APPLE FULL NUTRITION UTILIZATION IN YA CITY

BY

JIANQIANG LIU

AN INDEPENDENT STUDY SUBMITTED IN PARTIAL FULFILLMENT

OF THE REQUIREMENT FOR THE DEGREE OF MASTER OF

BUSINESS ADMINISTRATION (INTERNATIONAL PROGRAM)

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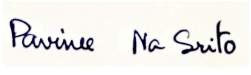

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Abstract

Yan'an has an apple planting area of 3.31 million mu, with an annual output of 4.0053 million tons, ranking first among prefecture-level cities in China, and its excellent quality is world-renowned. However, the apple industry is large but not strong. It is an important way for the development of the Yan'an apple industry to increase the processing of apple NFC juice and low-alcohol fruit wine, and to develop food green additives and daily chemical products using apple processing by-products as raw materials. The project processes 200000 tons of apples annually and mainly uses low-temperature processing technology to produce NFC apple juice, foamed Apple clear juice, apple wine, apple ice wine, leisure functional food, food-grade apple pectin, apple polyphenols, etc. The production scale ranks first in China. The project's total investment is 1.076-billion-yuan, including buildings and structures, production equipment, utilities, and initial working capital. The project covers an area of 72304 square meters and 24 buildings and structures, including a complex building, warehouse, R&D center, experience center, power, sewage treatment and other public works. The first phase of the project involves the construction of sparkling clear juice, cider workshop and utilities; The second phase of the project involves the construction of an NFC turbid juice line, brandy ground wire and pectin workshop; The third phase of the project involves the construction of NFC juice clearing line, polyphenol workshop, fruit residue fermentation high-value products, R&D center and leisure functional food and experience center.

Keywords: Apple Full Nutrition Utilization in YA City

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Jianqiang Liu

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Section 1

Executive Summary

1.1 A Brief Background of the Project

1.1.1Total investment of the Project

The whole investment includes the construction, production equipment, public utilities, and reserve funds, with a total of 1,076.512 million yuan.

1.1.2 Project implementation content and preliminary implementation plan

The building of this project covers 72,304 square meters, with 24 structures, including the complex building, warehouse, research and development center, product display area customer experience center, power and sewage treatment and other public works. The first phase could build sparkling juice, cider (sparkling) workshop and utility works. The second phase will be used to build NFC turbidity juice line workshop, apple ice wine, apple brandy production workshop and pectin workshop. The third phase builds NFC fermentation juice production line, apple polyphenols workshop, fruit residue fermentation high-value product production line, leisure function food production line, and product development center, display area and the customer experience center.

1.1.3 Significance and necessity of This Project

Shaanxi province is a large and a developing province especially in the apple production with its planting area and output in China. It accounted for one-quarter of the country and 1 / 7 of the world. Yan'an apple planting area of nearly 4 million mu, ranking first among the prefecture-level cities in China, its excellent quality is renowned around the world. However, the Apple industry is great but not strong enough, especially in the processing industry and its branding is unsuccessful. Therefore, the position of increasing the investment and construction of apple processing is urgent. In the domestic market, NFC fruit juice and low-degree fruit wine are two important ways out of fruit processing. However, the apple industry has not dominat market fist product except for concentrated fruit juice. And in the international market NFC juice, cider, apple ice wine, apple

brandy, apple pectin, apple polyphenols, and leisure function food (puffed food, apple meal replacement powder) are favored by the market and consumers, with apple processingby-products as raw materials to develop food green additives, cosmetic products also have a good application prospect. Yan'an is not even has integrated apple nutrition full utilization technology in Shaanxi Province to develop related products manufacturers.

Some existing enterprises produce cider based on the wine method, and products and models are not successful. As Yan'an ranking the largest apple planting area in China and the city continue to play the advantages of the apple "rural revitalization" strategy leading industry, the construction of integrated apple diversification, nutritional processing and high value using technology innovation chain demonstration project, explore new apple processing method and business model, to promote Yan' an and Shaanxi apple into people's livelihood industry transformation and upgrading quality efficiency is significant.

1.2 Economic and social benefits

1.2.1 Social benefits

The new technology adopted in this project has improved the flow of traditional fruit juice processing. It adheres to technological innovation, energy saving and consumption reduction and green environmental protection, reasonable capital investment, eliminate backward production capacity, constantly improve the energy utilization rate, and reduce environmental pollution. The implementation of the project will gradually change the domestic apple industry through fresh fruit products. To further improve the consumption level of apple processing products, promote the transformation and upgrading the whole industry, to realize the quality of efficiency will also promote the development of fruit processing in our province, change our province through apple concentrate production industry status. To increase fruit income, driving the development of fruit industry plays a key role. It will also enhance the level of technology and international competitiveness of China's apple processing industry. It plays an important guiding role in leading the new reform of the apple processing industry and driving technological innovation

and industrial upgrading in the fields of agriculture and society. In addition, since the main apple- producing areas are mainly agricultural and relatively backward rural areas, the implementation of the project will play a key role in helping to achieve "one village, one product" and rural revitalization.

1.2.2 Environmental benefits

With the country's attention to environmental protection and the improvement of people's environmental awareness, especially the western development, ecological construction has been the attention of all walks of life. Furthermore, there is a preferential investment in this. Through the implementation of this project, the disadvantages of traditional apple processing in China can be improved. The nutritional functional fruit juice processing technology takes circular economy as the main line and solves the issues of waste of apple nutritional resources and environmental pollution. In the implementation of the project, we firmly establish the concept of circular economy and adhere to the unity of economic benefits, ecological benefits, and social benefits. We should take the carrying capacity of the ecological environment as the premise of access and realize the transformation of economic and social development from "environment for growth" to "environment for optimized growth". Measures to eliminate pollution and protect the environment should be implemented before or in the process of economic development and construction projects, eliminate the main reason causes of environmental problems, prevent and control pollution from the source, and build a resource-conserving and environment- friendly society.

1.2.3 Economic benefits

The project has good profitability and economic benefits.

The project construction investment is 84.654 million Yuan, which include 81.154 million Yuan in fixed assets investment and 3.5 million Yuan in interest during the construction period.

After the completion of the project, the estimated annual sales revenue is 240 million Yuan, the total annual average profit is 53.1495 million Yuan, the annual average tax paid is 46.2313 million Yuan, and the average annual after-tax profit is

39.8621 million Yuan. The total investment return rate of the project is 45.05%, and the investment payback period is 3.52 years (including the construction period).

After the completion of the project, it will directly promote the annual employment by 90 employees, and at the same time, it will indirectly promote the development of apple seedlings, planting, storage, transportation, processing machinery, digital Internet of Things, and other industries, with remarkable benefits in both social and economic fields.

Section 2

Company Description

The SWOT analysis of this project

S (superiority)	W (inferior strength or position)
Raw materials: low cost, stable source. Technology: advanced technology, large-scale. Transportation: production area processing, low transportation cost. Cost: full use of raw materials, low	Brand: Need time to promote, improve the acceptance.
Policy support: state support, Shaanxi Province to build a 100 billion level apple industry. Market development: Apple quality is good, Yan'an has the brand effect;	Raw material competition: low-end manufacturers to buy raw materials. Market competition: many small businesses, eager to try;
O (chance)	T (threaten)

Project construction unit

Construction unit: Company A Legal address: Baota District, Baota District, Yan'an City, Shaanxi Province Legal representative: Liu X

Project implementation site

The construction site of this project is in Lincheng Town, Baota District, Yan'an City. Lin Town is in the southeast of Baota District, located in the southeast of Baota District, adjacent to Yichuan County Yunyan Town in the east, Yichuan County Xiaoli Township, Yingwang Township in the south, Ma Dongchuan Township in the west, and Yanchang County Anguo Township in the north. The maximum distance from east to west is 37.5 kilometers, and the maximum distance between north and south is 30 kilometers, with a total area of 511.82 square kilometers. the

transportation of this town is convenien because the total distance is only 66 kilometers from the pot road to the township road. East near the Yulan Expressway, convenient transportation.

Project scale

The initial site of this project is in Lincheng Town, Baota District, Yan'an City, covering a total area of 250 mu.

Supply and turnover of apple raw materials

Apple raw material supply

At present, apple has become the leading industry in Yan'an agriculture and has made an important contribution to the agriculture, rural areas and farmers' industries in Shaanxi and even the whole country. Fuji is the main species in the northern area of Shaanxi, with the characteristics of high quality, large supply, and stable prices. Yan'an apple production in local fruit production is the proportion of the large, about 96%~97%, about 28%~30% of Shaanxi apple production and a large output scale.

Table 2-1 Apple output and proportion of Yan'an from 2014 to 201

Production (10 m t)	**In 2014,**	**In 2015,**	**In 2016,**	**In 2017,**	**In 2018,**
National apple production	3735.39	3889.90	4039.33	4139.00	3923.34
Shaanxi apple production	939.14	979.76	1033.16	1092.46	1008.69
Yan'an fruit yield	269.72	284.65	316.53	335.69	299.10
Yan'an apple output	269.44	274.96	303.18	323.15	289.20
Yan 'an apple production to yan' an fruit output proportion of (%)	97	97	96	96	97
Yan'an apple production accounted for the					
28		28	29	30	29

The top four counties in apple production in Yan'an are Luochuan County, Fuxian County, Yichuan County and Baota District. In 2018, the output value of Yan 'an Apple was about 12.87 billion Yuan, after that, in 2019, the output value of Yan' an Apple has reached 14.03 billion yuan, which increase of about 9%. In 2019, the total output of apples in Luochuan County reached 930,000 t, with an output value of 4.8 billion Yuan and a brand value of 68.727 billion Yuan, ranking first in the national fruit category.

Table 2-2 The output and proportion of apples in all counties (districts) in Yan'an in 2018

County (district)	Production (10 m t)	scale (%)
Luochuan County	55.3	19.10
Fuxian County	49.6	17.10
Yichuan County	47.5	16.40
Pagoda area	35.0	12.10
Huangling County	29.0	10.00
Ansi district	28.0	9.70
Zichang County	15.2	5.30
Yanchang County	10.5	3.60
Zhidan County	7.1	2.50
Huanglong County	6.2	2.10
Yanchuan County	4.0	1.40
Wuqi county	1.3	0.40
Ganquan County	0.5	0.20
amount to	289.2	100.00

Apple Supply Cycle

Considering the cost and supply of apple raw materials, the production cycle is flexibly arranged based on the market price forecast to ensure more than 150 days per year.

2.5.3. Transportation of raw materials

External transportation: External transportation of this project mainly adopts automobile transportation; except for a small number of enterprise vehicles, the part of insufficient transport capacity mainly depends on social transport forces.

Internal transportation: According to the characteristics of raw materials, battery forklift trucks and pallets are used for interposes operation in the factory and work parts between workshops. Transfer between the process using a conveyor belt, roller channel, and single beam cantilever hanging.

2.5.4. Raw material storage

Based on making full use of the existing 10,000 tons of cold storage in the park, 2000 square meters and 2000 square meters of raw materials storage.

2.6 Apple Base construction supporting strategy

2.6.1 Stabilize production scale, optimize region the l structure and adjust variety structure

According to the principle of resources and facing the market, the construction of an apple raw material base in northern Shaanxi should adhere to the optimization of regional layout and adjust the variety structure while the area is relatively stable and has moderate expansion.

Regional layout: Under the overall planning of the fruit industry of the province, the area of non-suitable, sub-appropriate and suitable areas will be gradually reduced, and the area of the eugenics area is moderately expanded. The proportion of apple cultivation area in the total area has reached more than 95% in 2020. Different regions should adopt different adjustment methods: ① south of Yan'an, eugenics is apple, apple production natural conditions is superior, the production of apple quality, development potential, should be based on improving the existing orchard, to develop part of such as honey crisp, Qin Cui new varieties, to expand the high-quality fruit cultivation area, increase the proportion of new varieties. In the area north of ② Yan'an, most of them are suitable areas, with vast land, and little contradiction between fruit and grain for land. Although the benefit of fruit is lower than that of the northern Weihe area, it

is better than grain or other cash crops, which is an important way for farmers to get rid of poverty and become rich. In the future, we should mainly consolidate and improve the appropriate development of special apple varieties for juice making and brewing, strengthen the technical transformation and management of the existing orchards, and not build a large area of new orchards.

Variety structure: to adapt the market demand, compress the general varieties of qin crown and marshal and late mature varieties and golden crown varieties, and increase the early and new mature varieties, so that the proportion of early, middle and late mature varieties is gradually adjusted to 8:12:80. For different producing areas, the excellent varieties selected are Weibei Plateau apple eugenics area, which should be mainly late ripe and medium and late ripe varieties, and moderate development for some early and medium ripe varieties, with a ratio of 85:15. The late maturing varieties are mainly Fuji Iyanfu 10, Miyazaki Short fu and Lifu 1, New World and coloring ages, and the middle maturing varieties are mainly Gara and American No.8, and the early maturing varieties are mainly Tengmu 1. In the hilly area of northern Shaanxi, large fruit type fresh food varieties and processing varieties with strong cold resistance, such as Hanfu, Xu, Hongyu, Xiao Guoguang, Jonin, etc., and an appropriate proportion of Qinguan varieties should be maintained.

2.6.2 Strengthen infrastructure construction and improve the production conditions of the fruit industry

To strengthen the construction of water conservancy facilities focusing on water-saving irrigation, we should vigorously promote seepage irrigation, drip irrigation and micro-irrigation in orchards. In the arrangement of comprehensive agricultural development, beautiful mountains and rivers projects and water conservancy construction, the project should be inclined to orchard water-saving irrigation construction, and a certain proportion of funds should be allocated to help fruit farmers purchase necessary equipment and build basic irrigation facilities, to promote the promotion of water-saving irrigation technology in the surrounding areas.

Strengthening road construction in fruit district. Governments should come up with the related policies at all levels shall adopt the measures to raise construction funds from various parties to build the road network in fruit area.

Construction of provincial seed and seedling breeding center, strengthen the supervision and management of fruit tree seedling production and sales, the province should make full use of Tongchuan fruit tree research center, Northwest Agriculture and Forestry University and other institutions to accelerate the establishment of Shaanxi Province unscrupulous fruit tree seedling breeding center, responsible for the production of new and excellent varieties of virus-free original seed seedlings and scions. At the same time, in Yan'an city to establish non-toxic seedling propagation point, finished product virus-free seedling production base. In addition, we should also implement the seedling license system, strengthen the fruit tree seedling production, sales and supervision and management.

Make sure the perfect fruit industry service system: ① science and technology promotion service system: each county should implement the provincial government has already put forward 3% -5% from the apple specialty tax for the fruit industry service system construction and technology promotion provisions, to ensure that the fruit industry science and technology service unit activities, improve the environmental conditions of scientific and technological personnel engaged in science and technology service. Township governments should set up fruit industry service stations, and to ensure that the personnel are full-time dedicated. **!** information service system: to build a provincial, local and county, three-level information network system, which mainly with the provincial fruit industry information center in order to improve the information transmission speed and processing capacity. Main production of towns and fruit processing, sales and other fruit- related enterprises should establish information points. Each information point should build different departments includes the organization, personnel, equipment room, equipment, funds "five implementation", and ensure a timely report to the provincial fruit industry information center of the fruit industry information in the

region, to timely friends through the Internet and other ways, but also the province fruit industry information network about information timely transmission to the local government, fruit merchants and fruit growers.

2.6.3 Strengthen technical training and the construction of demonstration parks to improve the scientific and technological level of fruit farmers

In the view of city's new fruit area, the number of new fruit farmers, the technical level of fruit farmers is generally low, we should make great efforts to grasp the technical training to local fruit farmers. The city will train fruit farmers 100,000 person-times every year and strive to have a basic master of the main technology of fruit production labor force. According to the principle of unified technology and hierarchical batch training, technical backbone and teachers of provincial training sites and county level in training activities, compile and print training materials and annual management calendar of main fruit; prefectures and counties are responsible for training township and village farmer technicians; farmer technicians training fruit farmers. The training activities should combine with the implementation of the "green certificate project" and with the evaluation of farmers' technical titles. Technical training should also be closely combined with the demonstration construction, so that both theoretical learning and specific practice, to achieve a typical demonstration, from point to surface, the purpose of comprehensive improvement.

2.6.4 Accelerate the development of fruit farmers' association organizations and improve the degree of organization of fruit farmers To encourage and support by the rural technical talent, sales talent led by the people, by the fruit farmers voluntarily participate, in accordance with the private management, the people benefit the principle of various forms of fruit industry professional association, the government should help solve the difficulties and continuous development and growth.

However, administrative means must not be used to interfere in its internal administrative affairs. To follows the principle of step by step, mature one, set up one, avoid eager for quick success and instant benefits, to encourage the seedlings.

Section 3
Company Description

3.1 Company Overview

3.1.1 Brief Introduction of the construction unit

Company A focuses on promoting the agricultural supply-side structural reform and the transformation between old and new growth drivers, accelerating the transformation of the agricultural development mode, which will comprehensively be improving the quality and efficiency of modern agricultural development, and realizing the quality change, efficiency change and power change.

3.1.2 Registration information

Company name:

Company A

Registered address: Baota District, New District, Yan'an City, Shaanxi Province

Established date: October 8,2022

Business scope: agricultural products production, sales, processing, transportation, storage and other related services; Technical, information, facility construction and operation and other services related to agricultural production and operation; Agricultural scientific research and experimental development; Fruit planting; Labor services (excluding labor dispatch); Non-residential real estate lease; Storage equipment rental service; Sales of agricultural and sideline products; Animal husbandry machinery sales; Animal husbandry machinery manufacturing; Animal husbandry professional activities and ancillary activities; Livestock and poultry manure treatment; Project management services; General goods storage services (excluding hazardous chemicals and other items requiring license and approval); Sports goods and equipment wholesale; reforestation; Planning and design management; Supply chain management services; Landscaping project construction; Urban greening management; Consulting and planning services; Forest management, management and protection; Forest product collection; Forestry

pest control services; Forest reform to training; Urban park management; Forest park management; Flower planting; Energy- saving management and services; Irrigation services; Forestry professional activities and ancillary activities; Agricultural professional activities and ancillary activities; Tree planting and management; Management of tourist scenic spots (except for projects subject to approval according to law, To independently carry out business activities according to law by presenting the business license). License items: road cargo transportation (excluding dangerous goods); livestock raising; animal breeding; livestock and poultry production; feed production; goods import and export; food management (sales of pre-packaged food); bee management; veterinary drug management; timber transportation; construction engineering design; fertilizer production; forest seed production and operation; various construction activities (construction activities of projects subject to be approved by the relevant departments, the specific business items shall be subject to the examination and approval results).

3.1.3 Main Performance

A company in accordance with the "green drive, innovation drive, capital leverage" overall train of thought, cultivating "culture as the source, integrity, development, agriculture for the industry" enterprise culture, unswervingly implement the new development concept, continue to promote the agricultural supply-side structural reform, give full play to the Yan ‘an characteristic agricultural resources advantage, efforts to build with Yan' characteristics of modern agricultural industry system, production system, management system.

First, the new active sales model. We will lay the foundation for the brand, strengthen the cold chain, and strengthen weak links, work online and offline, and innovate models to expand the market. For Yan'an agricultural products enterprise brand is not wonderful. In the Yangtze river delta and the pearl river delta and other more than 40 developed cities held more than 200 times tasting and fair, through various forms to build enterprise brand, make full use of the Internet new media, actively cultivate online sales team, the construction of agricultural big data platform to provide production and marketing, cold storage, logistics distribution

and other accurate information. We will build traditional e-commerce, live streaming e-commerce, community e-commerce platforms and e- commerce enterprise alliances to work together to enhance the brand. Hold a series of "e-commerce + tourism" activities, open community group buying, and build a convenient channel from the field to the table. Give full play to the role of leading enterprises as the main force, build a comprehensive service platform integrating purchasing, experience and exhibition and sales, and build a stable and efficient revenue connection mechanism and industrial system through the three platforms of offline exhibition and sales, online trading and warehousing and logistics.

Second, make a plan of projects related to long-term development. According to the central, no. 1 file about "start agricultural products storage preservation cold chain logistics facilities construction project" requirements, to implement the cold chain logistics park, sheep breeding base, industrial integration park project, increase the Internet of things, big data, chain blocks, artificial intelligence and other modern information technology application in the field of agriculture, efforts to improve the level of cold chain distribution, swallow agricultural products sales.

Third, strengthen cooperation and do a great job in asset integration. In line with the principle of "complementary advantages, compliance with the law, equality and mutual benefit, and long-term cooperation", we will carry out all-round cooperation with high- quality enterprises.

Section 3
Marketing Analysis

2.3 Analysis of Apple's deep-processing products industry and product market

2.3.1 Apple deep processing industry and product market overview

Nowadays, both apple production power and apple processing products of the world have occupied a large proportion. Although China's apple production is significant, it mainly consist of fresh food, and the deep processing is still small. Therefore, under the current situation, the conditional regions, or units through the development of Apple deep processing, the deep development of apple multiple utilization has become the potential development power of the Apple market. At present, many enterprises have been committed to the development of high-value-added products, such as apple polyphenols and pectin products. Phenolic compounds in apples have antibacterial, anti-tumorous, reduce the risk of cardiovascular distend ase, reduce plasma cholesterol and other biological activities, which greatly improve the nutritional value of apple turbid juice. The presence of phenolic compounds also has a certain impact on the taste, browning and system stability of the turbid juice. Apple polyphenols can inhibit angiotensin-transferase (ACE), prevent vasoconstriction and blood pressure to rise, and are an effective substance to prevent hypertension. Apple pectin is considered a high-level prebiotic because it stimulates the growth and activity of beneficial bacteria. In addition, it may help inhibit the growth of harmful bacteria (e. g. clostridia and Bacteroides) in the digestive tract. Apple pectin as a thickener is widely used in the production of dairy products, but also as a gelling agent and in jam, jelly, a mixture in fruit juice drinks and a stabilizer in various food processing. In the process of apple processing, the apple is firstly processed into and fruit juice remaining of apple residue is used to process apple pectin, research shows that apple residue is the waste in the process of fruit juice production, accounting for about 20% ~ 25% of the processing amount, dry apple residue contains 15% ~ 18% of pectin. How to efively use the pectin and polyphenols in apple postpartum waste has become a

key issue in the high value industry of apple.

2.3.2 Apple deep processing industry and product market development trend

China's apple industry is developing rapid due to the large amount of fresh fruit listed every year. And the time is concentrated, it is very easy due to the temporary unsalable backlog caused by rot. Therefore, vigorou developing fruit deep processing, the promotion of deep processing of new technology and new achievements, not only alleviating to alleviate the contradiction between production and that arketing appeared some places, but also can improve the added value of fruit, to fulfil the needs of people in diffeApple'slevels. Apple deep processing industry occupies a very important position in the whole fruit industry, involving the coordinated development of industry and agriculture commerce and interest distribution, social stability, economiand c development, the solution of "agriculture has a huge role". Therefore, the relevant departments should be based on the high-value of industry and focus on the real consumption situation and future economic development prospects and residents' consumption trend change, guide the consumer actively of apple polyphenols, pectin and other processing products of domestic consumption, apple polyphenols, pectin to create well-known brands and advantage enterprises, improve the domestic apple processing products market share, vigorously support the healthy development of apple deep processing industry.

2.4 Analysis of Apple's high-value product industry and market

2.4.1 Apple's high-value product industry market profile

Apple's high-value products mainly include additives, snack food and daily chemical products. As a food additive apples can significantly improve the taste and sweetness of the food itself, and effectively improve the taste competitiveness of the products in the market. Apple crisper is now the most convenient snack substitute in the market and can also be seen as the best food for meal replacement from certain aspects. It is an emerging food that meets the requirements of international modern food health and nutrition of food and

retains the internacolouror, taste and value the of apple itself to the maximum extent. By the development of the economy, it has been widely accepted abroad, the ordinary western food catering food, which is quite popular among western countries, and slowly according to the production process of apple chips, the production of many baby special food. Now, the sales of China, inside and fruit and vegetable chips also far exceed the sales of potato chips.

In daily chemical products, apple polyphenols are often used in natural skin care products because of its ability.

2.4.2 Apple's high-value product industry market development trend

With the improvement of Chinese residents 'cognition of apple nutritional value, the change of customer' consumption concept, the acceleration of urbanization process, and the growth of income, it can be seen that China's apple demand market has a large space for growth in a certain period. To promote marketable quality, optimize the structure of early, middle, and late ripening varieties, form a fresh apple consumer market with early, middle, and late ripening, moderately reduce the planting area of Fuji apples, increase the proportion of other new varieties or characteristic varieties, develop special processing varieties, form the processing to consumer market, stimulate consumer demand, and increase the average apple consumption level of Chinese residents.

Section 5
ECONOMICS OF THE BUSINESS

5.1 Identification and assessment of risk factors

Risk analysis includes a series of risk management steps throughout the whole project implementation process, the details including risk identification, risk estimation, risk management strategy, risk settlement, and risk supervision. Risk analysis of the whole process of the project construction and production operation is mainly from the market risk, quality risk, timely delivery risk, price risk, brand operation risk, research and development risk, cost control risk, competition risk, policy risk, etc. The first chapter of section 1.6 of this report has analyzed the market risk of the project.

5.1.1 Quality risk

In the processing process of products, improper selection of process conditions, improper personnel operation, and improper environmental control may lead to quality problems in the product production phase. To ensure the quality of products, first of all, from the production route control, to ensure that the factory has the ability and conditions to produce qualified products. Secondly, before the product delivery, inspection, to further ensure the product quality. Some special products, such as products questioned by customers, can be sent to third-party testing institutions or for the help of the quality control department of SGS company. At the same time, we should do a great job of raw material acceptance work, to provide guarantee to produce reliable products.

5.1.2 Cost control risk

In the process of project construction, the procurement of production equipment, procurement of office equipment, personnel employment, procurement of raw materials, packaging materials, later equipment maintenance, data management and etc will produce a series of costs. How to control the cost is a major problem faced by the company. Make the cost budget in the preliminary construction process of the project, so that each expenditure is within the budget scope. For some useless

and outdated information, clean up in time as soon as possible, so as not to produce more costs. After the completion of the project construction, formulate the production management control, so that each production line and each batch of samples have a clear cost control process. Setting up a procurement department, each batch of material procurement registration in detail, do a good job of inventory statistics, so as not to avoid repeated procurement, waste resources, but also save labor costs.

5.1.3 Risk of delivery on schedule

There is a certain time limit from the customer's order to the delivery of the product. To complete the delivery work within the deadline, we need to manage the delivery risk on schedule. Immediately and effectively identify risk factors, good prevention, reasonably avoid and properly handle the company's internal delivery risks and promote the continuous improvement of the company's operation and management level. First, we should do a good job in inventory management, including raw material inventory and product inventory, and then we should do a good job in processing into alternatives and processing into delivery control. Ensure the smooth logistics operation, formulate the crisis public relations management plan.

5.1.4 Price risk

The price of products is unstable. It will be influenced by a variety of factors, to reduce the impact of market price changes on enterprises, a market price prediction mechanism is established in order to timely predict the market trend. To formulate the annual sales contract, annual processing, and raw material supply control strategies, control the distribution of annual contracts and short-term contracts, so as to maximize the profits and stabilize the supply.

5.1.5 Brand operation risk

In the development stage of the company, the brand is gradually built by us, so that the majority of consumers can understand, accept and recognize the company's products. In the process of brand operation, whether the subjective or objective factors are not grasped in place, risk events will occur, resulting in the

loss of brand assets. When the company appears improper brand management behavior, it will lead to brand image disaster. Product quality defects are the most likely to cause quality accidents, and even brand crisis. In the process of production and sales, encounter product quality problems, analyze the reasons as soon as possible, whether it is under the influence of raw and auxiliary materials from suppliers; whether consumers do not understand the use of products, find a solution to the problem, timely solve for customers, maintain the brand image. When signing a brand agency contract, pay attention to the control of potential risks is essential. In marketing, quality is the key to control the product brand. In the qualification, certification, laws, and
regulations, control the brand image. In the signing of trade terms with customers, always maintain the brand image.

5.1.6 Research and development risks

Product's research and development for the company is an important content to promote the development of survival in the market. If Product research and development management is not allowed, which will lead to a waste of capital, time, personnel, or the product is finally put into the market, cannot meet the consumer needs and may eventually lead to the bankruptcy of the enterprise. Therefore, before product development, conduct in-depth market demand analysis to determine the technical feasibility and future technical support; during product development, make reasonable R & D progress and cost investment plan, and make the R & D progress and fund investment within a controllable range.

5.1.7 Competition risk

In the intense market competition, the basic motivation and goal of competition is to maximize the income. There are many uncertain factors in the competition. Although every competitor expects to achieve its expected interests, it cannot all accomplished, and some competitors will inevitably lose in the competition. To avoid failure in the competition, a competitive risk analysis should be performed. The risks faced in the competition mainly include social risks and management risks. In the process of project construction, do a good job in safety management

and anti-theft work to reduce the occurrence of social risks. In the process of management, it is inevitable to encounter competition, to do a good job of competitive scheme design, magnify their own advantages, weaken the shortcomings, so that their own invincible position.

5.1.8 Policy risks

Policy risk refers to the risk caused by market price fluctuations due to changes in national macro policies, such as monetary policies, fiscal policies, industrial policies, regional development policies, etc. First, we should improve the understanding of policy risks, and secondly, we should make predictions and decisions on policy risks. Analysis potential policy risk factors and adopt scientific risk analysis methods to avoid or reduce unnecessary losses.

By comparing the above risk factors, it can be found that market risk still be the main risk of the project, with the greatest impact on the project. Quality and cost risk are secondary risk factors, which have a certain impact on the project, while other factors have little impact on the project.

5.2 Prevent and reduce risk countermeasures

According to the main potential risk factors of the project, the project unit shall take certain preventive measures.

(1) After the implementation of this project, the enterprise management should be strengthened and improve the market competitiveness of products with better cost performance and adaptability. At the same time, strengthen the contact with more dealers, broaden the product sales channels, and strive to improve the market share of the domestic and foreign products of the enterprise, so that the enterprise in the fierce market competition is invincible.

(2) During the implementation process and after the production, it should be carefully designed and constructed, strengthen the pre-job technical training of the employees. Those who fail to meet the standards shall not take up the post. In the production process, through strict operation policies, to establish a perfect

enterprise quality management system, strict quality control and quality inspection, to ensure the product quality to prevent and reduce the quality risk of the project.

Section 6

Marketing Plan

6.1 Strategic basis

(1) The company is in Yan'an, a prefecture-level city with the largest apple planting area in China, with rich apple resources and excellent fruit quality, which is one of the important preconditions for the implementation of the strategy.

(2) The company is invested in and established by the Yan'an municipal government. In order toTo achieve rural revitalization, seek high-quality industrial development, to establish a smooth sales channel and market network.

(3) The project has been supported by the Education Western Fruit Resources High-value Utilization Engineering Center with advanced continuous non-thermal sterilization, biological juice production and other technical means, rich apple variety resources and fruit fermentation fungus library, and has an experienced technology and research and development team.

(4) The company has started the construction of the first phase of the project, which has laid a good foundation for the subsequent construction.

6.2 Strategic envision and implementation

(1) Introduce strategic investors or financial investors to enrich the material basis of the company's development.

(2) Closely around the "technology" and "market" these two key business points to do a good job of management, and targeted investment of resources, the market is the guidance, and technology is the support.

(3) According to the capabilities of the company, timely develop or acquire new products with great potential to improve and expand the company's product capabilities.

6.3 Product Strategy Selection

According to the characteristics of the product market and our advantages, we will

mainly implement the following product competition strategy:

(1) Constantly improve the price and technology of high value-added products, monitoring costs.

(2) Strict product quality inspection, to control the quality control.

6.4 Marketing Planning

6.4.1 Channel is the king

Channel is the key to the success of the company's market. The company will continue to supplement, improve, and develop appropriate channels based on the development stage of the company.

(1) Both Juice and fruit wine products will be mainly sold in China, by contrast, pectin and polyphenols products will appropriately expand foreign sales channels.

(2) Through the traditional sales model and taking large and medium-sized supermarkets as the largest target customers.

(3) Cooperate with large catering chain companies to seek fresh squeezed and functional fashion products.

(4) Cooperate with agents to expand various sales channels and expand the sales network.

(5) Actively develop the brand strategy, take the geographical advantages of Yan'an as the breakthrough point, and focus on the old base area and the red concept.

The company plans to expand into a variety of sales channels within three years to cover all major biodiesel demand regions.

6.4.2 Implement efficient publicity

Actively strive for approved projects in the state, to win policy support, and based on the fruit economy and rural economy characteristics, with the help of television stations, radio stations, and industry print media for regular or irregular publicity.

Cooperate with agents to drive market sales and promotion in the surrounding areas.

6.4.3 Make full use of low-cost Internet marketing means

Internet marketing has become one of the mainstream marketing methods. The company will establish excellent website content based on the network publicity further do the following things:

(1) Publicity and marketing in short video live delivery platforms such as TikTok, Kuaishou, video number and Bilibili

(2) Promote real-name names and keywords on Baidu, Weibo, Tencent and another search or portal websites.

(3) Establish online live broadcast sales, direct sale stores, and exclusive stores on Pinduoduo, Alibaba and other national enterprises and product online marketing platforms to realize online marketing.

6.4.4 price strategy

Makes full use of apple resources, with low production cost, less equipment investment, high nutritional value. Therefore, adopt a competitive price strategy, the lower price, and foreign similar products to form a competitive advantage. Price strategy is a feasible and very effective competitive strategy for most consumers.

Section 7
Design and Development Plan

7.1 Analysis of apple juice industry and product market

7.1.1 Apple juice industry and product market overview

China's apple juice industry is the export-oriented industry. Almost all the concentrated apple juice is used for export. The driving force of China's apple juice industry is mainly derived from the international market demand, especially in the United States, Japan, Russia, and the European Union. In recent years, the dependence of export trade has reached more than 90%, and about half of them are sold to the United States, so the fluctuations in the international market strongly affect China's apple juice industry. Apple juice has become one of the most important export agricultural products in China. China's apple juice production and export volume has grown rapidly, and it has become the largest apple juice producer and exporter in the international market. Apple juice industry is not only a natural resource-based industry but also a typical labor-intensive and capital-intensive industry. Although the development of China's apple juice industry and apple juice export are cyclical and volatile, it generally shows obvious comparative advantages. Apple juice is mainly divided into NFC juice and sparkling juice. According to the European Juice Association (European Fruit Juice Association, AIJN), the NFC juice market share in the developed European countries has grown steadily in recent years, up 4.4% in 2016 and 5.4% in 2017. In China, although the fruit juice and juice beverage industry is developing rapidly, in 2016 China fruit juice output has reached 24.049 million tons, the retail sales of 100.914 billion yuan, but the NFC juice market is still in the primary stage, as early as 1995 NFC technology has occupied 37% of the North American juice market share, in Japan, apple juice consumption in more than 700% of fruit juice industry sales per capita consumption more than 2.5 liters; in the United States, the per capita consumption of fruit juice has reached 10 liters. Looking back at China, apple juice has only been introduced into China in recent years. In the current domestic market, apple juice consumption only accounts for

100% of the fruit juice consumption

structure, far lower than 98% of the market share, has not yet formed a large-scale development, the market potential is huge. In the 100% juice consumption structure of the United States, apple juice consumption accounts for 60% of 100% of 100% juice, which has become the mainstream drink in the market, and still maintains rapid growth every year. The domestic consumption of apple juice only accounts for 2% of the 100% juice consumption structure, much lower than the 60% of the United States. In addition, the annual per capita consumption of apple juice is 4L, and Japan is 2.5L, while the domestic per capita consumption is only 0.01 L. It is predicted that the market size of apple juice will reach 12 billion yuan by 2020. As the largest processing and exporter of apple juice, the development of apple juice has great development prospects and important practical significance.

7.1.2Apple juice industry and product market development trend

Chinese apple juice production for exports. 95% of the apple juice industry development depends on the export market the status is impossible to change in the short term, and the main export market in the United States, Japan, and the European Union, Russia's trade policy is unstable, bilateral trade friction and political disputes intensified the trade policy changes, Chinese apple juice exports need to focuses on the importance of trade policy changes, and a certain export policy changes on the impact of the international apple juice trade market. The export of apple juice needs to develop differentiated export strategies for suitable markets. The export strategy of apple juice in the next few years is the United States is still the first target market, maintain the price advantage, and actively expand the market share. The recovery of the Japanese market and the EU market is seriously affected by trade policies. It is necessary to formulate apple juice production standards according to the inspection and quarantine standards of the Japanese and EU markets and the animal and plant hygiene characteristics (SPS characteristics) and establish a production base of "special fruit for processing" to improve the international competitiveness of apple juice. In addition, grasp the competition of apple juice supply status, other apple juice exporters supply to Chinese apple juice

alternatively influence growing, in recent years, South Africa, Moldova, Turkey apple juice international competitiveness to Chinese apple juice export market,

Chinese apple juice to international market apple juice supply and demand structure, supply and demand fluctuations, to predict its ability to guide the domestic apple juice production and structure adjustment, targeted.

7.2 Cider industry and product market analysis

7.2.1 Apple deep processing industry and product market overview

Cider is an alcoholic beverage fermented from all or part of apple juice, can be divided into ice wine, cider, and brandy. Cider is a low-alcohol fermented fruit wine produced by apple or apple juice. It is the second largest fruit wine in the world after wine. It has high nutritional composition and health value and has attracted people's attention and love. The concept of ice cider comes from ice wine. It sticks the naturally ripe apples to frost, picked in low temperature environment, crushed with ice, and pressed with concentrated apple juice, and brewed in low temperature environment.

Because the production of ice cider has strict requirements on the maturity period of apples and the climate conditions of origin, the only Quebec region in Canada in the world. Apple cultivation in Liaoning province, Fushun area in recent years developed a large area of "cold" apple, the apple varieties have cold, mature late, the characteristics of long time, combined with the local Fushun cold winter climate conditions, fully conform to the requirements of ice cider to raw materials, using Fushun area "cold" apple brewing ice cider can solve the problem of fresh food surplus, and can fill the gap of domestic ice cider production of brandy is one of the world's six distilled wine, is the fruit after fermentation fruit wine, after distillation and aged fruit distilled wine. The earliest brandy is used by grape brewing distillation to get alcohol, and then aged through oak barrels and stored wine, also known as grape brandy. Now the brandy generally refers to all the wine made from fermented and distilled fruit, and the finished product should be attached to the name of the brandy, such as apple brandy, pear brandy, sea-buckthorn brandy and so on, etc.

Many countries in the world produce brandy, which is best known for that made in France. China's brandy market is almost all grape brandy and other fruits of brandy species is very few. Accelerate the development of China's brandy industry, make full use of China's rich fruit resources, through technical improvement, process improvement, formula exploration, to improve the output and quality of brandy, solve the low utilization rate of fruit processing, brandy industry is conducive to the development of China's food processing industry. The prospect of using apple as raw material to brew brandy is very broad, and it is of great significance to make full use of Chinese apple resources and effectively improve the level of fruit deep processing technology.

7.2.2 Apple fruit wine industry and product market development trend

Apple is one of the main fruits in our country, with the apple planting area and production, rapid expansion, apple will produce greater than sales, oversupply, marketing difficulty, supply subject will be competitive, fruit unsalable and industrial volatility risk, many fresh fruits in the case of selling easily due to unsalable backlog rot, must rely on deep processing to digest. Vigorously develop the deep processing of apples and promote the new technology and new achievements of cider deep processing are not only conducive to alleviate the local production and marketing contradictions, but also can improve the added value of fruits and meet the needs of people at different levels. The national "12th Five-Year" Development Plan of the Food Industry makes it clear that the fermentation and brewing industry should strive to increase the proportion of non-grain raw materials and reduce the consumption of corn and other grain raw materials. By 2015, the proportion of non-grain raw materials (grapes and other fruits) had more than doubled. The national "13th Five-Year" Development Plan of the Food Industry " emphasizes the continued adjustment of production capacity structure, the proportion of bulk fermentation products decreased, the proportion of high value-added fermentation products increased, and the number of new products derived from fermentation products increased. Products tend to be diversified, small varieties, high added value, moderate scale, benefit maximization,

extended from the existing traditional products to derivative products development, product forms can be customized according to the characteristics of users, to meet the market demand, modern society green, nutritious food concept gradually deeply rooted in the people.

Therefore, the prospect of using apples and other non-grain fruit raw materials to brew wine is very broad, which is of great significance to alleviate the food crisis, make full use of apples and other resources, and effectively improve the level of fruit deep processing technology.

7.3 Analysis of Apple's deep-processing products industry and product market

7.3.1 Apple deep processing industry and product market overview

At present, the world's apple production power and apple processing products all occupy a large proportion. Although China's apple production is huge, it is mainly fresh food, and the deep processing amount is very small. Therefore, under the current situation, the conditional regions, or units through the development of Apple deep processing, the deep development of apple multiple utilization has become the potential development power of the Apple market. At present, many enterprises have been committed to the development of high value-added products, such as apple polyphenols and pectin products. Phenolic compounds in apples have antibacterial, anti-tumor, reduce the risk of cardiovascular disease, reduce plasma cholesterol and other biological activities, which greatly improve the nutritional value of apple turbid juice. The presence of phenolic compounds also has a certain impact on the taste, browning and system stability of the turbid juice. Apple polyphenols can inhibit angiotensin- transferase (ACE), prevent vasoconstriction and blood pressure to rise, and are an effective substance to prevent hypertension. Apple pectin is considered a high-level prebiotic because it stimulates the growth and activity of beneficial bacteria. In addition, it may help inhibit the growth of harmful bacteria (e. g. clostridia and Bacteroides) in the digestive tract. Apple pectin as a thickener is widely used in the production of dairy products, but also as a gelling agent in jam, jelly, a mixture in fruit juice drinks and a

stabilizer in various food processing. In the process of apple processing, the apple is first processed into fruit juice, the remaining apple residue is used to process apple pectin, research shows that apple residue is the waste in the process of fruit juice production, accounting for about 20% ~ 25% of the processing amount, dry apple residue contains 15% ~ 18% of pectin. How to effectively use the pectin and polyphenols in apple postpartum waste has become a key issue in the high-value industrialization of apple.

7.3.2 Apple deep processing industry and product market development trend

China’s apple industry is rapidly developing because the large amount of fresh fruit listed every year. And the time is concentrated, it is very easy due to temporary unsalable backlog caused by rot. Therefore, the promotion of deep processing of new technology and new achievements not only conducive to alleviate the contradiction between production and marketing appeared in some places but also can improve the added value of fruit. Apple deep processing industry occupies a very important position in the whole fruit industry in order to meet the needs of people at different levels. which involving the coordinated development of industry and agriculture commerce and interest distribution, social stability, economic development, the solution of "agriculture has a huge role". Therefore, the relevant departments should be based on the stable development of apple high value industry and focus on the real consumption situation and future economic development prospects and residents consumption trend change, guide the consumer actively of apple polyphenols, pectin and other processing products of domestic consumption, apple polyphenols, pectin to create well-known brands and advantage enterprises, improve the domestic apple processing products market share, vigorously support the healthy development of apple deep processing industry.

7.4 Analysis of Apple's high-value product industry and product market

7.4.1 Apple's high-value product industry market profile

Apple's high-value products mainly include additives, snack food and daily

chemical products. As a food additive, apples can improve the taste and sweetness of the food itself, and effectively improve the taste competitiveness of the products in the market. Apple crisper is now the most convenient snack substitute on the market and can also be said to be the best food for meal replacement from certain aspects. It is an emerging food that meets the requirements of international modern food health and nutrition of food and retains the internal colour, taste and value of the apple itself to the maximum extent. With the continuous development of the economy, it has been widely eaten abroad, as the usual western food catering food, which is quite popular among westerners, and slowly according to the production process of apple chips, the production of many babies special food. Now, the sales of China, inside and fruit and vegetable chips also far exceed the sales of potato chips. In daily chemical products, apple polyphenols are often used in natural skin care products because of their antioxidant ability.

7.4.2 Apple's high-value product industry market development trend

With the improvement of Chinese residents 'cognition of apple nutritional value, the changing in residents' consumption concept, the acceleration of the urbanization process and the growth of income, it is expected that China's apple demand market has a large space for growth in a certain period. To promote marketable quality and optimize the structure of early, middle, and late ripening varieties, form a fresh apple consumer market with early, middle, and late ripening, moderately reduce the planting area of Fuji apples, increase the proportion of other new varieties or characteristic varieties, develop special processing varieties, form the processing and consumption market, stimulate consumer demand, and increase the average apple consumption level of Chinese residents.

Section 8

Production and Operation Plan

8.1 Product plan

This project can achieve the annual processing of 200,000 tons of apples, mainly using low-temperature cold chain processing technology to produce sparkling apple clear juice, NFC apple fermented juice, apple cider, apple ice wine, leisure function food, food-grade apple pectin and apple polyphenols, etc. The product structure is shown in Figure 3-1, and the production capacity of each product is shown in Table.

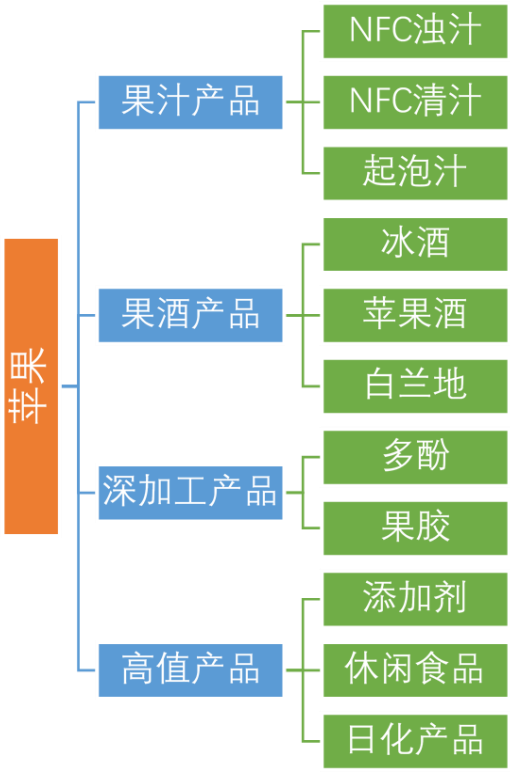

Figure 8-1 Structure diagram of Apple's fully processed products

Table 3-1, Product production capacity

name	Juice products			Fruit wine products		highly processed products		high-value product		
	Bubble juice	NFC Clear juice	NFC Turky juice	Icewine	brandy	pectin	Apple polyphenols	Fruit residue fermentation products	Daily chemical products	Leisure functional food
annual output	8000	50000	50000	2000	2000	2000	50	1000	10000	2000

8.2 Products

8.2.1 NFC Apple Juice

NFC fruit juice, translated into Chinese as "fruit juice reduced from unconcentrated juice", NFC fruit juice is directly packaged and sold after crushing and sterilization. Compared with fruit juice made with concentrated juice, it has rich nutrition and high taste and flavor quality. The NFC juice was divided into NFC turbidity juice and NFC fermentation juice based on whether the clarification agent or PF case was clarified in its production. The processing process of NFC apple juice mainly includes raw material selection and treatment, crushing and pressing and juice extraction, enzymatic clarification and separation, adjustment of sugar acidity, sterilization, and filling, etc.

The specific process flow is shown in Figure 3-2.

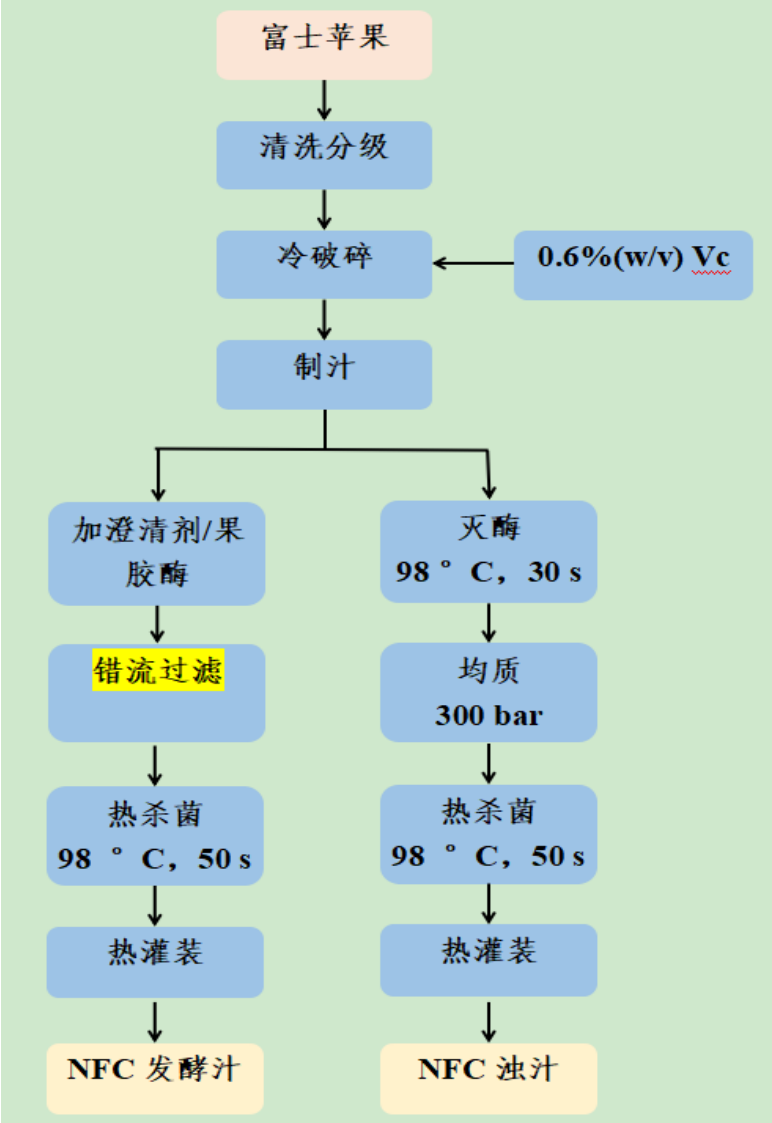

Figure 8-1 NFC Fruit Juice production process

8.2.2 Apple bubble juice

The booming apple juice processing process is to add a small amount of carbon dioxide based on the NFC fruit juice processing process, to make a healthy drink with the flavor of carbonated drinks. Statically charge a certain amount of carbon dioxide before filling, canning, sealing, sterilization of the product to meet the requirements. Bulking apple juice has both the refreshing cider and the nutrition and taste of apple juice.

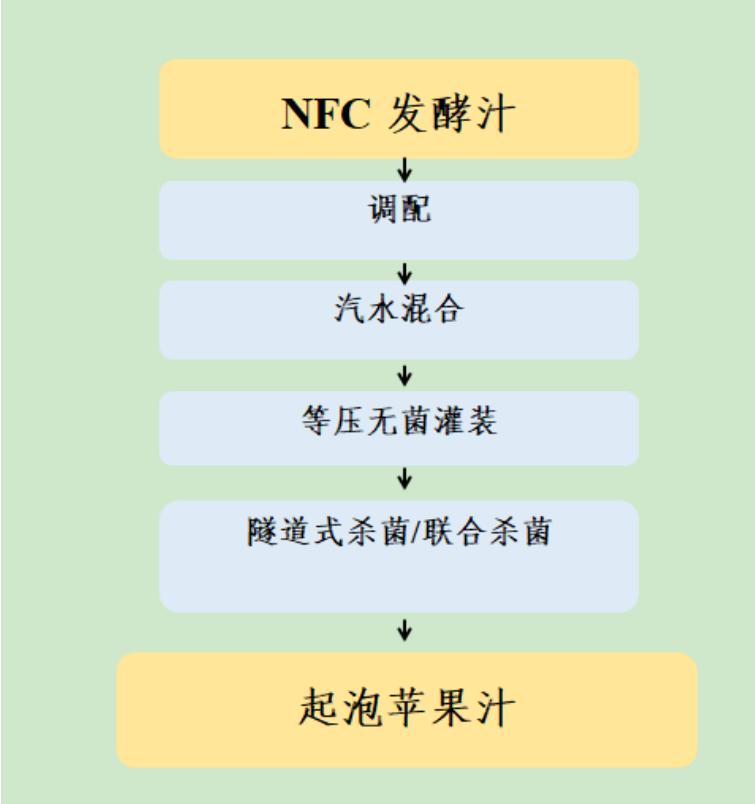

Figure 8-2 sparkling apple juice production process

8.2.3 The cider

Cider is an alcoholic beverage made from fermentation of pure fruit juice. Cider is low in alcohol, from 2% -8.5%.

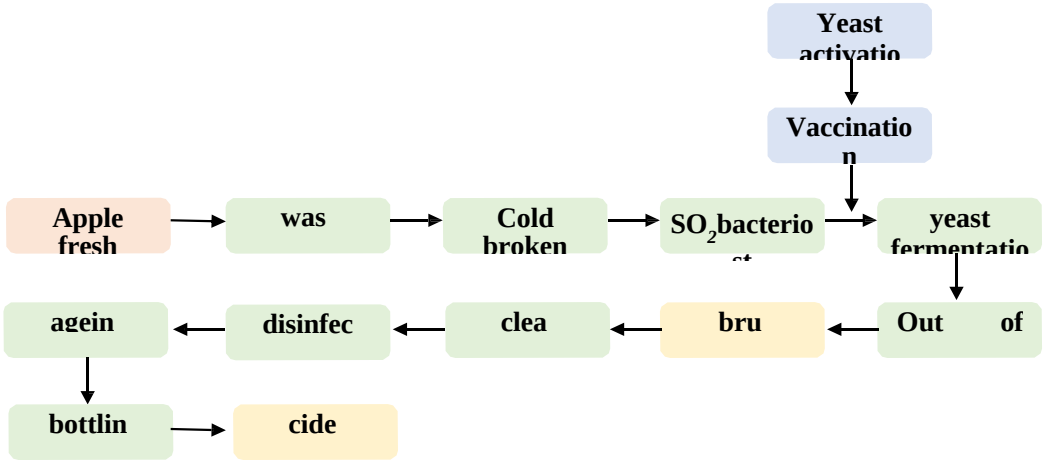

Figure 3-3 Production Process of Cider

Apple ice wine

Apple ice wine is a kind of fruit wine produced based on the traditional ice wine brewing process and combining the characteristics of apple ice wine and fruit. Canada, the largest producer of ice wine in the world, defines apple ice wine as a high sugar content of apple concentrated juice, resulting in a residual sugar content of more than 130 g · L^{-1}, Alcohol between 7% and 11% V o l. Apple ice wine is bright in colour, fragrant and mellow, with high nutritional components and health care functions, it contains a variety of vitamins and amino acids, can play a nourishing, sterilization, help digestion, prevention and treatment of cardiovascular diseases and other roles.

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Brandy

Apple brandy was created by the distillation of the cider, fermenting the apples to continue their distillation, producing strong, clear cider drinks.

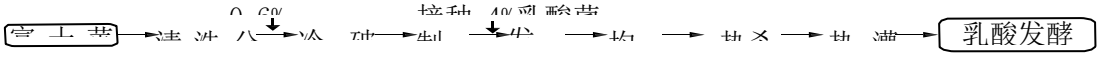

Figure 8-5 Production process of brandy

Polyphenolic

Apple polyphenols are the general term for the polyphenols contained in apples.

Crude apple polyphenols contain chlorogenic acid, catechin, epicatechin, apple condensation dine, rhizoxin, root skin, anthocyanins and so on. Apple condensation tannin accounted for about half of the total polyphenol content.

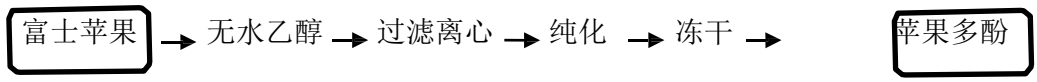

Figure 8-6 Production process of apple polyphenols

8.2.4 Pectin

Pectin is a natural acidic polysaccharide substance, mainly found in the cell wall and intracellular layers of higher plants, with the role of adhesive cells. Natural pectin is composed of a smooth region composed of a-D- (1-4) -galacturonic acid repeat fragments and a-D- (1-4) and a-L- (1-2) -rhamnose with large neutral sugar side chains. Pectin has good thickening, stability, gel, adsorption and film-forming characteristics, so it can be used as a high-grade natural food additive and health care products, widely used in food, pharmaceutical and health care products and daily chemical industries.

Apple pectin is the second largest source of commercial pectin after citrus pectin, which has reduced blood lipid and cleared the radioactive elements in the body, is anti-obesity and has a certain anti-tumour effect.

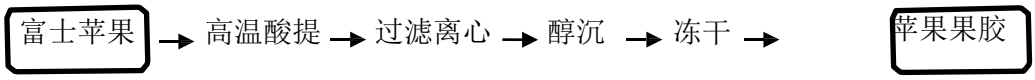

Figure 3-7 Production process of Apple pectin

8.2.5 High-value products

(1) Casual food

Apple crisp is in the vacuum state or negative pressure state, through the gas fryer expansion method, the apple water evaporation, shape and colour do not change, to get about 5% of the water-containing products. It is pigment-free, preservative-free, fibre rich, and all-natural snack food.

Dried fruit is a raw material after sugar stains and then dried, the surface of the finished product is not sticky, not dry, has a sense of transparency, and has no frosting precipitation. Dried fruit preserves are rich in nutrition, contain a lot of glucose, and fructose, easy to be absorbed and used by the human body.

(2) Daily chemical products

Daily chemical products mainly refer to the apple polyphenols, and apple pectin as the functional ingredients, after the formula screening, in line with the efficiency of green anti-corrosion washing and care products, cosmetics, etc.

8.3 Core technology

8.3.1 Patent

[1] Meng Yonghong, Han Wanyou, Guo Yurong, Deng Hong, Qiu Nongxue. A biological method for extracting natural pectin from pectin-containing plant residues, Patent No. ZL201610290019.3.

[2] Meng Yonghong, Zhao Huaguo, Wei Lina, Niu Yongjie, Yang Min. A method for extracting arbuxicin from Hodulis, Patent ZL201410221527.7.

[3] Wei Lina, Meng Yonghong, Guo Yurong, Qiu Nongxue, Deng Hong. Water-soluble root skin derivative and its preparation method, Patent No.: ZL201410133298.3.

[4] Meng Yonghong, Qiu Nongxue, Deng Hong, Niu Pengfei. Fruit and vegetable crushing separator, patent No.: ZL201320719778.9.

[5] Meng Yonghong, Qiu Nongxue, Guo Yurong, Deng Hong, Liu Yun, Niu Pengfei. An apple processing method based on pre-press separation, Patent Number: ZL201210114719.9.

[6] Deng Hong, Li Han, Guo Yurong, Meng Yonghong, Zhang Zhiyu, Qi Na, Shi Jing. A low-calorie Australian apple and Hayward kiwi fruit and its preparation method, Patent number: ZL201610429952.4.

[7] Guo Yurong, Xu Jie, Liu Lei, Deng Hong, Meng Yonghong. Pure natural apple young fruit compound oral liquid and its preparation method, Patent No.: ZL201410148146.0.

[8] Zhang Xiaorui, Guo Yurong, Ma Yu, Meng Yonghong, Deng Hong. FF1-2 and its screening method and application, Patent No.: ZL201410305038.X.

[9] Guo Yurong, Li Shuai, Deng Hong, Qiu Nongxue, Meng Yonghong. Apple whey soluble dietary fibre beverage and preparation method, Patent No.: ZL201310346718.1.

[10] Guo Yurong, Sun Lijun, Meng Yonghong, Zhang Juan, Fu Chengcheng. Method for continuous extraction of total polyphenols, chlorogenic acid and rhizoid from young apple fruit, patent No. ZL201210190650.8.

Key technologies

(1) Based on the characteristic flavour quality of apples in northern Shaanxi province, the combination of low-temperature cold crushing and pre-extraction separation technology is taken as the key technology for extracting apple juice and cider juice before fermentation.

(2) Bioenzymatic technology extracts the aromatic substances and functional components in apples, which ensures the green production of the product, the high juice rate, and ensures that theflavourr substances in apples greatly enter the fruit juice and has good sensory quality.

(3) Micro-controlled bubble mixing technology ensures that the production of sparkling apple juice and apple cider tastes like the naturally produced bubble characteristics, with delicate bubbles and a palatable taste.

(4) The tunnel spraying sterilization and root skin ultrasonic combined sterilization technology are adopted to realize the efficient sterilization of apple juice and apple cider.

(5) Apple pectin preparation based on the principle of Fenton reaction will apple fruit slag lignin damage, let cellulose, and cellulose fully exposed, and then use cellulase degradation of cellulose and hemicellulose, make water-soluble pectin fully released, and with plant starch, natural pigment, protein, and some salt separation, after purification, dry the product.

Section 9

Management Team and Company Structure

9.1 Equity structure

Company A is a sole proprietorship.

9.2 Organizational structure

According to the strategic positioning, business attributes and development needs, Company A comprehensively adopts the strategic, financial, and operational management and control mode, defines the management and control mode of each business segment, and establishes a streamlined and efficient group management and control system.

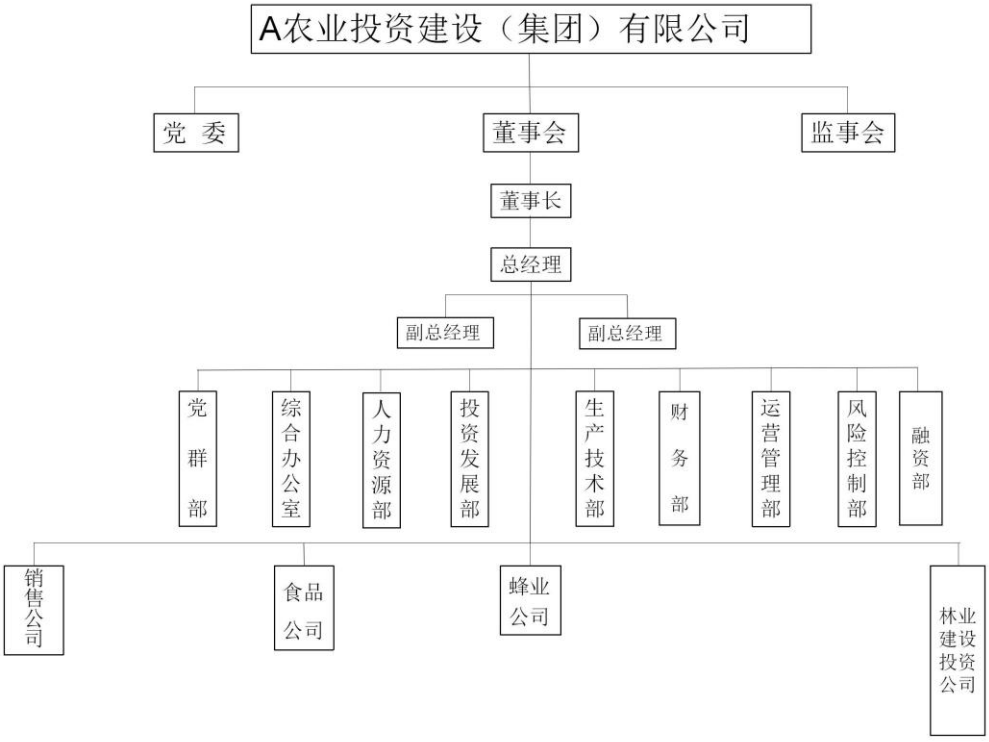

Figure 9-1 Organization diagram

9.3 Core management personnel and main engineering and technical personnel

Liu X, born in June 1970, is currently the chairman of the A company.

Chen X, born in December 1981, is currently the general manager of Company A.

9.4 Development strategic objectives of the company

Company A will adhere to draw strength from the "Yan'an Spirit" and cultivate the corporate culture of "culture as the source, integrity, development as the ambition, and agriculture as the industry", with agriculture, forestry, and animal husbandry as the main industry, and strive to build four sectors of production and processing, scientific and technological service, capital investment, and operation and sales. First, integrate and establish the fruit industry company, fertilizer industry company, bee industry company, animal husbandry company, modern facility agriculture company, cold chain logistics company, agricultural culture and creative company, modern agriculture research institute, smart agriculture company, and supply chain finance company.

Second, based on the management, operation, promotion and value-added of regional brands such as Yan 'an Apple, Luochuan Apple, Nanniwan vegetables, Yan' a Millet, Ansei pepper mutton, Yanchuan jujube and Huanglong walnut, we will incubate new famous, special, and excellent brands to realize the brand of Yan'an agricultural special and excellent products.

Third, with Yan ' a brand agriculture as the leading role, incubate and develop high-end markets and circulation channels, with agricultural supply chain finance as the help, promote the in-depth integrated development of primary, secondary and tertiary industries, and realize the value goal of the whole agricultural industry chain in Yan' an.

Fourth, to promote the consolidation of the agriculture, forestry and animal husbandry industry, adhere to the market-oriented, standardized guidance, brand call, and large-scale operation, to create Yan 'an agriculture-related capital investment and operation platform, the first supply platform for intensive

processing of agriculture, forestry and animal husbandry products, Yan' modern agriculture and the integration development of primary, primary, secondary and tertiary industries in Yan'an.

Section 10
Schedule

10.1 Overall Plan of project construction

The project covers an area of 72,304 square meters, with 24 structures, including the complex building, warehouse, R & D center, experience center, power and sewage treatment and other public works. In the first phase, the sparkling clear juice, cider workshop and utility works are built. In the second phase, the NFC turbidity juice line, apple ice wine, apple brandy line and pectin workshop; in the third phase, the NFC fermentation juice line, polyphenols workshop, fruit residue fermentation high-value products, R & D center and leisure function food display and experience center are built.

10.2 Project construction and implementation plan

Project construction plan

Project technical scheme

Apple's whole fruit utilization industry project adopts the proprietary technology of the western Fruit Resources High-value utilization Engineering Technology Center of the Ministry of Education. The core technology is internationally leading, using full low temperature processing technology and high-pressure pulse continuous non-thermal sterilization, completely prevent the product browning; intelligent processing, to realize less employment or unmanned control. The route is to use non-commercial fruit as raw material. After deep cleaning, the separation equipment is used to finely separate the fruit pulp, fruit seed and fruit skin; the fruit pulp is processed into NFC fruit juice and sparkling fruit juice, and the fruit peel is processed into pectin and apple polyphenols. The young apple fruit resources are fully considered in the process route, and the young apple fruit is extracted and processed into young apple fruit polyphenols. High-value application end products will take apple fruit polyphenols, apple pectin as the basic raw materials, to further develop preservatives, cosmetics, health food and other high-value products.

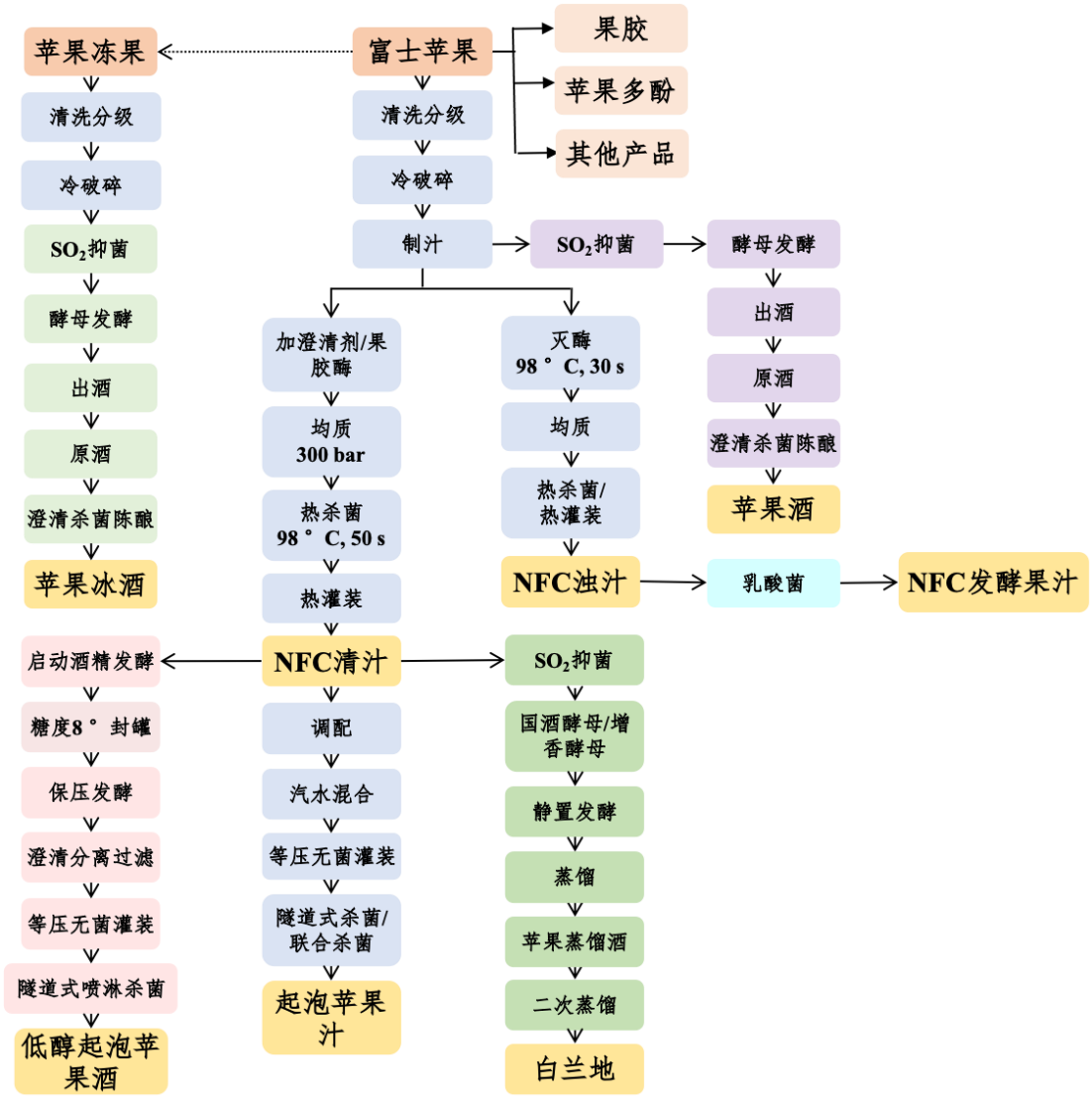

Figure 10-1 Apple's High-value Utilization technology route

Section 11

Financial Projections

This report defines the annual processing of 200,000 tons of apples and full nutrition processing supporting projects as the scope, and its economic benefits are calculated and evaluated.

11.1 Cost estimation

11.1.1 Cost estimation basis

(1) The calculation period of this project is 10 years, which include the first phase of the construction period 1 year and the production and operation period 10 years. The second phase starts in the second year, with a construction period of 1 year and a production and operation period of 10 years. The third year of the third phase began the construction, the production and operation period of 10 years.

(2) The production load of the first year is 20%, and the production load of the second year is 60%, the production load of the last year is 80%, and the remaining annual production load is 100%.

(3) Price of raw materials and auxiliary materials

The prices of the main raw materials and auxiliary materials in this report are calculated at the factory price, as shown in Table 11-1.

Table 11-1 Prices of raw and auxiliary materials

order number	name	unit	Price / yuan	remarks
1	apple	kg	3	
2	ascorbic acid	k g	30	
3	K2S2O5	k g	20	
4	gelatin	k g	37	
5	carbon dioxide	k g	15	
6	Bottle (750mL)	individual	0.8	
7	Rubber cap	individual	0.08	

8	tie plug	individual	zero point	
9	label	cover	zero point zero	
10	carton	individual	4.5	

(4) Fuel and power price (tax included)

Fuel power is estimated according to the design consumption index, and the price provided by Party A is:

Electricity is 0.65 Yuan / kw.h

Tap water is 3.63 Yuan / ton

Steam is 118.65 Yuan / ton

Heating and hot water is 6.97 yuan / month. Square meter

(5) Staffing, salary and surcharge

In this report, the total staff is 200 people, including 120 production workers, and the salary and welfare fee is 59,000 Yuan / person. Year.

(6) Manufacturing costs

Manufacturing costs include depreciation costs, repair costs, and other manufacturing costs.

Depreciation cost: calculated by the straight-line method, the residual value rate is 5% of the original value of the fixed assets, the depreciation life is 10 years, and the annual depreciation cost is 82.26 million yuan.

Repair fee: 3% of the original value of fixed assets, 48.38 million yuan per year.

(7) Other management fees

Other management fees: calculated at 5% of the sales revenue.

(8) Financial expenses

The financial expenses of the project are mainly the interest expenses, including the construction investment loan interest expenses and the working capital loan interest. The interest rate of construction period loan is 5%, and the interest rate of working capital loan is 6.5%.

(10) Sales expenses

Sales expenses: calculated at 5% of the sales revenue.

11.2.3 Cost analysis

It is estimated that the manufacturing cost of the production year is 1474059,700 yuan

/ a. Among them, the original and auxiliary materials are 102.7.25 million yuan

/ a; the steam, electricity, and water consumption are 21.14 million yuan / a;

and the employee salary and welfare are 11.91 million yuan / a.

11.3 Financial evaluation

11.3.1 Financial Analysis Basis

The Accounting System for Business Enterprises (Accounting [2000] No.25), the Accounting Standards for Business Enterprises.

11.3.2 Main data and parameters of financial analysis

(1) Determination of the product price

Due to the wide variety of chemical products in the international and domestic markets, the market price fluctuation is also very large. When determining the product price, we consider not only the actual situation of the current market, but also the product market price fluctuation in recent years and the possible trend in the future. The average price is calculated, as shown in Table 11-2.

Table 11-2 Product Prices

	order number	product	Production / ton	Unit price / ten thousand yuan · ton	remarks
tranche product	1	Bubble apple juice	8000	2	
	2	cider	2000	4	
the second phase product	3	NFC apple juice	50000	1.50	
	4	apple brandy	2000	10	
	5	apple pectin	1000	18	
	6	NFC apple clear juice	50000	1	
	7	Apple polyphenols	50	80	

The third phase product	8	Fruit residue fermentation products	1000	12	
	9	Daily chemical products	10000	1	
	10	Leisure function food (puffed food, meal replacement	2000	2	

(2) VAT

VAT: except for steam, desalinated water, hot water, and condensed water is 13%, the other raw materials and products are 17%.

(3) Sales tax and surcharge

Urban maintenance and construction tax: 7% of VAT.

Education surcharge: 3% of VAT.

(4) Income tax

The corporate income tax rate is 25%.

(5) Source of project repayment funds

The sources of project loan repayment funds are profit, depreciation, amortization of intangible assets and deferred assets.

(6) Financial benchmark return rate Financial benchmark yield rate: 13%.

11.3.4 Summary of major economic evaluation indicators

After calculating the above parameters and data in this report, the main economic evaluation indicators are summarized in Table11-3.

Table 11-3 Summary of major economic evaluation indicators

order number				
1	**Total project funds**	**Wan Yuan**	**140631.05**	USD in foreign currency
1.1	Construction investment investment in the fixed assets Construction period	Wan Yuan	101124.34	USD in foreign currency
		Wan Yuan	96651.20	
		Wan Yuan	4473.14	
1.2	floating capital	Wan Yuan	39506.71	
2	**Total funding source of the**	**Wan Yuan**	**140281.05**	
2.1	funds for construction funds in the hands of the localities Construction investment loan Including: bank loans	Wan Yuan	100774.34	
		Wan Yuan	24048.94	
		Wan Yuan	76725.40	
		Wan Yuan	76725.40	
2.2	floating capital	Wan Yuan	39506.71	

2.2.1	Its own working capital	Wan Yuan	15802.68	
		Wan		
2.2.2	short term bank loan	Yuan	23704.03	0.00
				Including us $8
	Annual operating	Wan		million in
3	income	Yuan	210945.71	foreign currency
	Annual annual business tax and	Wan		
4	surcharge	Yuan	2816.66	
		Wan		
5	Annual VAT	Yuan	25606.02	0.00
				Foreign currency
	Total average annual	Wan		including US
6	cost and expenses	Yuan	147405.97	$6.559 million
		Wan		
7	Total annual profit	Yuan	35117.06	
		Wan		
8	Annual income tax	Yuan	8779.27	
		Wan		
9	Annual after-tax profit	Yuan	26337.80	
		Wan		
10	Average annual EBIT	Yuan	40110.63	
	Annual profit before EBITDA and	Wan		
11	amortization	Yuan	48661.34	
12	Total investment yield	%	28.52	
	profit and tax investment			
13	ratio	%	45.18	
14	Capital net profit ratio	%	66.09	
	Project investment before the			
16	income tax index			
	capital pay-off time	year	6.94	Including the
	financial internal rate of			construction
	return	%	22.83	period of 3 year

	FNPV	Wan Yuan	91687.35	(ic=10%)
17	Project investment after the income tax index			Including the construction
	financial internal rate of return	%	18.23	
	FNPV	Wan Yuan	38106.12	(ic=12%)
18	Financial internal rate of return capital	%	65.58	
19	Financial net present value of capital	Wan Yuan	97671.05	

11.4 Conclusion of financial evaluation

From the " summary table of major economic indicators, the internal rate of return on all investment (after income tax) in the report was 22.83%, which is higher than the industry average benchmark value (13%). Under the leverage of borrowed funds, the internal report includes internal rate of return (after income tax) each 18.23%. The above financial analysis shows that the project has good market prospects, good economic benefits, and anti-risk ability.

11.5 Financing method to be adopted for the Project

11.5.1 Strategic investment mode

This project has advanced technology with independent intellectual property rights, strong replication and expansibility, which is suitable for venture capital intervention. The preliminary proposed cooperation methods are as follows:

(1) Company establishment: establish a secondary company with Company A or a tertiary company.

(2) Cooperation mode: the controlling party holds 51% of the shares, and the shareholding party holds 49%.

(3) Composition of management personnel: the holding party shall nominate the chairman and the chief financial officer; the shareholder shall nominate the general manager and the supervisor.

(4) Management mode: The joint venture company hire professional managers to conduct production and operation management.

11.5.2 Investment and exit plan

Plan 1: Investors directly transfer interests to a third party (existing shareholders have the priority right to transfer) to realize exit. Specific matters can be agreed upon by agreement.

Plan 2: After the company is listed, the investors can exit through the secondary market.

Plan 3: The investors shall dissolve the enterprise in advance through negotiation.

After liquidation, the net equity of the company shall be distributed according to the equity proportion of the interests agreed in the cooperation agreement, to realize the early exit.

References

Krückl, J. S., Moeller, J. Gaupp, R., Meier, C.E., & Huber, C. G. (2021). Implementing home office work at a large psychiatric university hospital in Switzerland during the covid-19 pandemic: field report. **JMIR Mental Health**, 8(9), e28849.

Li, C., Khantanapha, N., & Rattanapun, S. (2022). Express Parcel Packaging Waste Recycling Platform. **International Journal of Health Sciences**, **6**(S4), 1425–1433.

Li, J. (2020). Byte Dance launched "Lark" after the rise of online office. **Computer and Network.**

Zhou, X. F. (2021). **Big Data for Smart Communities**. Shanghai: Science and Technology Press.

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