 hash operation to obtain Hash1234, the cycle of recursive calculation is carried out until there is only one value, the Merkle tree root node. The Merkle tree is very extensible, and can produce Merkle trees and fixed-length Merkle roots, regardless of

the number of transaction records. In addition, the timestamp in the block header records the write time of the current block data, which ensures that each transaction data can be traced, which facilitates supervision and query.

5.3.2. Data flow of LWC platform

Figure 6 shows a liquor data flow diagram based on the LWC platform. The entire data flow mainly includes the following steps: 1 Certificate center subsystem generates public key, private key and version number; 2 The certificate center subsystem is responsible for sending and pushing the public key, private key, and version number generated to the source data acquisition subsystem and the supervision query subsystem, respectively; 3 The source data acquisition subsystem collects liquor-related data. Liquor-related data mainly includes liquor product information, liquor related information and liquor transaction information. These data can be divided into public data and privacy data according to the type of data; 4 The source data acquisition subsystem uses the key obtained from the certificate center subsystem to encrypt the private data, and sends the public data and the encrypted private data to the intelligent contract subsystem; 5 The intelligent contract subsystem stores the liquor-related data obtained from the source data acquisition subsystem into the blockchain subsystem; 6 When it is necessary to inquire about liquor-related data, the supervisory query subsystem uses the interface provided by the intelligent contract subsystem to send query requests to the blockchain subsystem. The blockchain subsystem obtains corresponding data according to query requests and intelligent contracts, and obtains the query data. Win-related data is fed back to the regulatory inquiry subsystem through the intelligent contract subsystem; 7 When the data being queried belongs to private data, the supervisory query subsystem, after obtaining the queried private data, uses the key obtained from the certificate authority subsystem to decrypt the private data before viewing it.
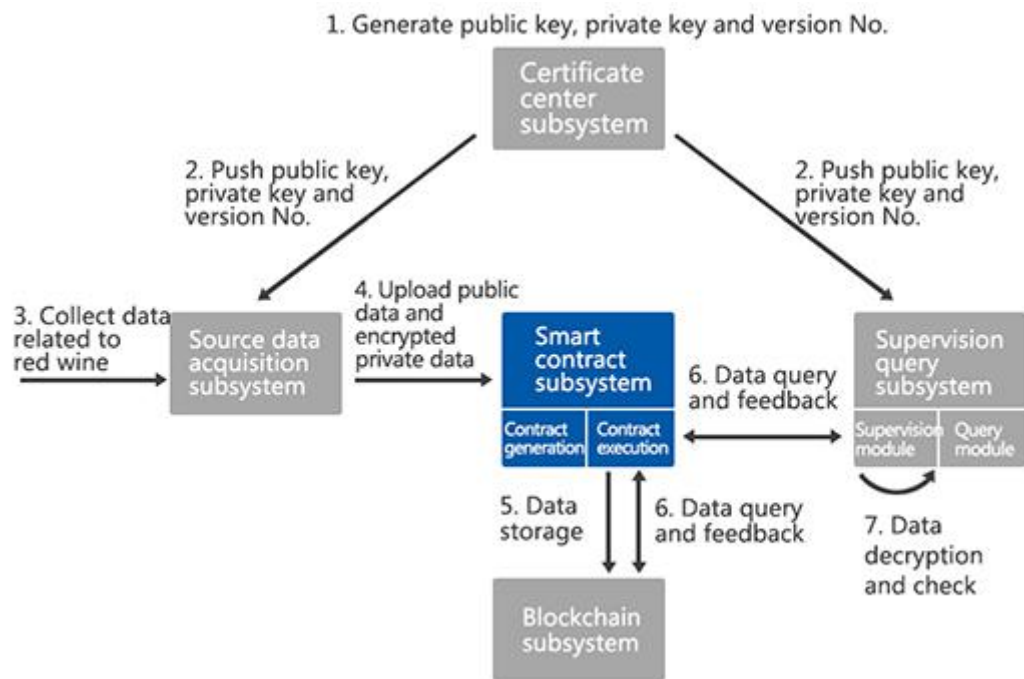
Figure 6: Liquor data flow diagram based on LWC platform

5.4. LWC key technology

LWC is a platform based on blockchain technology. Combining the characteristics of red wine trading and related technology of blockchain, this section focuses on four key technologies applied to the LWC platform: Process coordination management mechanism, multi-center dynamic consensus mechanism, value-based incentive mechanism, and multi-party key agreement mechanism.

5.4.1. Technical introduction

1) Process coordination management mechanism

In the LWC platform, user terminals initiate different types of requests based on actual requirements. For example: Inquiries, user id subject authentication, liquor trading, billing, etc. For different types of requests, if the same type of node is used for processing, the processing efficiency will inevitably be reduced, the response delay of the user request is large, and the user satisfaction is reduced. In order to effectively solve this problem, according to the type of request, the request can be allocated to different point nodes for processing. The process collaborative management mechanism is based on this principle to efficiently handle the user's request.

Figure 7 shows the LWC architecture based on process collaborative

management. For requests sent by clients in a blockchain network, process collaborative management identifies the type of requests and deploys different request types to different channels for different nodes to respond to and execute requests.
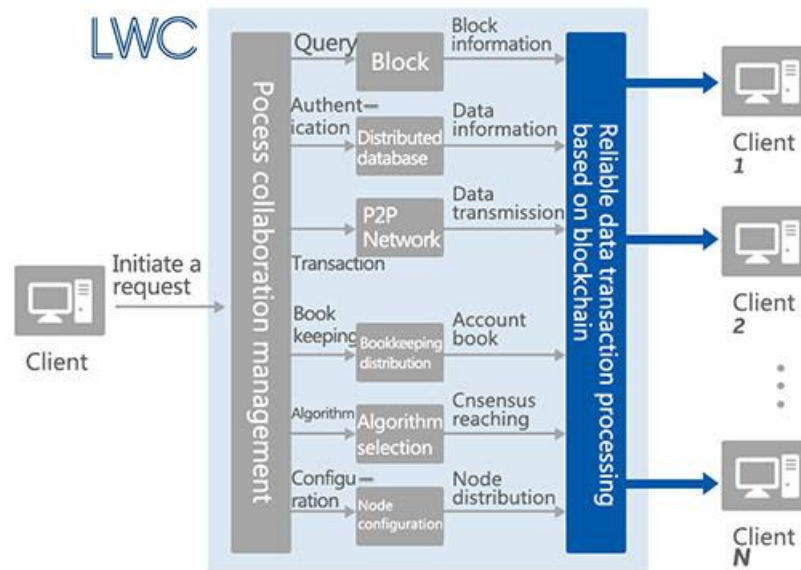

Figure 7 LWC architecture based on process collaboration management

In the liquor trading process, when all nodes participate in the consensus process, the system is more secure. However, if all the nodes participate in the consensus process, some nodes with lower processing capacity will reduce the entire system, and the efficiency of the system is then reduced. In order to balance the safety and performance of the system, nodes can be classified, for example, into ordinary nodes and special nodes. Ordinary nodes are responsible for routine operations, while special nodes are responsible for high-demand operations such as transactions and accounting.

Figure 8 shows the application of the collaborative management mechanism in the billing process. After the liquor transaction is completed, a new block is generated by the billing node to record the transaction data, and the new block information generated is broadcasted to other parties. The node and other nodes verify the received information and store it in the local ledger after verification. The cooperative management mechanism is adopted. By selecting the node with higher performance as the billing node, the billing operation with relatively high performance and efficiency requirements is specifically handled, and the efficiency of the entire system can be effectively provided.
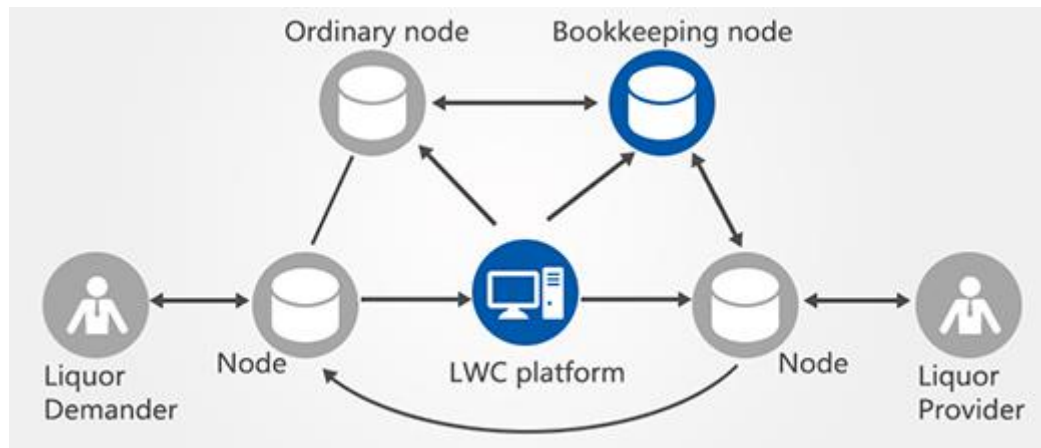
Figure 8 Application of Cooperative Management Mechanism in Accounting Operations

2) Multi-center dynamic consensus mechanism

In the LWC platform, liquor trading is a complex process that involves multiple links and involves multiple liquor-related subjects (e.g., consumers, liquor suppliers, liquor producers, liquor transporters, etc.) throughout the process. In different links, the subjects involved may not be the same. In order to ensure that all subjects can know the current state of liquor in a timely and accurate manner, it is necessary to ensure that the state of liquor is consistent in all subjects. The multi-center dynamic consensus mechanism can effectively solve this problem.

As shown in Figure 9, in the multi-center dynamic consensus mechanism, a time interval may be set and the time may be divided according to the time interval. Each time interval is called a round. The overall blockchain is divided into different subjects. Each subject governs the blockchain within its own scope. All the subjects maintain the overall blockchain. The transaction information of all kinds of liquor is stored in the overall blockchain. In each subject, all nodes generate a representative node based on random voting rules in each round. This representative node is used to communicate with other subjects on behalf of the subject. At the same time, based on the random voting rules, the dynamic verification set of the subject can be selected and generated from the blockchain nodes of other subjects, and the consistency of the liquor state can be ensured through dynamic verification set. The specific realization process is as follows: The representative node of each subject broadcasts the block header data of the subject blockchain to the verification group of the subject. The verification group of the subject verifies whether the liquor state meets the overall consistency, and selects the subject blockchain nodes that meet the overall consistency
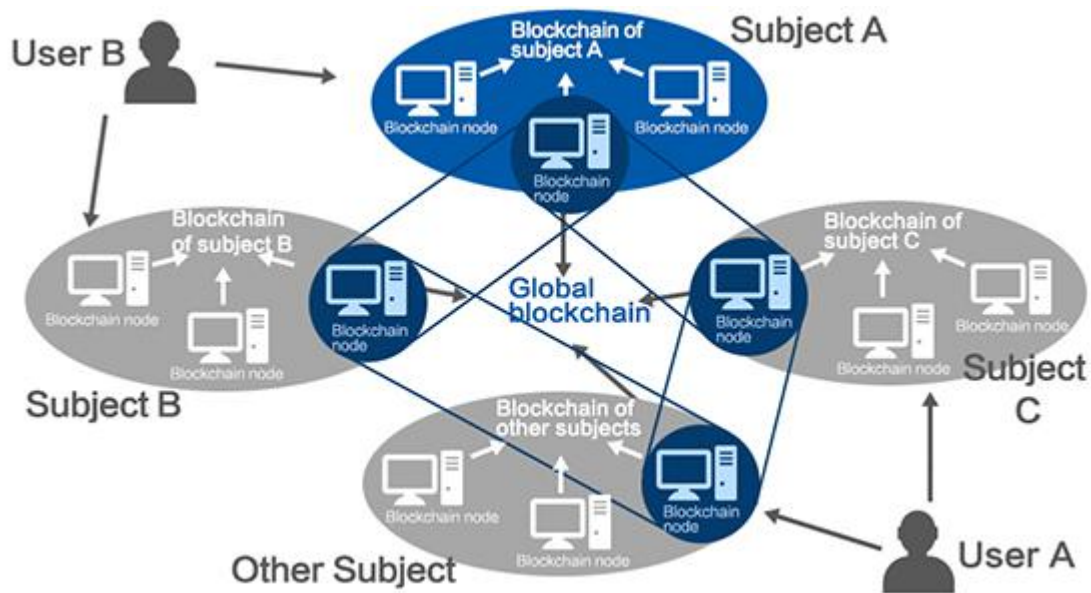
to form the overall blockchain.

Figure 9 Dynamics of the Multi-center Dynamic Consensus Mechanism

3) Incentive mechanism based on value

The LWC blockchain system includes the billing nodes and the ordinary nodes, and their functions have certain differences. The billing nodes reach a consensus according to the corresponding results of the users' request and generate new blocks. The ordinary nodes send a request to the billing nodes to query the transaction information of the users and do not generate new blocks.

In the actual liquor transaction, the value of the liquor transaction can be measured by the profits of the liquor suppliers in the liquor transaction. After the completion of the liquor transaction, the liquor suppliers and the liquor consumers can be rewarded according to the value of the liquor transaction. In order to ensure the stability of the total issued currency within a certain period, the award coefficient needs to be set up to make the dynamic adjustments of the awards.

Based on the functions of the nodes in the above LWC blockchain and the general rules for incentive release in the liquor transaction, an incentive mechanism based on value is proposed. The specific process is shown in Figure 10.
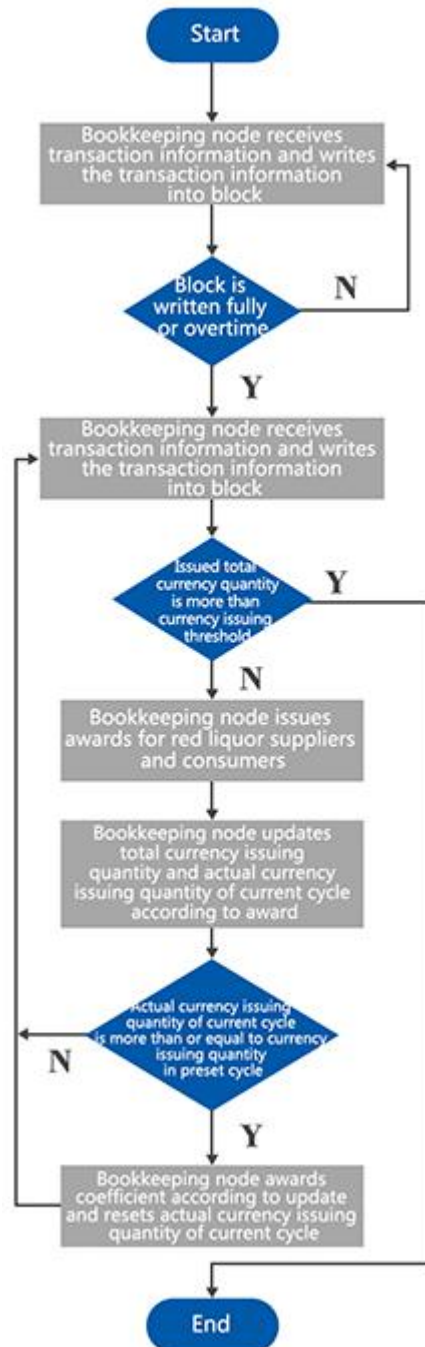
Figure 10 Incentive Mechanism Process Based on Value

Step 1: The billing nodes receive the transaction information and write it into the block;

Step 2: The billing nodes judge whether the block is full, or whether the writing process is overtime. If it is "Y", we shall proceed to step 3; otherwise, we shall proceed to step 1;

Step 3: The billing nodes make the consensus on the transaction information, and use the intelligent contract to calculate the value of the transaction. V=M-C, among

which, M is the amount of the liquor transaction and C is the cost of the liquor;

Step 4: The billing nodes judge that whether the total amount of money that has been issued at present has exceeded or equal to the total amount of currency W. If it is "Y", we shall proceed to step 9; otherwise, we shall proceed to step 5;

Step 5: The billing nodes issue awards to the liquor suppliers and the consumers according to the value of the transaction. R=V*K The calculation formula for awards is the total number of awards issued to the liquor suppliers and the consumers. The distribution ratio between them can be set according to the actual situations. For example, we can set the distribution ratio of them as 1:1, and it is the award coefficient of the current cycle;

Step 6: The billing nodes update the total amount of RMB issuance based on the issued awards and the actual amount of RMB_C issuance in the current cycle. Among which, the calculation formula of the total amount of RMB issuance is, RMB+R and the calculation formula of the actual amount of RMB issuance in the current cycle is $RMB_C=RMB_C+R$;

Step 7: Judge whether the actual amount of RMB_C issuance in the current cycle is greater than or equal to the amount of RMB_C issuance in the preset cycle. If it is Y, we shall proceed to step 8, otherwise, we shall proceed to step 3;

Step 8: The billing nodes update the award coefficient according to the actual amount of RMB_C issuance in the current cycle, and reset such amount. The update formula of the award coefficient is, $K_{i+1} = \dfrac{T_i}{T} * K_i * \dfrac{RMB_R}{RMB_c}$, among which T_i it is the time from the last update of the award coefficient to the update of the award coefficient at this time. T is the preset currency issuance cycle.

Step 9: End.

4) Multi-party key negotiation mechanism

In the communication network, in order to ensure the security of the transmission data, we can authenticate the identities of both communication parties and encrypt the communication data in general. For public network, asymmetric cryptographic technology is usually adopted. The asymmetric cryptographic technology is the underlying technology that guarantees the security of blockchain data. In the asymmetric cryptographic technology, there are two secret keys, namely, a public key and a private key. The generation of the secret keys is completed through the secret

key negotiation system. The following is a brief introduction of a simple three-party negotiation agreement. The specific processes are as follows:

1) A, B and C can know the public key of each participant g^a, g^b, g^c

2) A selects a random number x to make the calculation, g^{xd}, g^{xc} sends it to B and C respectively.

3) B selects a random number y to make the calculation, g^{ya}, g^{yc} and sends it to A and C respectively.

4) C selects a random number z to make the calculation, g^{za}, g^{zb} and sends it to A and B respectively.

5) A, B and C calculate the session key respectively after receiving messages from other participants.

$K_A=e(g^{yaa-1},g^{zaa-1})^x=e(g, g)^{xyz}$

$K_B=e(g^{xbb-1},g^{zbb-1})y=e(g, g)^{xyz}$,

$K_c=e(g^{xcc-1},g^{ycc-1})z=e(g, g)^{xyz}$.

$K_{ABC}=K_A=K_B=K_C=e(g, g)^{xyz}$

It is obvious that, the session key.

As the LWC platform involves a great number of subjects, including consumers, liquor suppliers, liquor manufacturers, liquor transporters, supervision departments, ordinary users, etc., the three-party negotiation agreement may not be able to meet all the application scenarios of the LWC platform. Therefore, it is necessary for us to expand the three-party secret key negotiation mechanism into the multi-party secret key negotiation mechanism. The following is the specific process of the multi-party secret key negotiation mechanism applied to the LWC platform.

Make G_1 and G_2 the two multiplication cyclic groups with the rank of prime number q. Make e: $G_1 \times G_1 \rightarrow G_2$, g is G_1 the generator; $sig_i(m)$ It represents the signature of users; E_{PK} It represents the public encryption algorithm of the users; H is the Hash function.

1) The user U_i uses the random number generator to generate the random number, regards it as the private key of its own selection, s_i and saves it. Calculate g^{5i} and send it to other users. $U_j(1 \leq j \leq n, j \neq i)$, The sent messages are $sig_i(H(m_i))$ and $H(g^{s_i})$,among which. $m_i = E_{PK_j}(g^{s_i})$ .This is equivalent to that the user sends the public key with its own selection to each user in the system. The unauthorized users can not see it. Among which, $H(g^{s_i})$ it must be written into the

blockchain ledger the same.

2) U_i After receiving the message from the previous round, firstly verify the signature, then decrypt it to get the of each user, g^{s_i}, and then select a random number to calculate. r_i . $Z_i = g^{r_i s_{i-1}}$, $M_i = g^{r_i s_{i-2}}$ Send $sig_i(H(m_i'))$ and $sig_i(H(m_i''))$ and $H(M_i)$, among which $m_i' = E_{PK_{i-1}}(Z_i)$, $m_i'' = E_{PK_{i-2}}(M_i)$ to the user respectively. U_{i-1}, U_{i-2} .In addition to the transaction records that need to be written into the blockchain ledger, the following $H(Z_i)$, $H(M_i)$ are also need to be written into the ledger.

3) After obtaining the U_i according to the methods in the second round, $Z_{i+1} = g^{r_{i+1} s_i}$, $M_{i+2} = g^{r_{i+2} s_i}$ the users respectively calculate their own shares $k_i = e(g^{r_{i+1} s_i s_i^{-1}}, g^{r_{i+2} s_i s_i^{-1}}) = e(g, g)^{r_i r_{i+1} r_{i+2}}$, send the messages of $sig_i(m_i''')$ and $H(k_i)$ $(i \neq j, i, j = 1, 2, \ldots, n)$, among which $m_i''' = E_{PK_j}(k_j)$, to the users respectively. $U_j (1 \leq j \leq n, j \neq i)$.

4) After getting the U_i k_i the users calculate the session keys.

$$K = \prod_{i=1}^{n} k_i = e(g, g)^{r_1 r_2 r_3 + r_2 r_3 r_4 + \ldots + r_n r_1 r_2}$$

5.4.2. Technical summary

As the blockchain technology is in the early stage of development, and although the application of the technology can guarantee the credible transaction environment of LWC, however, there is a certain gap between the processing performance and efficiency of the platform and the system and the actual transaction scale and requirements. The process coordination management mechanism, multi-center dynamic consensus mechanism, incentive mechanism based on value and multi-party secret key negotiation mechanism can enable the platform or the system to better adapt to the actual business needs.

Through the process coordination mechanism, we can deploy different types of requests such as inquiry, authentication, transaction, accounting, etc. to different channels for the implementation of corresponding nodes, which can effectively reduce the system delay, reasonably use network resources, and improve transaction performance.

The multi-center dynamic consensus mechanism supports the licensing multiple centers. At the same time, it designs the two-layer transaction blockchain. The subject blockchain communicates with each other through the representative nodes to ensure that the liquor information and its transaction information cannot be modified and to improve the blockchain performance.

In the value-based incentive mechanism, the billing node is the value of the liquor transaction to measure the awards granted to the liquor consumers and suppliers. The award rules are simple, open, and reasonable. In addition, the award coefficient is also used in awards which are conducive to ensuring the stability of the issued currency.

The session key of the multi-party secret key negotiation mechanism is obtained by using the short private key of each participant after a certain calculation. The short private key of each participant is generated through a random number, which can effectively guarantee the uniqueness of the short private key and session key in each session.

Unique of session key, in addition, in the secret key negotiation process, signature authentication is adopted for the agreement, which can resist secret key leakage and attacks and meet the sharing knowability of the secret key.

6. LWC Roadmap

The overall framework of the LWC platform mainly includes the source data acquisition subsystem, the intelligent contract subsystem, the blockchain subsystem, the certificate center subsystem and the supervision inquiry subsystem. Among them, the intelligent contract subsystem includes two modules of contract generation and contract implementation. The supervision inquiry subsystem includes the supervision module for the supervision departments and the inquiry module for the ordinary users. Four key technologies applied on the LWC platform are process coordination management mechanism, multi-center dynamic consensus mechanism, value-based incentive mechanism, and multi-party key agreement mechanism.

The roadmap for the time required for the construction of the platform framework and the time required for the research and innovation of key technologies are shown in Table 5.

Construction of platform framework	
Project name	**Time required (unit: Month)**
Source data acquisition subsystem	1
Intelligent contract subsystem - contract generation module	1
Intelligent contract subsystem - contract execution module	1
Blockchain subsystem	2
Certificate center subsystem	2
Supervision inquiry subsystem - supervision module	1
Supervision inquiry subsystem - query module	1
Key technology research & innovation	
Project name	**Time required (unit: Month)**
Process coordination management mechanism	2
Multi-center dynamic consensus mechanism	2
Incentive Mechanism Based-on Value	2
Multi-party key negotiation mechanism	1

Table 5 Schedule for the Construction of the Platform Framework and the Innovation of Key Technologies

7. Coin Offering Plan / Token Sale

The token offered by LWC is the Love Wine Coin, and referred to as the LOVC. Its distribution plan is as follows.

7.1. Coin / Token distribution plan

Proportion	Purpose	Description	Rules
1.5%	Cornerstone	Open to the excellent angel investors in the early stage of the currency circle and give priority to subscription	Lock for six months from any exchange since its launch, and unlock one-sixth in each month from the second month
3.5%	Private placement	For institutions and well-known investors in the currency circle	Lock for three months from any exchange since its launch, and unlock one-third in each month from the second month
50%	Construction and operation of ecology	It is used for the construction and operation of product ecology, development of subsequent projects and business development, etc.	Each part of the expenditure will be recorded, and the financial report will be published in stage
10%	The team holds	Incentives and expenditures of founding team, and expenditures of product technologies, talents, etc.	Locked position for 40 months from any exchange since its launch, and unlock 2.5 percent of this part in each month from the second month
25%	Foundation	Used for the daily operations and management, transportation and office, finance and report and other needs	
10%	Community incentives	Used for the community maintenance, user behavior incentives, etc. Reward the actions of download, promotion, consumption, transaction, etc.	Staged awards

Table 6 Distribution Plans of coins

7.2. Offering plan

The sales of LOVC will be strictly in accordance with laws and regulations around the world to be offered to the right groups in appropriate ways. The total sales volume of LOVC is 100 billion, of which 5 percent, which means 5 billion have been offered to the outside. The raise association made the settlement with ETH, raising a total of 92,500 ETH. The specific ways for raise are as follows:

Cornerstone round -

Mode: For cornerstone investors

The total amount of the plan: 1,500,000,000 LOVC

Duration: six months

Locked position: Release after six months

The first round of private placement -

Mode: Invite investors to participate in the investment according to the private placement funds and institutional investors that passed approval

The total amount of the plan: 3,500,000,000 LOVC

Duration: three months

Locked position: Release after three months

Soft top and hard top plans of coins:

The total issuance volume of the cornerstone and private placement is the soft top and hard top planning specified in this project. At the initial stage of coin issuance, the foundation will control the issuance amount according to the soft top plans, and the soft top shall be issued 40,000 ETH. It will properly issue or reduce the issuance amount according to the market response and project needs. The project issuance plan will not exceed the above total amount of 5 billion LOVC, which is 92,500 ETH. This item is regarded as the hard top. If the hard top is not reached in the current round of issuance, the foundation will firstly trust the remaining LOVC. When the project needs fund expansion in the future, it will make public distribution according to the market price.

Special tips: Any Chinese citizen or U.S. citizen shall not participate in the investment.

7.3. Team abstention plan

To reward and stimulate the contributions of founding team in the project process, the foundation will distribute 10% of the total amount of the coins to the team. The lockup period for the currency is 40 months, and 2.5% will be offered in each month from the second month.

8. Team

8.1. Project team

Gheorghe Nicolaescu

Co-initiator & commercial director of the project, be responsible for promotion and resource cooperation of the project.
Doctor of Viticulture of Viticulture Department of the National Ag--ricultural University, Moldova, once served as the Director of Vit--iculture and Wine Brewing Department & Dean of Horticul ture D--epartment.

Prida Ivan Andreevich

Co-initiator & commercial director of the project, principal & opera--ting director of the project.
Technical expert of the National Authentication Center in Moldova P--roduct & Service Authentication Field, and Assistant Professor of Wi--ne Brewing Department, Technology University, Moldova.

Gheorghe Arpentin

Co-initiator & commercial director of the project, principal & fin--ancial director of the project.
Doctor of Grape and Grape Research Institute of French National Agricultural Research Institute and Okraine Yalta National "Ma--garatch" , Brewing Engineer of Moldova National Technology U--niversity. Once served asHead of Moldova National Wine Bureau. Manager of Moldova - French Laco-Alfactec & Promotec Compa--ny, and Deputy Minister of Agriculture and Food Industry Depart--ment of Moldova
.

Mulder Lee

Co-initiator, principal of development & operation, be responsible for construction of platform frame smart contract and settlement of product.
Bachelor's degree in Computer and E-Commerce fr--om South China University of Technology Successiv--ely worked in Amway China, Best Buy Group in Can--ada, and NCR Company in Canada Have more than 20 years of network management and IT experience, and rich project experience. Once led the team to par--ticipate in the AD framework upgrade and the estab--lishment of remote control system jointlywith Micro--soft as the project leader, and cooperated with IBM in network reconstruction projects. Microsoft Certified System Engineer (MUSE), and Cisco Certified Network Assistant (CCNA).

8.2. Expert consultant

1. Jason Chen

He has the major of Logistics Management in Fujian Normal University, and a leading man for the new type of liquor sales. After learning and exploring in the e-commerce industry for nearly 8 years, the continuous entrepreneurs started their

businesses while they were in school. They once achieved sales of more than RMB 8 million per day in the single shop in Taobao. In 2012, he entered the state-owned grain sales system and led the team to make innovations and reform the sales mode of traditional grain. In 2015, he entered the liquor market and studied in depth the application of blockchain technology in liquor sales. He had a deep understanding on the liquor market and supply chain management. He once led the team to complete the remarkable sales performance of exceeding a hundred million for three months.

2. Zeki

Member of Asset Management Association of China, Chinese accountant, and once served as the financial manager of large-scale state-owned enterprises and the listed companies in America, as well as the chief finance officer of domestic well-known fund management companies. He has many years of experience in investment and financing, accounting and financial management, and has long been committed to providing services for mergers and acquisitions, and listing financing, etc. for enterprise. He is a researcher and investor in the early stage in the blockchain industry, and he has profound understanding and rich experience on this field.

3. Run Lee

He majored in Finance in Xijiang Shihezi University. He is the Xiamen Lalong equity investment fund partner and investment director. He has more than 10 years of experience in equity investment and financing, and has participated in the investment of more than 40 start-up enterprises, and has served for more than 200 enterprises. He has rich experience in the field of investment and financing. He is an experienced man of digital currency and a senior researcher of blockchain. He has a deeper understanding on the blockchain. He has rich connections and broad resources in the blockchain industry. Senior red liquor lovers, with more than ten years of liquor tasting experience. He is a liquor collector.

4 Zhan Yibo

He was born in Chaozhou, Guangdong Province in 1967, and graduated from a college. He is the liquor taster with level I in China, and national white liquor taster with level II, as well as the national marketing master in the field of liquor. He once studied at the Peking University Liquor Industry Transformation Workshop. From 1992 to 2012, he was discontinued to serve in the Amorai Chateau in Chile, and is mainly engaged in planting and brewing and liquor sales in China. After 2002, he was invited for several times to visit chateau and liquor manufacturing areas, and he

gained several nation certification in liquor manufacturing areas. Meanwhile, he was also repeatedly invited as the Culture Promotion Ambassador of liquor production areas in various countries and the Review Representative of various major liquor competitions and served as a Judge in international liquor competitions, including International Ice Liquor Peak Competition and Import *Liquor Appraisal* of La Revue du Vin de Frane RVF CHINA.

9. Private Placement Agency

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7) Wine Enthusiast:
   http://www.wineenthusiast.com/

11. Disclaimer

This is a conceptual document (「White Paper」). The unique purpose for preparation of the white paper is to introduce LWC platform and LOVC into potential token Holders by providing related and rational information so that they can determine whether deep analysis is made for the project when intending to purchase

LOVC. Information in the paper may be not detailed and implies no any element constituting contractual relationship. The white paper shall neither constitute any suggestion for that whether you participate in LWC platform or purchase any LOVC, nor be deemed as the basis of any contract or purchase decision.

Please carefully read and pay attention to the notes below:

1. LWC team will constantly carry out rational tries to ensure that the information in the white paper is true and accurate. During development, the platform may be updated, including but not limited to platform mechanism and distribution situation of LOVC. Part contents of the document may be adjusted accordingly in new white paper along with project progress and the team will publish updated contents to the public by releasing announcement or new white paper on website etc. The Participants must timely obtain new white paper and adjust their decisions according to updated contents.

2. Any content in the white paper shall neither be deemed as constitution of any type of prospectus or investment canvassing, nor constitute offer or offer canvassing aiming to purchase any security in any judicial district or any other controlled product by any means. The document is neither prepared according to or based on the laws or regulations of any judicial district aiming to protect the investors nor reviewed by the supervision institution of any judicial district.

3. LOVC can be used for the purposes specified in the white paper only and shall not be used for other purposes, including but not limited to: Any investment, speculation or other financial purpose. As a digital encryption product, LOVC does not belong to the categories below: (a) Any kind of currency; (b) Security; (c) Equity of legal subject; (d) Stock, bond, bill, stock warrant, certificate or other instrument authoring any right.

4. LOVC will not be offered or used in judicial districts (including but not limited to China, the United States etc.) where digital coin is forbidden for selling or using. LWC platform and LOVC are not public to all persons (including but not limited to the persons with nationality of China, the United States etc. who are forbidden purchasing LOVC) and the participation may require completing a series of steps, including providing specific information and document.

5. Appreciation or not of LOVC depends on market discipline and the demand of application implementation and it may have no any value. The team makes no promise against the appreciation and bears no liability for the consequence due to

value increase or decrease. Within maximum range allowed by applicable laws, the team bears no liability for the damage and risk due to exchange, including but not limited to direct or indirect personal damage, commercial profit losing, commercial information losing or any other economic loss. The project shall comply with any supervision regulations, industrial self-discipline declaration etc. beneficial to sound development of exchange industry and the Participants (representatives) will completely accept and abide by such inspection. Meanwhile, all information disclosed by the Participants to prove completion of such inspection must be complete and accurate. The project clearly conveys possible risks to the Participants. Once the Participants participate, it means that they have confirmed understanding and recognizing the article description in the procedure, accepting potential risks of the platform and bearing the results voluntarily.

6. Some statement, estimation and financial information in the white paper constitute forward-looking statement or information. The forward-looking statement or information involves in known and unknown risks and uncertainty, which may cause major difference between actual event or result and estimation or result implied or explicit in the forward-looking statement.

7. The white paper in English is the main official source of related information of LOVC. The information in the text may be translated into other languages at any time or used for written or oral communication with existing or potential Customers, Partners etc. During such translation or communication, some information in the text may be lost, damaged or inconsistent with the facts, therefore accuracy of such alternative communication cannot be ensured. In case of any conflict or inconsistency between such translation and communication and the white paper, articles in the original white paper in English shall prevail.

Final tips: You must listen to all necessary professional suggestions, including related affairs of tax and accounting treatment. We are very confident that LWC plan can be very successful. However, we cannot guarantee success and both digital asset and platform involve in risks. You must evaluate risks and your bearing capacity.