



ZY LABORATORY EQUIPMENT ENGINEERING TECHNOLOGY

BY

LIN YUAN

AN INDEPENDENT STUDY SUBMITTED IN PARTIAL FULFILLMENT

OF THE REQUIREMENT FOR THE DEGREE OF MASTER OF

BUSINESS ADMINISTRATION (INTERNATIONAL PROGRAM)

SOUTHEAST ASIA UNIVERSITY

ACADEMIC YEAR 2022

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Abstract

ZY Laboratory Equipment Engineering Technology has gathered a group of senior professionals known as managers in the industry, with rich management experience and advanced business philosophy. The company is mainly engaged in, Laboratory furniture making, Pneumatic circuit design and installation, Fume hoods and ventilation systems, Consulting & Design. The financial budget is for the five-year planning period, with a capital investment of 5 million yuan. In terms of fixed costs, ZY Laboratory has a lot of R&D costs, base salary and office expenses and forecasts based on the company's 2020 data and development plan for the next four years.

Keywords: Beijing Best Friends, Laboratory Equipment Engineering

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Section 1

Executive Summary

With the state's support for the science and technology industry, all walks of life various levels of laboratory constantly established, laboratory established to laboratory equipment company industry great living space.

At present in China's laboratory industry development for the development of diversity, laboratory professional companies also appear mixed, probably the market appeared problems for: 1) there is the traditional sense of laboratory furniture companies, because the laboratory furniture industry is the first to appear in China, the current laboratory furniture companies in China size total company about 4,000, only dozens of formal manufacturers companies, its She mostly for the late The emergence of another has emerged in East China, Jiangsu and Zhejiang for OEM (OEM) based assembly manufacturers, the overall confusion of market prices, products and quality also appear to be more differentiated. 2). In addition to manufacturers and formal laboratory companies, the market has also appeared to sell and agent manufacturers of trading companies, such companies basically belong to the original laboratory industry out of the staff or sales operations. The products are also basically selected to correspond to the profits. In the general environment, it gives the formal laboratory construction company great room for development. How to integrate resources and contact excellent suppliers of various

types of laboratory instruments and equipment to give customers the most suitable laboratory for themselves, while achieving safety, environmental protection and energy saving has become the goal of the best friends.

This paper elaborates on the business honour achievements of Best Friends through nine chapters, including company profile and company history. From the analysis of national policies, laws, economy and market, it is clear that the overall trend of the whole laboratory construction industry is still on the rise despite the massive inflow of capital. In the industry as a whole, Best Friend has developed an influence that suits Best Friend in this industry based on market analysis and its own strengths and weaknesses. Of course, a good company cannot do without a proven management system. The operational plan and product design are also key to ensuring that the products launched by Best Friend meet the expected objectives of the market. When Best Friend is open to investors, financial projections can give a more direct indication of Best Friend's current and future growth prospects, how much profit it can bring to investors and how much risk it can take. The financial and feasibility is an initial investment of \$5 million with a five-year average annual profit of \$747.75 million from 2021-2025 and a return on investment of 15%.

Section 2

Company Description

2.1 Introduction of the company

Beijing Best Friends Laboratory Equipment Engineering Technology Co., Ltd. has been established since 2019, gathering a number of senior professionals in the industry called managers with rich management experience and advanced business philosophy. The company is a professional laboratory equipment engineering service provider engaged in the planning and design of all kinds of laboratories, engineering construction, equipment supply, system commissioning, as well as laboratory furniture manufacturing, laboratory intelligent construction, production and sales of laboratory instrument consumables.

2.2 Corporate Culture

Vision: Working together for mutual benefit to build a scientifically appropriate and developable laboratory

To gain a foothold in the market with professionalism and to win trust with quality

To meet the challenges with innovation, to embody enthusiasm with service.

To develop forever with integrity and enhance value with efficiency

2.3 Company History

Unit Member of SEFA, USA

3A credit rating of China Association of Small and Medium Enterprises, the

AAA credit rating, the

Five-star after-sales service certification

Awarded the third place in the "Innovation Cup" for BIM application in engineering construction (Shenzhen medical equipment project), Quality Management System ISO9001, ISO14001 and OHSMS18001.

2.4 Products and Services







2.5 Key partnerships

We have signed industry-university-research cooperation with several top domestic higher education institutions, including Sun Yat-sen University, Jinan University, Xi'an Jiaotong University, South China Normal University, South China University of Technology and Guangdong Association of Green and Assembly Development in Construction Engineering, to form a joint effort to promote development and make more contributions to a strong science and technology nation. Academic and research cooperation in professional and industrial directions: medicine, laboratory optical information science and technology, computer technology, software engineering, new materials, electrical, mechanical fabrication, structural mechanics, automation, communication engineering, advanced manufacturing, machinery manufacturing, mechatronics, etc.

The business of Best Friends has been developed according to market demand combined with existing work experience, and has become a professional company that integrates consultation, planning, design, production, assembly and agency in the laboratory construction equipment industry.

Section 3

Industry Analysis

3.1 Industry analysis: Laboratory industry in China's development history: Phase I: China's laboratory industry development by the U.S. Fishel company in 1999 or so led into the laboratory furniture (table cabinets) in China for the first time in the field of laboratory furniture concept. The peak of development for China's first version of the GMP standard premise, mainly has been the countertop for the concept of physical board, instead of the traditional sense of wooden tables and cement masonry countertop, the main selling point for the concept of physical board, physical board for the United States VIA solid core physical board and veneer physical board. Under the cabinet body or by the traditional wooden furniture company with traditional wood particle board or solid wood for the cabinet base material. The second stage: laboratory furniture in 2004 to ensure that the laboratory equipment load-bearing requirements, the first time to consider the structure of steel frame structure on the substrate of the lower cabinet, changed to steel and wood laboratory table, the material of the table surface also by the veneer of rationalized board gradually changed to solid-core rationalized board material, fume hood also by the original all-wood and steel wood system changed to steel material. The third stage: 2006-2008 laboratory furniture formally entered

the peak of development, laboratory furniture, the main direction of all steel cabinets, countertops also changed from the original single rationalized board countertops to a variety of types of countertops also developed in order to match the functional development of new laboratory materials, epoxy resin material, ceramic countertops, and rock plate type. National standards and international requirements such as SEFA certification and EN14175 certification have also emerged for overall laboratory furniture. Fume hoods also incorporate SGS certification systems. The overall laboratory furniture counter cabinets are in line with the global laboratory industry. Phase IV: 2018 to date, the rapid development of the laboratory industry, in addition to the original laboratory furniture and global laboratory standards, by the emergence of the overall industry from the initial design of the initial docking project design drawings with the design institute, to the pre-project docking design specifications based on a combination of the site conditions of the party to optimize the overall project design and budget situation. The overall project turnkey model has emerged. Laboratory construction concept also appears to environmental protection, safety, green energy saving, item management and intelligent all-in-one based on the new laboratory construction. Modern laboratories are entering the early stage of high-speed intelligent construction, new projects in universities and research institutes across the country are now basically considered by the turnkey mode of construction, has been separated from the traditional sense

of infrastructure engineering package engineering, equipment package equipment is not connected mode, at present, China's laboratories have all kinds of special industry exhibitions of up to 30 kinds each year, a variety of talks and seminars up to hundreds of seats, the experts attending all walks of life, the number of attendees Hundreds of thousands of participants. Every year, hundreds of thousands of patents are generated in various fields of the industry, and national standards are being issued according to the new participation of various industries with new specifications and standards.

3.1 Main factors driving the development of the industry

Political factors: The National "12th Five-Year Plan" points out that cultivating and developing strategic emerging industries is of great significance in promoting the upgrading of industrial structure and accelerating the transformation of the mode of economic development, and that breaking through a number of key common technologies supporting strategic emerging industries must be a priority task in science and technology development.

Social factors: The report of the 18th National Congress clearly puts forward the idea of accelerating the construction of a national innovation system and promoting the efficient allocation and comprehensive integration of innovation resources. In view of the current situation of international and domestic science and technology development, the construction of national laboratories is one of the important

measures to promote the construction of China's national innovation system.

Advanced Western countries have established national research bases in different forms. For example, the National Laboratory in the United States, the RIKEN and the Institute of Molecular Research in Japan, and the Max Planck Institute in Germany. These national research bases have made outstanding contributions to the development of science and technology in their own countries and internationally, and have a very high influence and status in the international science and technology field.

The Ministry of Science and Technology of China approved the establishment of five national laboratories on 25 November 2003, and over the past 11 years, the national laboratories in the pipeline have made significant progress in the development of innovative research systems and scientific and technological innovation activities, and have played a leading role in the development of the national innovation system. However, there has been no national acceptance of the national laboratories in the pipeline, and a formal approval and confirmation from the state is urgently needed. The Ministry of Science and Technology has cancelled all the original State Key Laboratories of these relying units, leading to uncertainty of the academic platform of these units. In the long run, this will greatly affect their talent introduction, research innovation and international influence.

Related information: the situation of foreign national laboratories

National laboratories in the US

In the US, people refer to all government research institutions collectively as national laboratories. Some of these national laboratories have only a few people, and there are many national laboratories with thousands of employees or more. The main reason why the US federal government has established so many national laboratories is that it believes that it is extremely critical and important for the government to have a strong science and technology workforce and research and development capabilities directly in the government to fulfil its various responsibilities and missions, and at the same time, it has a responsibility to use research and development activities to promote the development of society and the economy as a whole.

National laboratories in the United States play a particularly prominent role in research and development activities in nuclear energy, agricultural science and technology, military science and technology, high-energy physics, nuclear fusion research, industrial metrology standards, public health and health care, social and occupational safety, scientific metrology standards, and the gasification and liquefaction of coal. Lawrence Berkeley National Laboratory, Lincoln Laboratory, Los Alamos National Laboratory and Brookhaven National Laboratory are representative of these.

National laboratories in the UK

The UK's National Research Institutes (NRIs) are research institutions that are part of the Commonwealth of Nations and are administered by central government and ministries. They are usually divided into ministerial and non-ministerial categories, with the ministerial category comprising research institutes, research and development centres and laboratories under federal government ministries, focusing on applied and defence research, and the non-ministerial category comprising research institutes under the seven Research Councils and independent research institutes, all of which are autonomous, non-government bodies established by Royal Charter. The Research Councils and their affiliated research institutes cover the fields of engineering physics, medicine, particle physics and astronomy, biology, etc. They have a clear division of labour with the ministerial category, which allows them to allocate resources effectively and promote the development of the country's science, technology and economy.

Germany's national laboratories

Germany has a world-renowned Max Planck Society. The Max Planck Society (MPG) is a large German scientific research organization that has contributed 32 Nobel Prize winners and is the largest, most prestigious and most effective government-funded national academic institution internationally. Its predecessor refers to the Royal Wilhelm Society, which was founded in 1911. Currently, the

Society has 80 research institutes under the Divisions of Biology and Medicine, Chemistry, Physics and Technology, and Humanities and Social Sciences. It currently has around 12,000 employees, of which 3,500 are scientists. In addition to this, there are around 8,000 doctoral students, post-docs and visiting scientists carrying out research at the various institutes of the Max Planck Society.

The Max Planck Society is an independent, non-profit research organization. Its main tasks are to support basic research in the natural sciences, life sciences, humanities and social sciences, to support the opening up of new research areas, and to cooperate with and provide large research instruments to institutions of higher education. Academic leaders can choose their own research topics to carry out their research.

The research of the Max Planck Society is financed by federal and state grants, government programmes and private donations, and in 2003 the budget of the Max Planck Society was 1.24 billion euros.

National laboratories in Japan

Japan's scientific research institutions are governed by a government-led system. Japan's large national research institutes, such as the Institute of Physical and Chemical Research, which is part of the Japan Science and Technology Agency, have more than 50 laboratories and support departments. They are located in the fields of nuclear physics, solid state physics, applied physics, basic engineering

technology, inorganic chemistry, biochemistry, microbiology, life sciences, molecular neurobiology, gene technology, photodynamics, bionic control, etc., and conduct mainly basic research. The Industrial Technology Research Institute (ITRI), which is part of the Ministry of International Trade and Industry, has 15 research institutes under it. Unlike the Physical and Chemical Research Institute, the ITRI focuses on applied research in areas such as new materials technology, biotechnology, electronic communication technology, machinery and aerospace technology, medicine and welfare, human life and social technology, natural resource technology, energy and environmental technology, and general technology.

Technical factors: With the continuous progress of the level of science and technology, laboratories from enterprise laboratories, hospital laboratories began to gradually increase subdivision into metal testing laboratories, food testing laboratories, building materials testing laboratories, gene amplification laboratories, environmental testing laboratories, biopharmaceutical laboratories, measurement and calibration laboratories, electronic and electrical laboratories, make-up testing laboratories, medical testing laboratories, textile testing laboratories Non-destructive testing laboratories, automotive testing laboratories, cell preparation laboratories, light industrial products laboratories, petrochemical laboratories, laboratory subdivision also promote the development of laboratory equipment industry, the corrosion resistance of products, environmental safety, etc. have higher

requirements.

3.2 Laboratory equipment engineering also development trend

The country's strong support for the science and technology industry has promoted the development of the laboratory industry, various types of laboratories are springing up, enterprises and institutions in all walks of life in order to better development, the establishment of different sizes and types of laboratories, prompting the booming development of the laboratory equipment engineering industry. At the same time, the standardization of the laboratory also promotes the laboratory equipment engineering industry services to improve the content of continuous improvement.

Laboratory construction is no longer a simple instrument and ordinary countertop cabinet, to the food industry, for example, as people's lives get better and better, eat and drink enough to just products to no longer meet the needs of consumers, various food manufacturers are catering to the needs of consumer taste, nutrition, health. So that consumers do not have to worry about their health while satisfying the taste and flavour, forcing modern food companies to set up laboratories that meet the cleanliness requirements and introduce GMP management systems when preparing for construction. Or perhaps it is not too much to say that cleanrooms have become a production necessity for the food

industry.

A complete purification project consists of clean room planning and design, clean room engineering decoration, air purification engineering, HVAC engineering, clean mechanical and electrical installation engineering, fire protection engineering, process piping arrangement and other businesses.

It can be seen that the construction related to laboratories will continue to grow, prompting the development of this industry.

3.3 Long-term prospects

China's annual demand for laboratory instruments is about 32 billion, with a large market demand. At present, there are already projects listed as national key support and development projects.

During the 12th Five-Year Plan, the State will focus on food safety monitoring capacity building.¹⁾ According to the relevant institutions and plans, China's agricultural, quality supervision, inspection and quarantine, food and drug supervision and management, food and health systems have initially formed a systematic four-level (national, provincial, municipal and county) food safety inspection (monitoring) system.²⁾ The first three levels of institutions are about 2608, and the number of county-level institutions is about 1,000.) The first three levels of institutions are approximately 2,608, and the set-up of county-level

institutions has not yet been determined.3) There are large gaps in the set-up of county-level food inspection institutions, with incomplete configurations.4) Capacity-building issues such as the lack of rapid testing capacity at the grassroots and front-line levels need to be addressed, and a large number of food safety tests need to be supplemented and updated.5) The needs of over hundreds of thousands of domestic food processing enterprises and testing institutions constitute China's demand for food safety 6) The demand for equipment is expected to exceed 40 billion yuan during the 12th Five-Year Plan period.

Medical and health care (1) In primary medical units should be equipped with 163 items of major medical equipment, about 68% of which are laboratory instruments, analytical instruments and optical instruments, of which about 50% are products of the laboratory branch. (2) The State intends to build 100 national-level CDCs, 200 provincial-level CDCs and 300 municipal-level CDCs during the 12th Five-Year Plan period. (3) There are nearly 20,000-odd grassroots medical units in China that urgently need to be improved and equipped with technical equipment, and the State will arrange 96 billion yuan for the procurement of medical instruments within three years (20.5 billion yuan has already been arranged). It will take 15 to 20 years to completely change the backwardness of the technical equipment of the grassroots units in China. (4) The laboratory industry should pay attention to the development of application sets of instruments and equipment to

better serve the users and improve the level of technical cooperation in the industry. (5) New technologies and special needs of the relevant fields, the development of the laboratory industry to provide greater room for development. (6) With the development of science and technology in China and the establishment of high-tech industries, the development of high-end instruments and equipment for the laboratory industry to provide a strong technical guarantee, so as to achieve product upgrading, the laboratory industry to win a larger market and development space.

3.4 Industry size, growth rate and sales forecast

State Key Laboratories are the highest standard of scientific research in an industry. There are about 700 of them in China. The market for the laboratory construction industry in China is relatively fragmented, with a large number of competitors. According to the annual statistics published by the CNCA, the top five competitors in 2019 hold a combined market share of only about 3.6%.

Section 4

Marketing Plan

4.1 Combined with the current market product diversification, market customer groups in a wide range of areas, the company's marketing plan to develop the main direction: 1. laboratory furniture customization, standardization, scale. 2. laboratory design for the docking design institute, reference to national standards, study foreign advanced ideas. 3 to enhance the overall scientific management of laboratory engineering, on-site construction standardization 4. the marketing department has exhibition talks to promote the company's brand strength and The sales department has docked with various universities and research institutes across the country to enhance the company's brand influence in the scientific research industry, promoted by national institutions to various related industry enterprises.

4.2 Pricing Strategy

Pricing Objective: To estimate the profitability of products/services and develop a pricing strategy that must be conducive to maintaining or expanding market share, improving the quality of product sales and services, and increasing turnover.

Product positioning: Our objective is to pursue a one-stop integrated marketing and promotion industry. Because clients will have long-term internal demand for

growth in product sales and external demand for client brand awareness, improving the quality of our services, we can offer clients a total case integration output that can position the market at a high level.

Starting with operating costs.

Initial funding will be used for product production and maintenance, early publicity, office costs and staff employment. Funds will be used as follows:

(calculated for the first year of operation)

project	Description
Product creation and maintenance	Price approximately \$5 million
Office costs	100000 元
Employment of staff	100000*12
RMB	630000 元

The service process refers to the process of providing and operating services, and is the interaction process between the service subject and the user, of which the user experience is an important basis for the user to evaluate the service. We have a noble mission to create a modern laboratory that is "safe, intelligent, environmentally friendly, efficient and suitable", with the core business philosophy of "technology + management + service"; our services range from pre-laboratory consultancy, planning and design, to mid-term project implementation, to

post-operational maintenance. Our services range from pre-laboratory consultancy, planning and design, to mid-term project implementation, to post-operation maintenance, achieving full coverage of the laboratory construction cycle and building a sustainable laboratory ecological chain.

The comprehensive pricing strategy is as follows.

For Best Friends' customers, there is no service fee for initial consultation, and different pricing can be set according to the different needs of the customer. Different prices are set according to different usage environments. For example, in the south, attention should be paid to the dryness and humidity of the laboratory, while in the north, attention should be paid to the erosion of the external facilities of the laboratory by wind and sand.

4.3 Sales process

Finding potential customers through various formal channels, contacting target customers by telephone, internet and other online and offline means, setting up your own website and providing a showcase for your target customers through real-life examples.

The core of the marketing strategy is to provide a service to the customer. Therefore, it is important to first understand

The influencing factors of consumer behaviour and develop a personalized

marketing approach based on the influencing factors combined with your own strengths. According to known statistics, the state is strongly supporting industries with a high technological content such as biomedicine, and the construction of laboratories has been changed from a system to a customized one. The basis for the realization of customization is laboratory equipment, the standardization, standardization and generalization of furniture, modules are common independent units that can form systems with specific functions and interfaces. The accuracy and timeliness of the delivery and confirmation of customized information is the primary issue of customization management, including the accurate expression of design, the confirmation of customer choice, the delivery and confirmation of information. Information is the carrier to communicate between the company and the customer. Without good communication channels, the company cannot gain the trust of the customer, and the customer cannot trust the company because they cannot express their needs accurately. After the basic information has been confirmed, measurements are taken on site and there may be adjustments to the preliminary design due to environmental factors. Afterwards design drawings are produced, and so on.

Section 5

Management Team and Company Structure

5.1 The importance of team building

(a) Foreign studies

Timothy L. Judge and Stephen. Robbins in Organizational Science say that organizational science explores the influence of individuals, groups and structures on behavior within an organization and then uses this knowledge to make the organization function more effectively; this organization is the team. American organization theorist John Barnard. Barnard) argues that the team is a collaborative system that consciously coordinates the activities or forces of two or more people. According to Manager Brown, the team is designed to facilitate the activities of internal members, to determine the best and most effective business purpose, and ultimately to define the tasks undertaken by internal members and the interrelationships between internal members... Member Harold Coontz sees the team as a formal and expected work structure or job structure.

Stephen Robbins divides teams into problem-solving teams, self-managing teams and cross-functional teams and analyses their advantages and disadvantages. Peter M. Senge argues that in the new environment we should engage in competition as a team and proposes five practices of self-transcendence, mental models, shared vision, team learning and systems thinking to foster a team learning

atmosphere and form a humane, organic and flat team - a learning team.

Timothy A. Judge and Stephen Robbins in *Organizational Behavior* say that the impact of scales on group performance depends on the type of task, that cohesion affects group productivity and that role conflict is related to job stress and job satisfaction. An American executive, Richard L. foolishly argues that organizational uncertainty about environmental factors and resource dependence may vary. Joan Woodward, an American administrator, studied the relationship between technology and teams and came to the conclusion that the requirements of different technologies, individuals and organizations are different and that organisational structures should be adapted to this requirement. Joan Woodward also studied the relationship between team size and team design: the larger the team, the more specialised the work, the better the standard operating procedures and systems, and the greater the degree of decentralisation. Robbins argues that factors such as size, strategy, technology and environment limit the choice of organisational structure models, but that it is ultimately the power controller who decides what choice to select from the multiple options. Leigh Thompson argues that the basic requirements for building a successful team are: adequate resources of knowledge and skills; active efforts to achieve acceptable common goals; and behavioural alignment and communication between members. Belbin examines how to choose an effective team and concludes that participating companies should look for a

number of characteristics in the managers they want; teams need different qualities of people and must ensure the right "type" to get the right balance. A study by Professor James of Harvard Business School showed that if a person is inspired, he will reach his full potential of 80%, rather than being motivated, when he has only 20%.

(b) Domestic research

After 40 years of reform and opening up, China began to "bring in foreign investment" and management experts in the 1980s. Management in China has developed rapidly, but the team building and management situation in most companies is still problematic and relatively low.

In his article "How to build an efficient team", Zhang Yudong writes that management focuses on "rationality" rather than "management", adjusts team management strategies according to the actual situation, clearly challenges team goals, directs team interests and team members' interests as much as possible, and achieves corporate development goals through efficient the team works together to achieve the company's development goals. The establishment of an efficient team is the key to the development of an enterprise; only through effective cooperation can the team's capabilities be brought into play and more than doubled; in modern corporate competition, the establishment of an efficient team is the most crucial step towards achieving the goals

Zhou Lei in how to build and manage efficient teams, building and managing efficient teams is a difficult job, but as long as the team starts, focus on the practical, analyze the factors that affect team efficiency, take effective measures to stimulate the ability of team members, explore efficient team operations, promote team communication, create an atmosphere of team growth, improve team cohesion, promote team members towards one-way goals, can achieve the goal of improving the purpose of team efficiency.

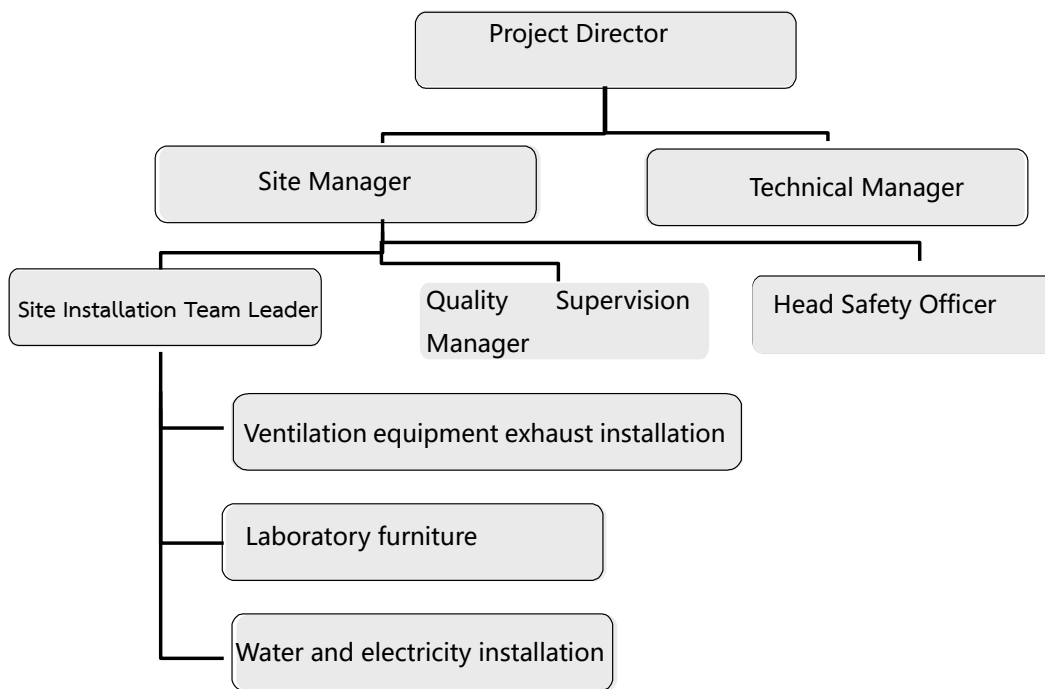
In Efficient Team Management, Tan Xiaofang writes that work teams can create positive synergies through the combined efforts of their members. As a result of team membership, the team's level of performance is far greater than the overall performance of individual members. And it suggests that an effective team should focus on establishing common team goals, strengthening the team's ability to collaborate and encouraging each other among team members.

Lu Jiangyong writes in Joint Performance Strategies that he can analyse leaders in terms of leadership experience, leadership resources and leadership potential, team size, team quality and team growth; considering organisational structure, organisational systems and organisational culture].

In summary, foreign research on team building management from team formation and definition, team classification and training to influencing factors (size, skills, motivation) shows that foreign (mainly developed Western) countries are

far-reaching, comprehensive and scientific. Research on team building by domestic scholars includes studies on the steps of team building, the specific content of team building, core points and corresponding misconceptions. Certain research findings have been made, but they are still in the exploratory stage.

(1) Organisational chart



Responsibilities of each key position.

1), Project Director

1.1, prepare project work plan and engineering management system.

(1) Fully preside over the work of the project team, formulate engineering management objectives, establish processes, systems and regulations for standardized engineering management, continuously improve operational processes

and standardize the company's engineering project management system.

(2) Organize the preparation of the project master development plan and the project progress plan and capital budget plan for each stage.

1.2 Organise and supervise the implementation of various work of the project.

(1) implementing the project progress plan, coordinating the progress of works on site, and keeping strict control over the progress and quality of the project.

(2) Reviewing project design drawings and making rationalization suggestions on design solutions, materials and technologies.

1.3. Manage and monitor the overall construction situation.

(1) to monitor and manage the project in a comprehensive manner and to resolve major technical problems arising in the design, construction and supporting etc.

(2) To be responsible for metric control and time schedule control in design and construction to achieve reliable quality and economic reasonableness and to ensure the smooth progress of the total project schedule.

(3) Organise pre-acceptance of engineering projects before delivery, identify problems, propose improvement plans in a timely manner and organise their implementation.

1.4. Management of staff within the department.

(1) directing subordinates to formulate stage work plans and supervising their implementation.

(2) Responsible for team building, selection, equipping, training and evaluation and assessment work.

2), Technical Manager

3.1 Execute national and local technical standards, specifications and protocols relating to laboratory engineering construction.

3.2 Organize relevant personnel to be familiar with construction drawings carefully, participate in drawing meetings to review and raise quality issues comprehensively. Prepare construction organization design and quality plan.

3.3 Be responsible for construction process management, determine the key processes of the project and organize the preparation of technical measures, negotiate and approve technical issues.

3.4 Responsible for organising the collection, collation and filing management of engineering and technical data.

3.5 Organise the promotion and application of new technologies, new materials, new techniques and new products.

3.6 Participate in the completion acceptance and process self-inspection of unit projects and check the implementation of the quality assessment work of division projects.

3.7 Be responsible for dealing with substandard products in the construction process and participate in the investigation, analysis and treatment of general quality

accidents.

3.8 Responsible for the management of testing equipment, material inspection and testing.

3), Site Manager

4.1 Responsible for and supervise the quality and safety delivery and execution of the whole process of construction and the effective visa information of technical and economic changes.

4.2 Participate in the meeting and examination of construction drawings and the preparation of the project progress plan.

4.3 Implement the plans of the construction organisation design and the implementation of the construction programme.

4.4 Rational deployment of production factors and strict organisation of construction to ensure the progress and quality of works.

4.5 Issue construction task books and limit material cards in a timely manner, settle accounts accurately at the end of the month and ensure timely, accurate and effective quality assessment of sub-project works.

4.6 Accurately record the construction logbook by day and handle the visas for technical and economic information on site in a timely manner.

4.7 Organise concealed works acceptance. Participate in the quality assessment of sub-project works.

4.8 Ensure safe production, civilized construction, comprehensive, reasonable and effective implementation of the programme, and keep the construction site safe and tidy.

4.9 Participate in the completion of the project handover inspection and be responsible for the protection of the project intact.

4.10 Complete the joint work assigned by the leadership and related professional cooperation.

Specific construction teams and safety personnel: each construction team is equipped with foremen and safety personnel, responsible for the construction work of each profession according to the drawings. Among them, the gas pipeline involves stainless steel seamless welding technology, which needs to be done by professional staff for this work.

Section 6

Operations and Production Plan

6.1 Business location and equipment location

Best Friend has a first-class team and production and agency configuration to ensure the quality of its products and to meet the experimental needs of all types of laboratories, providing personalized, high-quality service.

Currently, the company is building a production facility in Beijing around the company's laboratory equipment production needs, located in the Shunyi District, with a construction area of 90,000 square metres.

6.2 Operational strategy and plan

First stage, contacting the customer and initial communication

After consultation, we will have an understanding of the customer's needs, prepare various samples and provide material descriptions for the next step of customer selection

Phase 2: Site visit

After the first stage of contact and communication, in the second stage the sales staff will go on a field visit to obtain site data and communicate with the user about the construction of the laboratory according to the actual situation.

Stage 3: Production of effects

After communicating with the laboratory user, a preliminary rendering is produced, indicating the location of the experimental apparatus and equipment to be used.

Fourth stage, re-scaling

After the rendering comes out, after the laboratory is decorated with ten thousand basic walls and floors, the site is measured again to avoid errors and communicate with the experimenter on the installation of equipment, which is more in line with the experimental process and can also maximise energy saving and environmental protection safety.

6.3 Development status and tasks

A Technology Centre was established with a dedicated R&D site. The main direction of R&D is laboratory system improvement and optimization, and the construction of an energy-saving, environmentally friendly and safe laboratory.

We have successfully achieved dozens of achievements and formed several main products and services, and our product technology is at the forefront of the industry.

The core key technologies of the products have obtained invention patents, utility model patents, appearance patents, and the number of soft writings, reaching the leading level in China. The company has established the "Scientific Research Project

Funds Management Measures", which stipulates the scope of expenditure on research and development funds and the principles for the establishment of research and development expense ledgers.

The company has 5 master's degree holders and 60 bachelor's degree holders, accounting for 60% of the total number of employees; among them, there are 30 scientific and technical personnel engaged in R&D work full-time, accounting for 30% of the total number of employees. Among them, there are 5 people with senior titles, 10 people with intermediate titles, and 10 people with first-class constructors.



6.4 Challenges and risks

According to the National Bureau of Statistics, from 2010 to 2020, China's investment in science and technology funding continued to grow, while the year-on-year growth rate declined and then increased. Starting from 2016, the annual growth rate of research and experimental development (R&D) expenditure remains at around 10%.

In 2020, annual research and experimental development (R&D) expenditure was RMB 244.26 billion, an increase of 10.3% over the previous year, with a ratio of 2.40% to GDP. Although the overall growth rate is relatively stable, at around 10%, China's research investment is increasing year by year, and according to the "Several Opinions on Strengthening the Construction and Development of State Key Laboratories", the target of building more than 700 key laboratories in 2020 is still some distance away. It is expected that the state will increase its investment in scientific research and accelerate the preparation of state key laboratories in the future.

With the country's strong support for the power of science and technology, the laboratory construction industry has also attracted opportunities, the establishment of laboratories at all levels, the lack of laboratory equipment engineering support, according to the specific circumstances of the laboratory type level to establish the most suitable laboratory environment, which is conducive to the needs of

laboratory users, within the scope of funds allowed to better achieve energy saving, environmental protection and safety.

At the same time close friends also face challenges, the current development of the laboratory industry in China for the development of diversity, laboratory professional companies also appear mixed, probably market problems: 1) there is a traditional sense of laboratory furniture companies, because the laboratory furniture industry was the first to appear in China, the current size of laboratory furniture companies in China, a total of about 4,000 companies, only dozens of formal manufacturers companies The majority of the rest emerged at a later stage, and there has been another emergence of East China, Jiangsu and Zhejiang for OEM (OEM) based assembly type manufacturers, the overall confusion of market prices, products and quality also appear to be more differentiated. 2). In addition to manufacturers and formal laboratory companies, the market has also appeared to sell and agent manufacturers of trading companies, such companies basically belong to the original laboratory industry out of the staff or sales operations. The products are also basically selected according to the profit to correspond to the product.

Section 7

Financial Projections

The financial evaluation of the project is a very important and objective indicator of whether the project is commercially viable. The financial budget for the operation of the project is a five-year planning period starting in 2022 with a capital investment of \$5 million.

In terms of fixed costs, Best Friends has significant R&D costs, base salaries and office costs and is projected based on the company's figures for 2022 and growth plans for the next four years. Fixed labour costs are shown in the chart below.

Fixed costs: Unit: RMB:yuan

Projects	2022	2023	2024	2025	2026
Number of employees	100	110	110	120	150
Rent and office expenses	100000	100000	120000	120000	120000
Staff basic salary	1000000	1000000	1000000	1320000	1650000
Welfare benefits	100000	100000	100000	120000	150000
R&D costs	5000000	5000000	5000000	5000000	5000000
Total Costs	6200000	6200000	6220000	6560000	6920000

7.1 Profit

Project profit returns (economic benefits) and cash flows are important factors in the project investment decision process, financial statements and cash flow statements can fully reflect the company's profit and loss and operating conditions, and effectively evaluate the feasibility of the project.

Income Statement (Unit: RMB: Yuan)

Projects	2022	2023	2024	2025	2026
Operating income	7150000	7198000	7156000	7599000	7982000
Corporate Costs	6200000	6200000	6220000	6560000	6920000
Operating profit	950000	998000	936000	1039000	1062000
Corporate income tax	237500	249500	234000	259750	265500
Net profit	712500	748500	702000	779250	796500

7.2 Investment appraisal and analysis

ROI = average annual profit / total investment

The initial investment plan for Best Friends is \$5 million. Based on the financial calculation table above, the five-year average annual profit for 2022- 2026 is \$747,750. The calculated ROI = is 15% (table below) indicating that the project has a good level of return on investment.

Investment Profitability ROI Calculation

Year	2022	2023	2024	2025	2026
Net Profit					
Attributable to Shareholders	712500	748500	702000	779250	796500
Average annual profit	747750				
Total investment	5000000				
Investment profit margin	15%				

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