ODESA I.I. MECHNIKOV NATIONAL UNIVERSITY
FACULTY OF ECONOMICS AND LAW
DEPARTMENT OF MANAGEMENT AND INNOVATIONS

Qualification project (thesis)

for obtaining the degree of higher education «master»

«Improvement of the organizational structure of management of the enterprise in modern conditions»

«Удосконалення організаційної структури управління підприємством в сучасних умовах»

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Educational and professional program
«Management»
Gong Biao / Гун Бяо

Scientistic supervisor: Doctor of Economics,
Prof. Iryna CHURKINA
Reviewer: Doctor of Economics,
Prof. Koshel'ok H.V.

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No. ___ dated ____.____. 2024

Head of Department
_____Prof. Eduard KUZNETSOV
(signature)

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Head of the EC
_____Prof. Eduard KUZNETSOV
(signature)

Odesa 2024

CONTENTS

INTRODUCTION

Relevance: The relevance of this research stems from the increasing importance of military-civilian integration as a national strategy in China, which has opened opportunities for private enterprises to participate in the research and development (R&D) and production of military products. However, small and medium-sized private manufacturing enterprises, like Venus Electrical Company, face significant challenges due to outdated management systems, slow project response times, and an inability to efficiently manage multiple projects. The current management structure and organizational approaches do not match the rapid demands of the military product market. Therefore, the research is highly relevant as it seeks to optimize the organizational structure and project management systems in such enterprises to better align with the complex demands of the military industry, improve efficiency, and enable these companies to remain competitive in the evolving market.

Analysis of Recent Research and Publications： This research draws on both domestic and international studies related to project management and organizational structure optimization. The research builds on the theory of project management, focusing on the multi-project management office (Project Management Office) model and its application in improving organizational efficiency. The recent literature emphasizes the importance of transitioning from traditional functional organizational structures to more flexible and project-oriented structures, which enable companies to respond more effectively to rapidly changing project requirements. By analyzing both foreign practices (in companies like Xiaomi and Huawei) and the particular context of Chinese private enterprises, the research contributes to the ongoing discussion of how project management methodologies can be tailored to meet the needs of small and medium-sized enterprises engaged in military and civilian product development.

Connection of the Qualification Project with Scientific Projects, Plans, and Topics This research is closely connected to ongoing scientific efforts aimed

at improving management systems within the manufacturing sector, particularly in the context of military-civilian integration strategies. The project aligns with broader research initiatives in the field of organizational change, project management, and innovation management in the manufacturing industry. Moreover the focus on optimizing project management structures within Venus Electrical Venus Electrical appliances company corresponds with the national focus on improving the competitiveness of private enterprises in the defense and technology sectors. This research project fits within the context of national and regional plans that seek to enhance the efficiency of the military-industrial complex through better management and organizational practices.

Goal and Tasks：The primary goal of this research is to optimize the organizational structure of Venus Electrical Company to improve its ability to manage R&D projects more efficiently and effectively.

–study the theoretical basis of basis of organization management;

– separate the instrumental provision of organization management of the economic entity in the conditions of modern;

– investigate models and methods of supporting the organization management of the business entity;

– carry out analytical research organization management system in Chinese companies;

– propose an mechanism of organization management in Chinese companies.

The tasks involved in achieving this goal include analyzing the current organizational structure of the company, identifying the weaknesses in its existing project management systems (such as unclear functional boundaries and poor departmental communication), proposing a new structure based on the matrix-type organization model, and establishing a dedicated project manager position and Project Management Office to manage multi-project scenarios. The research further aims to provide safeguard measures that ensure the successful implementation of these organizational changes.

The object of this research is the organizational structure and project

management system at Venus Electrical Company, a private medium-sized manufacturing enterprise engaged in the R&D and production of military and civilian products.

The subject of this research is the project management and organizational change processes within Venus Electrical Company. This includes examining how the current functional organizational structure impacts the company's efficiency in managing R&D projects and proposing an optimized project-oriented structure to address these challenges.

The research Methods employs a combination of literature analysis, survey research, and theoretical analysis. The literature analysis is used to gather insights from existing studies on project management and organizational structure, while survey research provides data on the current state of project management at Venus Electrical Company. Theoretical analysis is applied to interpret the collected data and formulate a new organizational model that addresses the identified problems. Through these methods, the research aims to develop practical recommendations for organizational restructuring and project management improvement at Venus Electrical Company.

Results Approval and Publication results of the research were likely presented in relevant academic and professional circles related to organizational management and project management, particularly within the context of the Chinese manufacturing sector. The study may have been published in national or regional journals focused on industrial management, innovation, and organizational restructuring. Additionally, the findings from this research could be used as a reference for further studies on the optimization of project management systems in small and medium-sized enterprises, particularly those involved in military product development.

Structure and Scope of Work The scope of the work covers an extensive analysis of both theoretical and practical aspects of organizational restructuring and project management. The research begins by introducing the background and significance of the study, followed by a review of relevant literature on project

management and organizational structure optimization. The body of the work then delves into the specific issues facing Venus Electrical Company, including the inefficiencies of its current functional organizational structure, and presents a detailed plan for transitioning to a matrix-type structure. The final sections of the research provide safeguard measures for the proposed changes and improvement of Venus Electrical appliances company's organizational structure.

Key words: organization structure, company organization, improve structure.

CHAPTER 1.
THEORETICAL BASIS OF THE ORGANIZATION MANAGEMENT IN THE MODERN CONDITIONS

1.1. Theoretical basis of organization management

At present, most of China's private enterprises are mainly small and medium-sized enterprises, and their problems mainly include: rough internal management mode, single backward management concepts, insufficiently clear boundaries of authority and responsibility within the enterprise, insufficiently precise and efficient management decision-making system, insufficiently clear internal management system, unsound organizational structure, the use of traditional functional organizational structure management system of the manufacturing industry, and inefficiency in the use of the project management model and other issues. The problems of project management mode are low efficiency. With the development and production of military maritime field products supply side further open to private enterprises, small and medium-sized private enterprises began to gradually intervene in the manufacturing process in the above areas, which allows China's small and medium-sized private companies to see a new profit growth point [2]. This allows China's small and medium-sized private companies to see a new profit growth point. However, military naval products have their special characteristics such as the construction of quality management system, strict quality requirements, development, production and delivery of urgent tasks and other characteristics, these small and medium-sized private enterprises put forward higher requirements [1].

The current management structure of Venus Electrical company has been infected by the historical tradition and cultural environment, influenced by the functional structure that has been implemented for a long time, and bound by the business concept of the whole enterprise, which lacks a systematic and standardized management methodology for R&D project management, and at the

same time, the senior leadership lacks scientific and systematic project management thinking. It is difficult to cope with the ever-changing R&D projects under the situation that the original functional organizational structure of the enterprise remains unchanged. Each functional department carries out daily operation and management according to different R&D projects, and does not make efforts to realize the environment required by project management.

The application results are not satisfactory, and even fall into the dilemma of the dilemma of the dilemma of the dilemma of the dilemma of the dilemma [3]. The result is a poor application and even a dilemma. Therefore, it is of great significance to transform the organizational structure and improve the concept and system of project management in companies like Venus Electrical company, which have problems in managing R&D projects with a functional organizational structure.

From the point of view of the entire manufacturing industry, most of China's manufacturing enterprises are still stuck in the stage of following the management mode of functional organizational structure, with the increasing competition, in recent years, such as Xiaomi, Huawei, Lenovo and many other Internet companies have adopted the project management model to lead the research and development of the product, and established a corresponding management mechanism to ensure that the product not only accurately meets the customer's needs, but also to ensure that the research and development process is smooth and stable, these advantages for companies with product development as their core competitiveness to strengthen the competitive barriers in the industry. These advantages have strengthened the competitive barriers in the industry for companies whose core competence is product development [4]. In general, many private manufacturing companies in China, which are not in the high-tech industry, have been using the traditional functional organizational structure to manage the product development process. The senior leadership of these enterprises and the technical staff involved in product development do not have a full understanding of the concept of project management, the company's executives do not have the will to take the initiative to

promote the improvement of the company's project management process, and the lack of full-time project management personnel in the enterprise, also makes it difficult to further promote project management in the domestic manufacturing enterprises. Many companies will be a lot of daily work as a project for process management, there are also many companies arrange functional managers or functional department heads to manage the project, but in the management of ideas, the daily operation of this functional department and project management is still very different [5].

This paper analyzes and explores the current situation of the organizational structure of Venus Electrical company, integrates the concept of project management into the company's management the current organizational structure of Venus Electrical company, integrates the concept of project management into the company's management model, puts forward the improvement plan of the company's project organization structure, and supplements it with the guarantee plan of the improvement measures, in order to improve the current organizational structure of the company's project, which is characterized by unclear functional boundaries of various departments, poor departmental collaboration, low efficiency and motivation of the employees, and inefficient management of multi-projects, so as to facilitate the rapid and healthy growth of Venus Electrical company, and to improve the core competitiveness of Venus Electrical company in the same industry. It is also hoped that this article can provide some reference for the organizational change and R&D project management of domestic small and medium-sized manufacturing enterprises in China.

1.2. Models and methods of supporting the organization management of the business entity

Organizational structure refers to the constituent elements in an organization and their relationship with each other, and he describes the framework system of the organization. Organizational structure mainly involves how the enterprise is

constituted, how to set up positions, the relationship between authority and responsibility, the business processes, management processes, coordination and control mechanisms within the enterprise; it is a platform for achieving the purpose of the enterprise [24].

A proper organizational structure can clearly delineate the boundaries of authority and responsibility of each functional department and each role within the organization, and then supplemented by appropriate systems, the efficiency of the organization will be improved [50]. On the contrary, when the structure of an organization does not match its management needs, it will lead to delayed decision-making, increased management costs, and low employee morale. Therefore, organizational structure has a direct impact on the results and efficiency of organizational behavior within a firm and is a key factor in the achievement of corporate goals.

Organizational structure is a pattern of linkages between elements that is determined by the goals and people of the organization, and on which the environment also has an impact, and it is a chain of command and communication system that has a direct decision-making function in the organization[6]. Changes in the organization's constituent elements and situational variables can lead to a variety of organizational structures.

Organizational Structure Classification Characteristics and Selection Project organizational structure depends on the specific situation of the enterprise, and can be roughly divided into three categories: functional, project and matrix. Different project organizational structures will produce different effects in the project process.

① Functional organizational structure

In a functional organizational structure (e.g., Figure 1.1.), work activities are grouped and consolidated from top to bottom according to common job functions. In a functional organizational structure, various job-specific knowledge and skills are uniformly associated, giving the organization a depth of knowledge across functions [10]. This structure is more effective when the depth of knowledge

required is important to achieve organizational goals, when the organization must be controlled and coordinated through vertical hierarchical management, and when the achievement of corporate goals requires the organization to operate efficiently. It is also quite effective when horizontal coordination and communication of information are not necessary. This structure is generally mechanical because of the centralization of authority and the fact that there is little or no cross-functional teamwork required for the completion of projects and the operation of the organization.

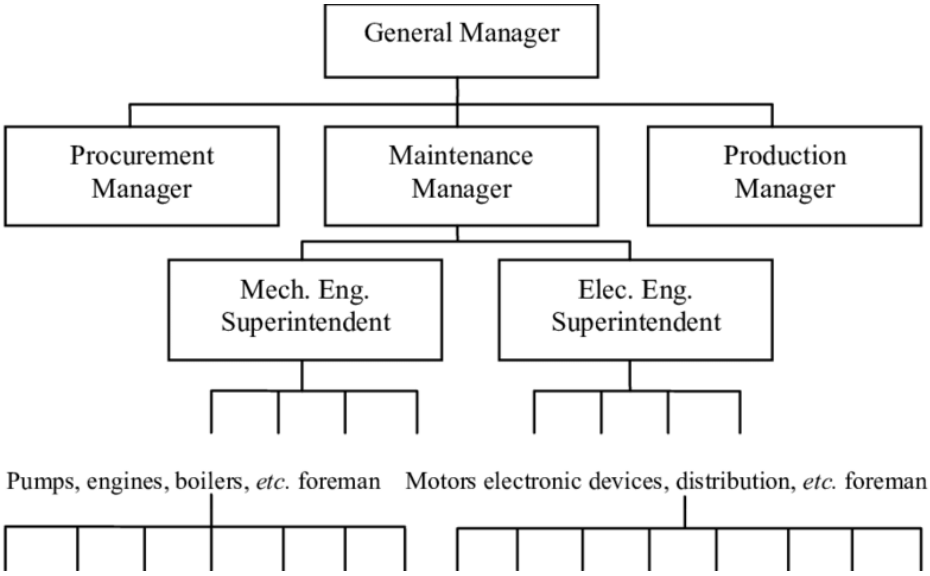

Fig.1.1. Functional organization structure

Source: author's own drawing

One of the major advantages of the functional organizational structure is that it facilitates economies of scale within each function, i.e., employees within the same function all work together and can share data such as facilities, resources, experiential knowledge, and lessons learned within the department. In addition, it allows employees to continue to further their education within their area of specialization. Employees handle a variety of tasks within their functions [11].

Managers of each function and their subordinate employees share a common technical background, deal with similar problems, and can train and learn with similar knowledge and experience, matching each other's areas of specialization

[9]. If an unexpected situation arises within a functional department, such as an employee suddenly taking a leave of absence or even leaving, the work within the department can ensure the continuity of the workflow without affecting the progress of the project. Moreover, this organizational structure is better at breaking through technical bottlenecks. This organizational structure is better at breaking through technical bottlenecks. The more specialized employees and experts are brought together to give play to their functional expertise, which makes it easy for the company to precipitate resources in the functional areas and deepen the depth of the professional resource pool [15].

The disadvantage of this structure is that the completion of a project usually requires the cooperation of multiple functional departments [8]. When the project environment changes and multiple departments work together, the response is slower. The disadvantage of this structure is that usually the project requires the collaboration of multiple functions to complete the project. Because employees work in different functions, cross-functional communication is often poor and often has to rely on escalation to the functional manager level, making it difficult to innovate efficiently in the face of rapidly changing needs. The tasks and goals of a project are not seen by employees as their primary work, so without a clearer breakdown of the project goals, employees are often not as productive or motivated. Another problem is that too many vertical layers can add to the management burden of the organization. There are many decisions to be made, which go through layers of escalation and approvals, and the top management of the organization is usually slower to respond to problems [7]. At the same time, this structure also requires specialization of work and stability of daily operation. In terms of performance appraisal, the daily work and administration of functional departments are the main focus, and it is not possible to motivate employees with effective and clear goals, and employees may lose the joy of work in the day-to-day work. External employees are often unable to see the overall goals of the organization because they only focus on their functional areas.

②Project organization structure

In a project-based organization structure (Figure 1.2.), each project is run like an independent small business. The resources of each project are fully allocated to the project manager, who is dedicated to serving the project [12]. The project manager has complete administrative authority for project management and project resources. Since each project team focuses solely on the project goals for this project, the project-based organizational structure will provide fast and efficient feedback to the customer. The project organization structure will provide fast and efficient feedback to the client [14]. For a single project, or for a business, a project-based organizational structure is inefficient. Project team members must be paid individually for each project, even if they are idle at a given stage of the project. In a project-based organizational structure, projects must be managed with detailed plans to maximize the use of project resources and to ensure that project goals are successfully met within budget.

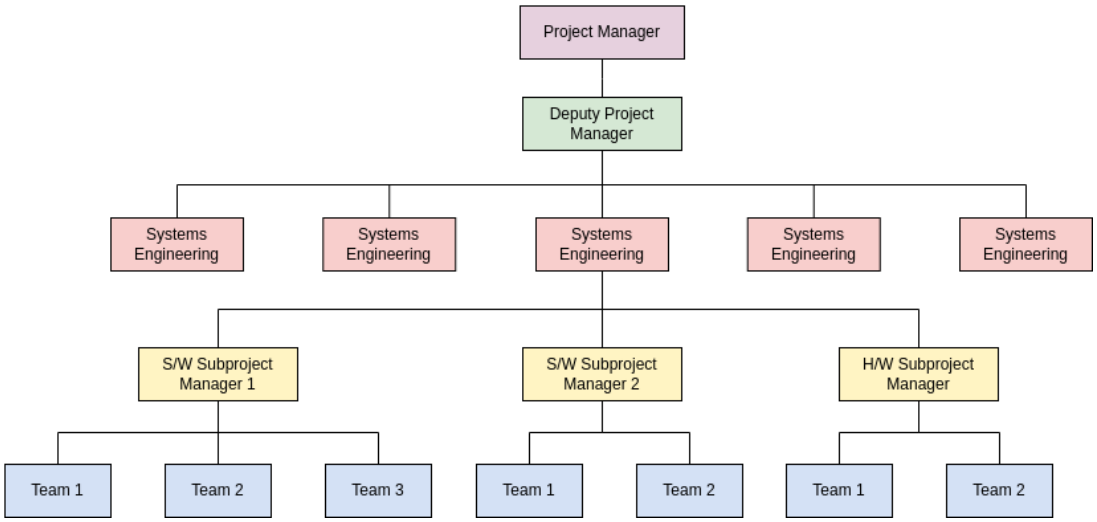

Fig. 1.2. Project organization

Source: author's drawing

The project-based organizational structure has very obvious advantages [13]. First of all, effective control of resources, the project manager is fully responsible for the project he manages, can be completely at the disposal of all resources

within the project, focus on doing big things, all for the project delivery responsibility. Compared to functional organizations, there are fewer communication barriers between different functional departments, and personnel responsible for different functions can communicate and cooperate more efficiently [16]. Secondly, the internal members of the project team report their work status directly to the project manager to avoid the embarrassment of multiple team leaders or unclear leadership. At the same time, the centralization of project authority improves the decision-making speed of the project in the face of various emergencies, and can make faster response and feedback to external project external parties. Finally, the success of the project is the most important goal of the project members, because the goal is clear, we will work for this common goal more focused. Agile project management has emerged in recent years to focus on delivering valuable products to customers as quickly and consistently as possible to meet their needs, and to adapt to changing external environments and customer changes. Emphasis is placed on team self-organization to deliver deliverable, team interaction, customer collaboration, and response to change, with shorter lead times and faster response times.

However, the project-based organizational structure also has its distinct disadvantages. Firstly, duplication of resources and cost inefficiency, each project may have the same functional staff, which is not conducive to organizational efficiency and economies of scale, and in order to ensure that the right people are used at the right point in the project, the project manager is likely to stockpile such human resources long before the start of the work activity, which leads to an increase in the cost of acquiring key resources. Secondly, when there is a conflict of resources between projects, especially when there is a conflict of key resources, the project manager has more resistance to mobilize resources and may need to intervene with a higher level of leadership or the Project Management Office for unified deployment. Moreover, after the completion of the project, the team will be disbanded, and the employees will lack continuity in their work, and they will feel insecure psychologically and believe that their jobs are not guaranteed. After the

project is completed, the sense of belonging of the team members is suddenly weakened, and it is more difficult for the company to retain its human resources.

③Matrix organization

The matrix organization structure (Fig. 1.3.) is a combination of functional and project structures, which are placed in the same part of the organization at the same time [18]. This structure makes it possible for companies to communicate information and coordinate across departments at the project level [17]. The dual authority line of the matrix organizational structure is one of its important features. Matrix organizational structure is different from other managerial "horizontal" organizational connections, as well as from other "vertical" organizational connections. It is an effective, multi-functional organizational structure established to strengthen the synergy between functional departments within the organization, between functional departments and planning projects, to better link the departments within the agency organically, and to better combine the centralization and decentralization of power.

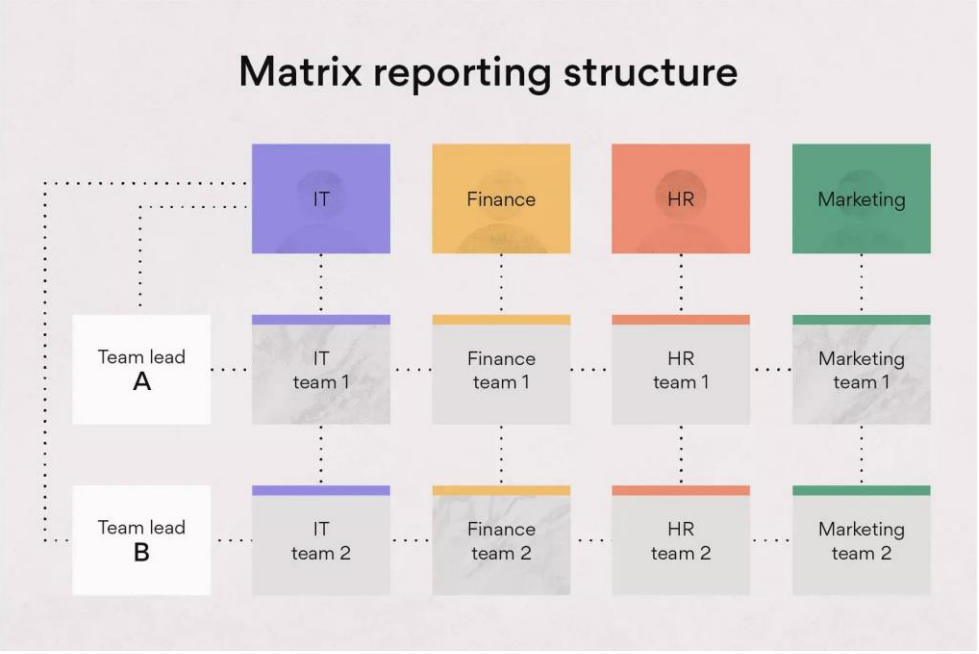

Fig. 1.3. Matrix organization

Source: from internet user

The advantage of the matrix organizational structure is that for the completion of such unique tasks as projects, it can be very advantageous to

combine functional division of labor with organizational collaboration[19]. The combination of permanent and non-permanent institutions can enable the functional departments to play their due role, so that the original organization to maintain stability, but also to make the organization has the ability to adapt and flexible mobility [30]. When a project is accepted and completed, the project can be withdrawn and the project resources can be recovered to the functional departments at the same time, avoiding the risk of organizational expansion and redundancy. Everyone in the organization has more opportunities to learn new skills and knowledge [20]. The matrix structure also has the ability to respond quickly to both external clients and internal senior management. At the end of a project, project members are disbanded from the original project and returned to their functional departments, which are the equivalent of a pool of human resources for the project. When a new project is launched, employees are reassigned to the project, which gives them a greater sense of belonging to their functional departments than a project-based organization.

Matrix organization structure also has its inherent disadvantages [29]. First of all, if the company has multiple projects at the same time, the company executives or Project Management Office need to coordinate resources in multiple projects, project managers to maximize resources for the benefit of their own projects, which is likely to lead to resource conflicts. Project managers need to communicate and coordinate with functional department heads when calling on functional department human resources, and such coordination is uncertain, and if communication fails, the project faces a high probability of failure. In addition, because of which the employees are subject to the dual leadership of the functional manager and the project manager, the priority of the tasks and instructions received by the employees are prone to conflict, reduce efficiency and raise the error rate. It is also difficult to align the actions of the functional organization with those of the project, which requires high coordination costs. The matrix organization structure is inherently unstable, and projects and project teams need to be changed frequently, which can lead to a lack of a sense of belonging and security among

employees [27].

Each organization needs to take into account a number of factors when designing and determining which organizational structure to choose. Factors that should be considered when choosing an organizational structure include, but are not limited to, alignment with organizational goals and strategies, functional expertise, degree and effectiveness of control, clear channels for problem resolution and decision making, clear lines of authority and responsibility, ability to delegate authority, assignment of ultimate responsibility, assignment of process responsibility, flexibility of design, simplicity of design, efficiency of implementation, cost factors, physical office location, and communication mechanisms etc. A comparison of the characteristics of different organizational structures is shown in Table 1.1.

Table 1.1.

Characteristics comparison of Project organizational structure

Project Characteristics	Functional type	Organizational structure type Project type	Matrix type
Way of organizing work	Work to be performed	By project	By job function
Project Manager Authority	Very little or none	Very high	Low to high (by matrix strength)
Project Manager Role	Part-time	Full-time	Full-time or part-time
Resource Availability	Very little or none	High to almost all	Low to high (by matrix strength)
Project budget managers	Functional Manager	Project Manager	Project Manager or Functional Manager
Project Manager	Part-time	Full-time	Part-time or full-time

Source: author's calculating

1.3. Instrumental for Organizational Change and the Importance of Organizational Structure in company

The current society is rapidly changing, modern organization theory believes that variability and stability are essential for the survival and development of the organization, therefore, organizations in a changing environment want to go to the

sustained growth and development, it is necessary to carry out organizational change with the changes in the environment. Generally, the reasons for organizational change in business lie in the following areas:

(1) Business Environment. The business environment consists of two parts: the general environment and the specific environment. General environment mainly refers to the external macro-environment of the enterprise, the political and economic environment in which the enterprise operates, the social and cultural stage, the technological development trend and so on, these objective environments will affect the ways and means of the organization's management. Specific environment mainly refers to the production and operation of the enterprise to play a direct impact on the enterprise's upstream and downstream chains, industry competitors and other specific conditions, these conditions are different for each organization, the two environmental conditions form a dynamic correlation. The external environment has uncertainty, the so-called uncertainty refers to the manager and the external environment there is a difference in information, so that it is impossible to accurately predict future changes and make the right judgment and decision. When the environment from stable to unstable trend change, the organization of the environment information gap will be more thoroughly revealed, the uncertainty in the management decision-making process is also greatly increased, only in line with the external environment of the kind of organizational structure can be an effective organizational structure The organization structure can only be effective if it conforms to the external environment.

(2) Business strategy. The organizational structure of the enterprise should be ensured to match the strategic objectives, and the organizational structure is the basis for the implementation of the strategic objectives of the enterprise and the form of implementation. Chandler, a famous management scholar, believes that strategy determines structure. Different strategies lead to different enterprise organizational structure [28]. The activities of the organization change according to the change of strategy. The direction of the organization's work will change due to

changes in the organization's strategic objectives, the importance of each department in the organization will also change, according to the strategy of many enterprises will be revised or redesigned organizational structure, the relationship between the departments and the workflow will also be different. Relative to a diversified corporate strategy, organizations prefer a flat, decentralized organizational structure that makes it easier to achieve multiple organizational goals. For simpler and more direct strategies, such as those that only meet a single goal or focus on low-cost strategies, the organizational structure is required to reduce the operational costs of the organization. The requirement of organizational structure is to reduce the cost of operation and improve the efficiency of operation. In this case, the company tends to choose a more centralized functional structure, which has a higher degree of mechanic.

(3) Stage of enterprise development. Enterprises are at different stages of development, the organizational structure is generally different [26]. Start-up enterprises, the general goal is relatively single, the organization needs to focus on doing big things, focusing all the resources to achieve the product from zero to one process, the power is more centralized. Growth stage enterprises, with the expansion of business and scale, will gradually form a mechanical decentralized organization, the formation of their respective functional departments, the maturity of the enterprise will continue to promote and standardize its organizational model, steady development. Declining companies need to introduce various methods to save the company's business, may have to reintegrate the business and carry out multiple forms of collaborative approaches to inject new vitality into the company.

(4) Firm Size. With the expansion of business and the gradual increase in the size of the firm, the organization may become complex and redundant, and the division of specialization will continue to be refined. Enterprises should make corresponding adjustments to their organizational structure to prevent management inefficiencies from occurring. The larger the size of the enterprise, the more management levels, the need to coordinate and control activities will increase

accordingly, which will force the enterprise to increase the number of managers or management bodies, the organization will become more and more rigid and inflexible. The gradual increase of personnel and departments, forcing enterprises to develop more management charter, through the rules and regulations to achieve the control of employees and departments, so that the work of a standardized model, if the management effect is good, will eventually form a mechanical organizational structure. If the management effect is not good, the organization still needs to change.

Organizational change is driven by a number of factors, often with different factors acting simultaneously and interacting with each other [25]. Organizational change is a phenomenon that inevitably accompanies the organization as a dynamic system in its development process.

Linking the dynamics of organizational change with the process of organizational change constitutes a systematic model of organizational change, this model consists of three parts: inputs, intermediate variables, and outputs, and describes the intrinsic relationships of the various variables in the process of organizational change.

CHAPTER 2.

ORGANIZATIONAL STRUCTURE AND MANAGEMENT STATUS OF R&D PROJECTS IN VENUS ELECTRICAL APPLIANCES COMPANY

2.1. Characteristics and present situation of Venus Electrical appliances company

Founded in 1960s, Venus Electrical appliances company is the earliest professional manufacturer of marine lamps in China shipbuilding industry, and the earliest designated manufacturer of marine lamps and control systems of CSSC, with a supporting history of military development for more than 60 years. In 2008, state-owned enterprises were transformed into private enterprises. The company has a complete qualification of military and civilian supporting products. The ability of mass production. There are 17 series and more than 400 varieties of products, which is the only leading enterprise in the same industry in China that can design and produce lighting and control systems for the whole ship. Products are used in various domestic ships, warships and offshore oil drilling platforms.

As far as China is concerned, the shipbuilding industry is an important part of the lifeline of the national economy and industry. After years of development, the scale of China's shipbuilding industry has gradually increased, and it has become the mainstay of the international shipbuilding industry. It is an important factor to improve the country's comprehensive strength, accelerate the pace of marine development, safeguard the national maritime rights and interests, ensure maritime safety, maintain the economic growth of the shipbuilding industry, and ensure national defense security.

In recent years, due to the epidemic situation, the delivery volume of various types of ships has shrunk to varying degrees. However, China's epidemic prevention and control has achieved results, the economy has continued to recover, and the domestic demand for energy, grain and minerals has steadily rebounded.

There are still opportunities for new shipbuilding markets such as bulk carriers, oil tankers and gas carriers.

The order quantity of marine electrical appliances and control systems is positively correlated with the delivery quantity of new ships. In recent years, the domestic epidemic prevention and control form is good, and the market for marine electrical appliances is expected to improve.

Venus Electrical appliances company is mainly engaged in the R&D and production of ship matching lamps and their control systems, part of which is the R&D project of military ship matching products and part of which is the R&D project of civil ship matching products.

The R&D project of lamps and control systems for military ships, the customers are several major shipyards in China, the customers provide the product specifications from the shipyards, which stipulate several major control parameters and external dimensions of the products, and Venus Electrical appliances company is responsible for the research and development of specific products and production and delivery of the products in accordance with the specifications provided by the customers. Due to the quality management system requirements of military products, the suppliers need to establish internal quality management system in accordance with GJB 9000, and formulate internal project development process in accordance with the management requirements of military products. At the same time, we cooperate with the customer's representative and the quality management department under the Shipbuilding Industry System Engineering Research Institute to carry out quality control at all stages of the project. Finally, after acceptance by the customer's representative, the product is delivered and the project is completed. After the delivery, Venus Electrical appliances company is also responsible for the after-sales service of the delivered products during the contract period. The life span of military ship lamps and control systems is generally high, and most of the products are required to have the same life span as that of the ship.

Therefore, the quality and reliability of the products have put forward quite

high requirements. At the same time, due to the urgent delivery schedule of some military ships, the loading time is not under the control of Venus Electrical appliances company and is prone to change, so it is a very high requirement for the company to control the progress of the project.

Civilian products are a new business segment for Venus Electrical appliances company in recent years. In order to expand its business field, the company has started to participate in the civil lighting market. Unlike military products, civilian products are more competitive, with high demand for orders, generally lower order prices, and much lower reliability requirements than military products. This is a new opportunity but also a challenge for Venus Electrical appliances company. First of all, because the order quantity of civilian products is much higher, it is not easy for Venus Electrical appliances company to develop its own products. First of all, due to the larger volume of orders for civilian products, Venus Electrical appliances company can theoretically receive more orders with its R&D base and technology reserves. However, compared with military products, which are sold at higher prices, the R&D and production of civilian products require Venus Electrical appliances company to change its R&D and production ideas, and cost reduction has become an important task in the R&D and production of civilian products. Since there is no need to monitor the project process according to the military's quality management system standards, Venus Electrical appliances company can explore more suppliers and use more cost-effective technologies and processes. Civilian R&D projects do not need to establish complicated quality control documents and process records like military R&D processes, and should focus more on the realization of deliverable products.

Organizational Structure of Venus Electrical appliances company manages the R&D and production of marine electrical products with a functional organizational structure. The following is an analysis of the organizational structure of Venus Electrical appliances company's R&D projects and the functions of each department. The organizational structure of the company is shown in Figure 2.1.

Fig. 2.1. Organizational structure of Venus Electrical appliances company

There are 66 employees in the company, including 8 managers such as the general manager, functional managers and ministers of each department.here are 4 business personnel, 2 financial personnel, 10 technical personnel, 38 front-line production personnel and 4 logistics personnel. See Table 2-1 for the composition and proportion of employees.

Table 2.1.

Composition of Company Employees

project	administrative staff	servicer	financial staff	technician	Production personnel	logistical personnel
number of people	8	4	2	10	38	4
proportion	10.8%	6.1%	3.1%	15.4%	58.4%	6.2%

Source: author 's own calculating

The company has adopted a functional organizational structure, and the responsibilities and authorities of various departments and posts are explained as follows in the quality manual prepared by the company:

Quality control department. Responsible for organizing the preparation and adjustment of the annual improvement plan, and regularly tracking the implementation of the plan; Responsible for the statistical analysis of the realization of the company's quality objectives; Responsible for monitoring the company's nonconforming products, product representation and traceability; Responsible for the inspection and test of the product formation process such as goods entering the factory, production process and finished products leaving the factory in accordance with regulations and standards; Responsible for the use and management of monitoring and measuring equipment.

General management department. Responsible for the preparation of the company's human resources plan, participate in the formulation of post staffing and other human resources allocation work; Responsible for personnel recruitment and on-the-job training; Responsible for the key, special process of posts and staffing; Responsible for the post ability evaluation; Responsible for the training plan and implementation of personnel in each position, and establish training files; Be responsible for formulating and improving the company's various management systems; Responsible for the centralized management of the company's labor contract.

Sales department. Responsible for marketing strategy, market research, analysis of market trends, customer development, after-sales service and visits, customer relationship maintenance and customer satisfaction service management; Responsible for product quotation, evaluation of contract performance ability and contract signing. Responsible for the packaging and delivery of finished products and the protection and management of warehouse products; Responsible for revising and transmitting communication and information feedback with customers; Responsible for customer after-sales service and visit, customer satisfaction with the company's products and services survey and data analysis, and take appropriate measures according to the analysis results.

Production Department. Responsible for the development, implementation and adjustment of the company's production plan, to complete the production tasks on schedule; responsible for the workshop manpower, machinery and other production

resources scheduling, effective allocation of production resources, supervision and control of the production process to ensure that the product qualification rate; responsible for the maintenance of equipment, as well as overhaul, to ensure that the equipment integrity rate; responsible for the site production business guidance, as well as the scope of the jurisdiction of the nonconforming product inspection, control, marking Responsible for the management of the warehouse; to achieve the matching of accounts and goods, neatly arranged items, clearly marked; responsible for the management of the production site environment; with the Department of Management to complete the contract with the customer, commitments, etc., responsible for the completion of the product and the delivery of the interface; responsible for the organization of production in accordance with the production plan, to ensure that the task of the product to meet the requirements and on time to complete.

Purchasing Department. Responsible for the collection and processing of qualified supplier-related information, selection, evaluation and re-evaluation, supervision and control of the outsourcing process; responsible for the procurement plan and implementation of the company's production materials, in accordance with the acceptance standards of the purchased products into the goods to ensure that the quality of the purchased products; responsible for the control and management of the purchasing contract, to determine the process of purchasing and outsourcing process to provide the process, products and services, the content of the purchasing and outsourcing contract for supervision and inspection.

Finance Department. Responsible for the company's financial security management, to ensure normal production; responsible for the organization of the company's economic operations accounting and financial report preparation; responsible for doing a good job of comprehensive budget management, business performance analysis.

Technology Development Department. Responsible for planning and organizing the implementation of new product design and development and related control management; responsible for technical process assessment guidelines and evaluation; responsible for the company's internal and external document control

management; responsible for the technical guidance and tracking of the new product development process; responsible for the product process inspection, testing to provide relevant inspection guidelines.

According to the above positions and responsibilities, the specific functions of each department in the new product development program of Venus Electrical appliances company are described below.

The Operation Department is responsible for receiving orders from customers, agreeing with customers on specifications and agreements for product development, and signing order contracts. At the same time, when the product manufacturing is completed, it is responsible for contacting the customer's representative for quality acceptance of the product, as well as the packaging, crating, storage and transportation of the finished product to the customer. At the same time, the Operation Department is responsible for the procurement of raw materials and outsourcing parts required for the project.

Technology Development Department is responsible for technical dismantling of the customer's product specifications and agreements, communicating with the Operations Department to clarify the contract requirements, communicating with the customer's technical department personnel to communicate the specific technical requirements and details of the product according to the customer's needs for feasibility analysis, R & D design, process design, and synchronized with the military quality management system and the civilian product development standards for the standardization of the research and development of the management of technical data to establish a perfect document, to ensure that the production of technical support. Ensure the production of technical support.

Production Department in the Technical Department will be issued after the product drawings for production processing and manufacturing, semi-finished products custody, mold tooling custody, inspection in the production process, responsible for product quality.

The Quality Control Department is responsible for managing the quality inspection of semi-finished and finished products of the produced components, for the

quality control and review of the project process from the design to the delivery of the product according to the military quality standard system and the civilian quality system, and for the quality acceptance of the customer's representative, and for the feedback and treatment of the problems found in the quality management.

From the point of view of the R&D project, each functional department has its own responsibilities, and the leaders of each department will report the work and problems of their respective departments to the general manager. From the project point of view, the process management responsibility of the R&D project mainly falls on the technical department.

R&D Project Flow The R&D project process in Venus Electrical appliances company is shown in Figure 2.2.

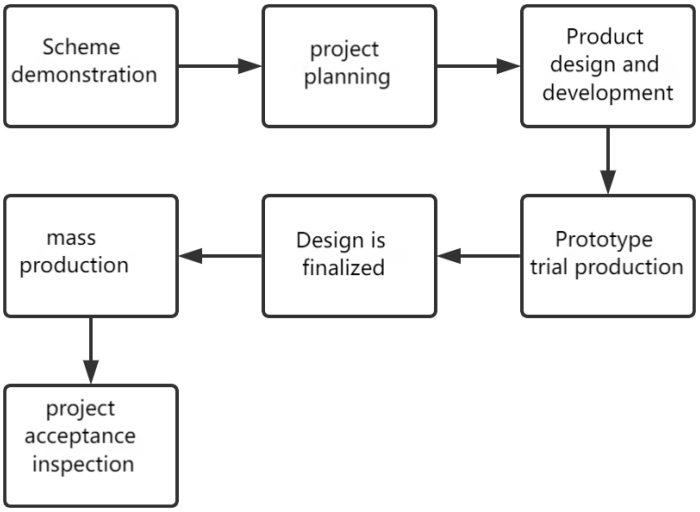

Fig. 2.2. R&D Process of Venus Electrical appliances company

Source: author ‘s own calculating

In the pre-planning stage of a project, the operation department hands over the technical specifications to the technical development department. The Technical Development Department analyzes the technical feasibility of the company's in-house R&D, production and testing capabilities, and analyzes the feasibility of outsourcing or purchasing the parts that are likely to be outsourced. The Technical Development Department analyzes the technical feasibility of the company's internal R&D,

production, testing and other capabilities, and analyzes the possibility of outsourcing or purchasing. The Management Department will cooperate with the Technology Development Department to conduct market research, analyze and compare the related products in the market [24].

In the program demonstration stage of the project, the Technology Development Department reviews the feasibility analysis of the preliminary planning stage. According to the customer's R&D and design mission statement, TDD completes the project's scheme demonstration report and design input documents. The correctness and feasibility of realizing the overall scheme for the development of new products are evaluated, mainly in terms of the accuracy of product performance, main technical parameters, compliance with the requirements of the product standards or regulations in use, the proposed product development cycle and production cycle, the analysis of the company's production capacity and quality assurance capability, and the analysis of the economic effects of the investments made (product cost forecasts and profit forecasts). If the above aspects are analyzed and evaluated, it is determined that the project can be developed, and the output document after evaluation is submitted to the general manager for approval, included in the annual development plan, and issued to the technology development department for the implementation of the research and development project. The Technology Development Department establishes a new product R&D and design review team based on business, specialty, and position and title.

In the product development and design phase of the project, through the project program demonstration report and design input documents, the Technology Development Department carries out the research and development and design of new products, outputs the relevant product drawings and process cards, and synchronizes the output of relevant documents according to the quality management system. In the design process, the reliability, maintainability, security, test line, safety and environmental adaptability requirements are considered. The inspection and acceptance of purchased parts, in accordance with the basic requirements of the company's assessment and evaluation of qualified suppliers of outsourcing

manufacturers, selected parts and components manufacturers, the Quality Management Department for incoming inspection, to meet the design requirements of the parts can be entered into the product prototype trial installation.

In the prototype trial production stage of the project, the production and supply department in accordance with the prototype drawings and technology issued by the Technology Development Department for prototype production. During the trial production process, the Quality Management Department will make detailed records, and if problems are found, the Technology Development Department will implement the rectification one by one. After the production of prototype will be prototype process verification, finalization test verification, prototype design review, through the verification and review of the prototype can enter the design stage.

In the design finalization stage of the project, the design changes that occurred in the previous stages will be evaluated, verified and confirmed, and the experience of the research and development process will be summarized and reviewed for standardization. After that, the design finalization review is conducted, mainly from the following aspects: the conformity of the prototype and the overall program; the situation of design changes in the previous stage; the rationality and completeness of the tooling and process documentation; the ability to work under the intended use and environmental conditions; the maintainability of the product; the completeness, uniformity and consistency of the technical documents, and the completeness of the output of the product's technical documents. After the review of the prototype output document completeness of the provisions of the finalized product drawings, processes, technical documents, collated and issued to the departments as required, and archived.

The mass production stage of the project, through the finalization stage of the product, according to the order contract for mass production, the production process by the Department of Technology Development to be technical support, quality management department of the product production process for quality control.

Acceptance stage of the project, after the mass production of the developed products is completed, the operation department will contact the customer's

representative for final quality acceptance of the products, and the products that pass the acceptance will be packaged and delivered. If the product does not pass the acceptance, the quality management department, production department, technology development department meet to discuss measures to rectify and solve the problems raised by the customer, the solution to the problem to provide customers with written documents and invite customers to re-rectify the product acceptance, acceptance and delivery.

2.2. Analysis of the organization management methods system in Venus Electrical appliances company

In order to have a deeper understanding of Venus Electrical appliances company's current functional organizational structure for R&D project management and production, so as to accurately and clearly find out the problems of the current organizational structure, and then improve it according to the theories of organizational structure design, organizational change, and project management, I conducted a questionnaire survey within the company, which was in the form of a closed-ended questionnaire. The questionnaire is in the form of closed questions, and the content of the questionnaire includes the views on the organizational structure, management mode, project workflow and other issues. A total of 33 questionnaires were distributed, accounting for 50% of the total number of employees in the company, and the questionnaires were drawn from different employees according to the ratio in Table 2.2.

A total of 33 questionnaires were distributed in this survey, excluding 1 unqualified questionnaire, a total of 32 questionnaires were recovered. The percentage of recovered valid questionnaires is 97%, which can meet the requirements of the survey objectives. Results of the questionnaire survey adopts the scale form of Likert scale, with 4 response options for each question. The statistical results of the questionnaire survey are shown in Table 2.2.

Table 2.2.

Statistical results of questionnaire survey

No.	Content of survey	Statistical results			
	Organizational structure management projects Reasonable Reasonable or not	R&D	General	Unreasonable	Unclear
1	Number of people	8	5	15	5
	Proportion	24.2 percent	15.2	45.5%	45.5% 15.2
	Reasonableness of the company's departmental setup	Reasonable	General	Unreasonable	Not clear
2	Number of people	12	13	7	1
	Proportion	36.4 %	39.4%	21.2%	3.0% of the total
	Are the boundaries of responsibility of each department of the Venus Electrical companylear?	Clear	General	Not clear	Unclear
3	Number of people	10	4	19	0
	Proportion	30.3 %	12.1%	57.6% 0.0	0.0% of the total number of employees
	Smooth communication between company departments	Smooth	Fair	Not smooth	Not clear
4	Number of people	3	5	22	3
	Proportion	9.1%	15.2	66.7% of the total	9.1%
	Whether there is inter-departmental tug-of-war	Yes	General	No	Not clear
5	Number of people	25	1	2	5
	Proportion	75.8 %	3.0%	6.1%	15.2
	Can priorities be clarified between projects	Clear	General	Not clear	Unclear
6	Number of people	12	3	15	3
	Percentage	36.4 %	9.1%	45.5%	45.5% 9.1%

Source: author ‘s own calculating

Con t	Contents of the survey			Result Statistics	
	Is the workflow within the project clear?	Clear	General	Unclear	Unclear
7	Number of people	15	10	7	1
	Proportion	45.5%	30.3%	21.2%	3.0% of the total
	Smoothness of communicatio n in all aspects of the project	Smooth	Fair	Not smooth	Unclear
8	Number of people	4	3	20	6
	Proportion	12.1%	9.1%	60.6%	18.2% of the total number of employee s
	Satisfaction with Employee Motivation	Satisfactor y	Averag e	Unsatisfie d	Not sure
9	Number of people	1	9	23	0
	Proportion	3.0%	27.3%	69.7%	0.0% of the total
	How efficient is management decision-making and implementatio n	High	Averag e	Low	Not clear
10	Number of people	4	10	16	3
	Proportion	12.1%	30.3%	48.5% of the total	9.1%

By the questionnaire survey questions want to find out the problems in the company's organizational structure, which question 1 want to determine the company's respondents on the company's organizational structure to manage the current R & D projects have a general judgment, many times the employees do not

accurately know what are the specific problems, but can have a general feeling. Only one-fourth of the respondents believe that the current structure is reasonable, and the remaining three-fourths believe that there are some problems with the current organizational structure.

Questions 2 to 5 want to determine whether the functional organizational structure of the department there is a gap between the collaboration between departments is smooth, departmental responsibility boundaries are clear, whether there is a phenomenon of inter-departmental tug-of-war, these may be the drawbacks of the functional organizational structure itself, but if the enterprise of this structure of the management of the proper, or to a certain extent, to avoid these problems, but on the basis of the results of the current questionnaire, nearly 70% of the However, according to the results of the questionnaire, nearly 70% of the respondents believe that there are some problems in inter-departmental communication, which may lead to high barriers in the departments themselves, and may neglect the interests of the organization or even the interests of the project clients for the sake of the interests of the respective departments themselves.

Questions 6 through 8 were posed to determine if the project is progressing well and can be effectively advanced within the same project, but nearly half of the respondents felt that the tasks given by their supervisors were unclear, that the project objectives were not defined, and that the process was overloaded.

A majority of the respondents believe that there are problems with the way the project progresses, and that there is a lack of smooth rotation between the various steps or processes. The majority of employees believe that the workflow within the project, i.e., the responsibilities of each process, are still clear.

Question 9: If you want to investigate the performance appraisal and incentive model that matches the functional structure, nearly 70% of the employees are dissatisfied, which is more in line with the actual situation because Venus Electrical appliances company does not have an incentive mechanism based on the project.

Functional organizational structure itself if the vertical hierarchical load is

too high, there will be inefficiency in the communication and implementation of decision making, Question 10 wanted to determine whether this defect exists within Venus Electrical appliances company. From the results of the survey, only 12% were satisfied with the efficiency of decision making.

Through the analysis of the above questionnaire survey, it is concluded that a considerable portion of the employees believe that the current functional organizational structure of the company is unreasonable in managing R&D projects, and the phenomenon shown is mainly the problems of unclear departmental functional boundaries, poor interdepartmental communication, unclear project priorities, poor communication links within the project, low level of employee motivation, and low efficiency of management decision-making and implementation.

2.3. Evaluation of the organization management system in Venus Electrical appliances company

Problems and causes analysis of organizational structure based on the results of the above questionnaire survey, the current organizational structure of Venus Electrical appliances company is not able to manage the company's increasing and ever-changing R&D projects, and the problems and analyses of the organizational structure are summarized as follows. The unclear boundaries of each department's responsibilities are reflected in the following aspects:

When a project is established, the interface for communicating with the customer is not unified. When a project is established after a contract or agreement is signed with a customer, the project is set up, the operation department hands over the specifications of the project requirements to the technology development department, and the technology development department is responsible for research and development and design of the project. However, after the project is set up, there is no communication channel between the company and the customer, which leads to the fact that when there is a change in the customer, the customer will

sometimes contact with the staff of the operation department, and sometimes contact with the staff of the technology development department, which is due to the reason that the customer The reason for this is that the customer believes that for the acceptance of the project and the delivery time of the product and other information related to the contract should be communicated with the Department of Operations with which the contract and agreement were signed, and for the project product development needs and technical parameters should be communicated with the technical staff of the Department of Technology Development, the change of the customer's technical requirements may affect the process of the product and the selection of suppliers, and at the same time the change of the number of the project products delivered and the time of delivery, which in turn, also has an impact on the product development. The impact on product development, when such customer changes are not communicated in a timely manner between the two departments within the company, it may result in prolonged R & D and design activities, waste of materials, and in serious cases, it will lead to confusion in the selection of suppliers and management disorders. This is ultimately reflected in the project schedule lag.

Procurement management of project materials and suppliers. When the Technology Development Department carries out the R&D and design, before the product production, the Purchasing Department should carry out the procurement of materials and parts according to the drawings and material schedule issued by the Technology Development Department, as well as the management of outsourcing process suppliers. However, in the process of project development and design, the procurement department is not involved, the product is not fully understood. However, in the process of project development and design, the purchasing department is not involved and does not fully understand the product, and the technology development department will be responsible for the selection of prototype parts and components as well as the search for outsourcing suppliers, which overlap the functions of the purchasing department. When the prototype production trial is completed, the purchasing department may change the selection

of materials and outsourcing process suppliers, which will lead to the quality of the batch of products and prototype is not uniform, or even more serious problems of poor quality of the project batch [23].

The production department and the purchasing department purchase production consumables and auxiliary materials at the same time [21]. As the Venus Electrical appliances company carries out production, the production department first time to understand the use of consumables and auxiliary materials, in many cases, will bypass the purchasing department directly on the procurement of these consumables and auxiliary materials, these materials purchased back to the factory into the warehouse, the warehouse also did not distinguish between the purchasing department and the production department of the purchased materials, often later on the financial department will be inefficient reconciliation problems.

Inter-departmental coordination is not smooth, Inter-departmental coordination problems are reflected in the following aspects. When the operation department negotiates new projects with customers, due to the lack of participation of technology-related departments, it is unable to accurately grasp the technical capabilities and feasibility of the production process, and rushes to sign the agreement and technical specifications, which leads to the problem that when the technical department gets the accurate R & D input information, it will find that the technological difficulty is high, the feasibility of the process is low, the cost is too high, etc. When dealing with this kind of problem, it has lost the ability to coordinate with each other. The original initiative of project schedule control has been lost when dealing with such problems.

In the R & D process, with the product prototype gradually clear, the need to determine the raw materials required for product processing and the need for outsourcing processing or procurement of spare parts. However, the relevant personnel in the purchasing department do not have a technical background and do not know enough about the technical characteristics of the product itself, which leads to poor information communication or even incorrect purchasing when purchasing raw materials and outsourcing parts. This leads to delays in prototyping

and mass production. Since the head of the Technology Development Department does not directly manage the Purchasing Department, the progress of the Raw Material Purchasing Department cannot be controlled.

The information between the purchasing department and the warehouse is not transferred to the technology development department at the first time, and the R&D designers cannot grasp the stock materials at the first time, which leads to the need of temporary purchasing of the materials that are thought to be in the stock, and increases the cost and the project cycle.

Inter-departmental coordination does not work directly affect the progress of the project. the current progress of the project in Venus Electrical appliances company is the current status of the project, project A from December 2021, according to the R & D progress of the Department of Technology Development, the requirements of March 14, 2022 to complete the development of the product design finalization, but the sub-project 17 is still in the prototype trial production and problem feedback link. Project B started in March 2022, and according to the R&D schedule of the Technology Development Department, the design and finalization of the product development of 6 sub-projects were completed on April 22nd.

However, only sub-project 1 has started the project development, sub-project 2 and sub-project 3 are in the program demonstration stage, and sub-projects 4 to 6 are still in the technical feasibility analysis stage. With the current staffing schedule, it is almost impossible to complete the project on time, and there is a high probability that the project will be delayed by more than two months. This will cause the acceptance period of Project B to fall far behind.

Inefficient Decision Making on Problems in Currently, the company has the problem of inefficient decision-making when problems arise, which is manifested in the following ways:

1. In the project planning stage, the operation department investigates the market and communicates with the customer before the project is established to sign the project agreement, there may be the operation department thinks that the

undertaking of this project is beneficial to the development of the company or the project is highly profitable, but ignores the technical feasibility, and then discusses with the technology development department to see if it is feasible. If the Department of Technology Development at this time that the technical difficulty of the project is too high, may be high research and development costs and long research and development cycle, is not suitable to undertake this project, the interdepartmental staff will be a conflict of issues, and first of all, the problem will arise between the two departments of the grass-roots level, and then reported to their respective department managers, explain the situation, their respective department manager in the communication, if you can't solve the problem of the project whether or not to undertake the issue of the general manager needs to be reported to the General Manager for Decision-making. Even in small and medium-sized enterprises such as Venus Electrical appliances company, which only has three to four levels of management, this decision-making chain is relatively long, and the speed of decision-making will affect the success of the project.

2. In the process of the project, the focus of the work of the staff in the functional departments, employees have to obey the functional manager's work arrangements, many times an employee previously reported problems have risen to the general manager or chairman of the board of directors to solve the problem, but high-level decision-making delayed communication, may make the employees responsible for their respective project work objectives are not clear, so there are a lot of employees just to complete the departmental arrangements for the day-to-day tasks, and even a lot of departmental employees have a lot of friction. There are even a lot of departmental employees who are in the situation of grinding work. The organization's work efficiency is very low, often affecting the progress of the project.

3. When the project encounters problems, conflicts often occur. Especially when conflicts occur between functional departments, there is no dedicated project manager to mediate the conflict, and according to the organizational structure of Venus Electrical appliances company, the only way to resolve the conflict is to ask the general manager at a higher level. The general manager's understanding of the project

is far less than that of the functional departments that are actually involved in the project, so the response to such conflicts is very slow, but if the conflict is not resolved, the project can only be suspended, which also seriously affects the project schedule and the motivation of the staff.

Inefficient management of multiple projects, At present, Venus Electrical appliances company's projects always have multiple projects in parallel, and the inefficiency of multi-project management is mainly reflected in the following aspects:

4. When the employees of the operation department hand over the customer's R&D project requirements to the employees of the technology development department and carry out the demand docking [22]. the minister of technology development will directly assign a member of the technology team to carry out a certain project or certain projects. Instead of accurately evaluating the sub-projects, a certain sub-project or several sub-projects are directly assigned to a certain technician to carry out the development of the relevant product, if the difficulty of the product is estimated incorrectly or the technician fails to provide timely feedback on the development of design problems, which may lead to a sub-project to re-develop the project and thus the project schedule is insufficient.

5. Difficulty in monitoring multiple projects. Since Venus Electrical appliances company does not have a full-time project management staff or a sound project management mechanism, the responsibility of project management and control falls on the shoulders of the Minister of Technology Development, who also has to take care of the technical development of several projects and the daily administrative management of the Technology Development Department, which makes it difficult to monitor and control multiple projects at the same time. The time and energy available for management at the time was clearly insufficient. At the same time, the administrative functions of each department are at an equal level, and the Minister of Technology Development is also limited in terms of resources and authority to effectively monitor multiple projects, and it is actually the developers in the Department of Technology Development who manage each project.

6. Resource information is not shared. The company was formerly a state-

owned enterprise, and after privatization, the management hardware and software lag behind many private enterprises. The Venus Electrical appliances company currently has no management information system, not established enterprise information resource base, technology development department, production department and warehouses and other departments that need to share resources, project and product management are separated, information transfer within the company is not smooth and timely. At the same time, although the responsibility of project development is within the Technology Development Department, the sharing of resources between different projects within the department is not perfect, and sometimes even the requirements that have been changed and canceled are still being designed by the developers.

The causes of the above problems are analyzed below. The reasons for the problem of unclear boundaries between the responsibilities of each department are as follows:

7. The root cause was that the external environment was changing from stability to change. Venus Electrical appliances company's functional organizational structure was rigid and very inflexible, and thus could not adapt well. In the past, when there were not so many projects, Venus Electrical appliances company had a small variety of products, a single customer, and the company had almost no competitors in the same industry, belonging to the seller's market, Venus Electrical appliances company had quite a say in the market, and part of the industry and product standards are also the company participated in the development, so the producer of the product holds quite a lot of initiative. The departments only need to operate according to the annual production tasks, the communication with customers only exists with the daily maintenance and delivery matters, the technical department, purchasing department, production department and the quality department only need to follow the linear workflow to carry out the division of labor. However, with the development of competition in the industry, technological innovation, the constant influx of similar enterprises to participate in the competition, the customer's requirements for the product is also increasing, gradually forcing the enterprise to

increase more product lines, so that the product diversification, the original organizational structure and operational processes have brought a lot of pressure. In the operation of the project, there is a lack of clarity in the boundaries of authority and responsibility, some departments should not do the work but should not do more work to do the situation.

8. According to the organizational structure of Venus Electrical appliances company introduced in Chapter of this paper, the responsibilities and authorities of each functional department in the process of the company's production and operation are stipulated, but with the increase in the number of product lines, in the process of running the actual projects, there is no clear stipulation of the company's job duties as to when the departments should intervene in the projects and how much they should be involved in the different projects. This leads to the departments are only responsible for the functions of their own departments, but not unified for the project is responsible for the project in the process of running the project, the departments have overlapping functions and functional vacancies. And in the process of the project, a lot of information communication and coordination or changes need to be repeatedly confirmed in the current organizational structure of the division of authority belongs to the fuzzy area, there is no clear delineation of the current Venus Electrical appliances company in these fuzzy areas of the basic by the functional department managers discretionary, there is no clear responsibility for its coordination and responsibility, also led to the occurrence of the phenomenon described above.The reasons for the lack of collaboration among departments and the causes of the above problems are as follows: departmental collaboration problems arise with the organizational structure of the great relationship between the functional organizational structure in the cross-departmental horizontal communication capacity is weak, the existence of departmental walls. The untimely transmission of information is an obvious defect of the functional organizational structure. Employees are sometimes required to report upward to the functional manager to determine whether the information can be communicated to other departments. According to the current functional organizational structure, each functional manager of the departments under

his management to communicate and coordinate, if there is a cross-departmental or cross-process tasks, functional managers need to meet to discuss, if the product range is small, this form of communication can be solved to a certain extent, but in the diversity of the product now, the functional managers in the management of their respective departments at the same time, there is no time to take care of such a large number of communication needs. Moreover, when inter-departmental collaboration problems occur, since there is no single person responsible for managing inter-departmental collaboration, each department will shift its responsibility to other departments for its own benefit. Functional departments due to the different ways of work within the department, the assessment method are different, the results of the work of each department are also different, this is due to the different goals of the work of the communication is not coordinated, will reduce the efficiency of the organization.

Different stages of the project life cycle, but also different stages of the R & D process, the focus of the work are different, in how to adjust the requirements of different projects, in the functional organizational structure, which can only be grasped by the functional managers, but the functional departments are only responsible for some of the work of the profession, not the project success or failure of the main responsibility, which is easy to generate the departmental wall of the functional departments, the other departments of the work of indifferent, or even the work of the department. The work of other departments do not care, and even the project process of the upstream and downstream departments do not care about the handover, only to do their own department's work even if the task is completed. This is also an obvious problem with the current structure.

The main reasons for the inefficiency of problematic decision-making are as follows: Functional organization decision-making needs to be transmitted by management level, when a department encountered problems at the grass-roots level, the grass-roots staff can not solve the problem alone, they need to be reported to his department manager to solve, if the department manager is still unable to solve the problem, it also needs to be reported to the senior manager of the next level of the

solution, and even some problems directly to the general manager of the General Manager, such a long reporting process undoubtedly reduces the speed of the problem conveyed, and also increases the pressure of senior managers to make decisions, which will undoubtedly reduce the speed of decision-making at the top. And also increase the decision-making pressure of senior managers, which will undoubtedly reduce the speed of high-level decision-making.

If the problem that needs to be decided only involves a certain department, the problem will be conveyed upwards more smoothly and the decision-making will be relatively easy. If it involves inter-departmental conflicts or process problems, since the members of each department in a functional organization give priority to the interests of their respective departments, there is a certain probability of inaccuracies in the transmission of the problem, or both departments may want to obstruct the transmission of the problem to the top level for the sake of their interests. The transfer of information before decision-making also reduces the efficiency of decision-making.

9. There is no system of accountability for the full life cycle of a project, and there is no position or function to coordinate and monitor parallel projects in real time. As the company's projects increase, there will be more and more new products, many products need to re-development and design, the need to go through the entire R & D - design - production - delivery process. The company management is accustomed to the original order in the original product.

The company's management is used to the original orders, slightly improved on the basis of the original product can be produced routine, this situation in the functional organizational structure can not see obvious defects, but the increase in the number of new products, the increase in the number of new projects, the demand for resources is also constantly expanding. Although the company's human resources by a certain degree of growth, but for a number of new product development projects, resources are not sufficient, it is not possible to ensure that at the same time to meet the conditions of adequate use of a number of projects, projects in the development of their own plans did not pay attention to the conditions of resource security.

The current organizational structure pays more attention to whether the

production tasks of the project can be delivered according to the delivery date, and is unable to effectively manage and regulate resources, and lacks the necessary resource management mechanism, when the project suddenly increases, it will inevitably produce a certain time period certain resource tension or even conflict [38]. While at the same time in some time will produce a waste of resources. In this process, there is also no post or organization responsible for the results of resource management. It will reduce the efficiency of the project and the organization.

10. When multiple projects are running, information and resources are not shared, and there is no support for the establishment of a lessons learned and knowledge base and its effective management to assist in the operation of multiple projects [31].

When the number of projects in the company increases gradually, most of the new projects will rely on the knowledge and experience gained from the completion of the old projects to simplify the problems encountered during the operation of the projects[39]. However, there is no special organization in the organizational structure of Venus Electrical appliances company responsible for the management of organizational process assets, and the functional departments basically do not summarize the problems in the project process after the completion of a project, but only summarize and feedback on the professional problems of the functional departments, so when a new project emerges, the problems that occurred in the project operation process will occur again, and the repetitive problems that occur in each project will affect the progress of the project again. So when a new project comes up, the problems that occurred during the running of the project will appear again, and the repetitive problems that occur in each project will affect the progress of the project again [40].

CHAPTER 3.
IMPROVEMENT OF IMPLEMENT ORGANIZATIONAL STRUCTURE MANAGEMENT SYSTEM IN VENUS ELECTRICAL APPLIANCE

3.1. Conceptualization of organizational structure improvement

Requirements of the external competitive environment with the development of global integration and military informatization, a new round of scientific and technological revolution and industrial revolution are being quietly nurtured, and peace and stability are the most important demands of the country [32]. Consolidation of national defense construction and strengthening of military construction are not only necessary for guaranteeing national security and maintaining peace, but also a strategic task for economic development [36]. The defense science and technology industry represent a country's industrial development level, which represents the country's science and technology, technology and armament level [35].

The defense science and technology industry is a symbol of the country's comprehensive national strength. Civil-military integration opens the information barriers between military production and private enterprises, creates a level playing field, and plays a positive and powerful role in the harmonious development of both the national military manufacturing industry and private manufacturing industry.

The original military industry has its own special characteristics, relatively closed, long-term state-owned military industrial group dominated, responsible for the whole industry chain of defense weapons and equipment production and development [34]. And private enterprises due to the lack of information, the lack of understanding of the national defense equipment system, the degree of participation is low. Under the background of the era of civil-military integration, more private enterprises are involved in the production and manufacturing of military products, and Venus Electrical appliances company is facing the threat of more new challengers in the market.

In terms of technological innovation, many companies that originally held patents on civilian products also use these patents in the production and manufacture of military products, and the original patents of these companies, and the technological innovation brought about by the increase in their investment in military research and development projects, have also gradually revealed their advantages in the competition for new products. This puts Venus Electrical appliances company under greater pressure to compete for new projects.

In the R & D project cycle, the host plant on the project cycle requirements are also increasingly high, the original R & D production model of Venus Electrical appliances company on the iteration of the new project more and more quickly it is difficult to achieve a timely response, if part of the project requirements in the project process changes, the company's current project operation mode, the cost of making adjustments to this very high, and may even lead to serious delays in the project. This will face a decline in customer satisfaction and finally lose some orders and customers.

In recent years, many of the new product development is in the stage of forced innovation, due to the external competitive environment as well as the old customer's mandatory requirements for innovation and new product development, because of the exhaustion of the technical staff led to the company's patent layout in recent years also did not have a targeted planning, a lot of innovative products are only in the theoretical analysis stage and prototype stage, and there is no actual production and delivery. The enterprise's ability to innovate new products determines the enterprise's ability to respond to external changes and adaptability.

At present, many customers in the industry are interested in “short, flat and fast” products, and these types of projects have become the most sought-after products in the fierce competition. However, according to the above analysis, the current organizational structure of the company is unable to provide timely feedback to customers, which is also manifested in the lack of innovation ability of the company. All these problems constrain the high quality and sustainable development of this Venus Electrical appliances company.

From the above analysis, it can be seen that the external competitive environment puts high demands on Venus Electrical appliances company's R&D project mechanism, and the company will face great risks if it maintains the existing project workflow to carry out R&D and production of projects. It is necessary to improve the project management mode of the company's product development management mode.

Requirements for internal departmental collaboration, Due to the traditional functional organizational structure management model adopted by Venus Electrical appliances company, each functional manager arranges the work of their respective departmental employees, and the assessment criteria for the department and employees within the department do not take into account the inter-departmental collaboration, and there are communication barriers between the departments on issues related to the coordination of the project.

Even in traditional manufacturing companies, projects should be considered as a whole. When managing projects as a whole, the primary goal must be the successful delivery of the project, which requires each functional department within the company to break down the information wall and work together to realize the success of the project. In order to achieve this purpose, it is necessary to improve the information communication efficiency of the functional personnel in the project [32].

Reasonable scientific communication management mechanism is very important to create, inter-departmental communication and coordination only within a reasonable mechanism to implement, in order to ensure that the coordination of communication between the various functional personnel in the work for the project in the standardized procedures for the implementation of the coordination, to avoid communication and coordination of the phenomenon of chaos and disorder, to the project's progress and quality of the project to bring about adverse effects. In order to ensure smooth collaboration, the reconstruction of the project operation process and the communication mechanism between departments is a key factor in the development of the project operation of Venus Electrical appliances company. The project is also a key element in the development of Venus Electrical appliances

company's project operation. In this view, the improvement of inter-departmental coordination in Venus Electrical appliances company is very necessary, so that each functional department is responsible for the common project, and the creation of a full-time project management staff responsible for the project is an inevitable choice.

Multi-Project Management Requirements At present, there are always multiple projects going on at the same time [33]. The successful implementation of each project requires corresponding resources, such as human resources, software resources, processing equipment, project funds, etc [41].

However, these resources are limited within the company and need to be prioritized and evaluated at each project's resource demand node before resources can be allocated efficiently and reasonably [50]. The executives need to determine the resources necessary to satisfy the normal operation of each project at the resource demand nodes in order to rationally allocate the company's limited resources to each project [49].

In the functional organizational structure, because there is no project manager's role, the responsibility of project progress control and coordination of project resources falls on the Department of Technology Development [42].which is mainly responsible for the development of the project products, squeezing the project progress monitoring and coordination of the work time, it is bound to focus on other functional departments, so it can not fully grasp the project in the development of the project in the technical procurement of materials, prototype trial production, quality control, quality control, and the development and development of the project. Therefore, they cannot fully grasp the actual resource needs of the project in the process of material procurement after technology development, prototype trial production, quality control and mass production, and the resource allocation demand data proposed under this premise is often inaccurate [43].

Secondly, the technical development department of the technical developers as the actual project coordination personnel can not be based on the company's internal resources for overall consideration, can be their own project progress and resources to coordinate the appropriate has exceeded the scope of capacity, when the project

between the resource allocation competition and conflict, can only be reported to the functional manager to the company's more senior leaders to report to the top leadership to make overall adjustments by the senior leadership. However, due to the technical developers to put forward the resource requirements data itself has certain inaccuracies, resulting in the leadership in the resource coordination issues can not make the right decision, adjusted resource allocation may also appear with the actual situation does not match the problem, may be twice the effort or even cause more intense project conflict [47].

Multiple projects are carried out at the same time, unreasonable resource allocation will lead to some projects have unsaturated members, processing equipment idle, waste of funds. Equipment idle and waste of funds, while some projects have a lack of human resources, processing equipment, shortage of funds, both of which ultimately affect the efficiency of the enterprise.

When the company runs only one project, cross-departmental information communication and coordination can be operated in accordance with the mechanical workflow, the relationship is also simple to deal with, when the project increases, this communication needs more and more, the efficiency of functional managers in dealing with the communication problem will also be significantly reduced, and there is also the possibility of affecting the management of the functional departments of the situation.

In this case, there is a need to establish a specialized project management organization to manage all project managers and establish a communication platform between projects and between project teams and functional departments. All project managers within the project management organization will discuss solutions when resource allocation conflicts arise in multiple projects, and eventually the project management department will readjust the resource allocation, thus avoiding the phenomenon of irrational allocation.

Conceptualization of organizational structure improvement Venus Electrical appliances company currently suffers from unclear departmental functional boundaries, poor interdepartmental collaboration, low employee motivation and

efficiency, and inefficient multi-project management. After the above analysis, the reason behind this is due to the fact that it has been following the functional organizational structure of the past. There are many defects in the operation of this organizational structure in Venus Electrical appliances company: slow response to changes in the environment, fuzzy areas with unclear boundaries in the project process, resulting in overlapping functions or vacancies, weak horizontal communication, and no responsible positions directly responsible for the project. It is no longer able to meet the company's diversified product project needs, in order to solve the current management problems, put forward the concept of improving the organizational structure of Venus Electrical appliances company around the R & D project.

Venus Electrical appliances company is now adopting the strategy of product diversification, not only in the field of military products, but also to expand the civilian products, under the demand conditions of “short, flat and fast” products, the improved organizational structure is designed. In the choice of improved organizational structure, including project-type and matrix-type organizational structure. The matrix-type organizational structure will be more suitable for the current situation of Venus Electrical appliances company. It not only retains the original functional departmental management mode, which will not lead to a huge change of human resources in each functional department, but also adds the position of project manager, which can control the project as a whole at the time of project establishment, and use each functional department as a resource pool to deploy each human resource into the project.

At the same time, Venus Electrical appliances company also has the problems of low employee motivation and efficiency, and low efficiency of multi-project management, due to the lack of effective resource management mechanism, unable to achieve a balance of resources, and did not set up the project life cycle accountability system, there is no organization to carry out unified control of multi-projects, and also unable to effectively manage the project organization process assets. In order to solve these problems, and to cope with more product

development projects that Venus Electrical appliances company may undertake in the future and the expansion of the company's scale, a Project Management Office (PMO) will be established to support the company's project management activities.

Ways to Achieve Organizational Improvement, Venus Electrical appliances company is going to change from a functional to a matrix organization structure in the following ways:

1. Establishment of project management office and project manager positions [46]. An important feature of the transformation from functional to matrix organization structure is the formal establishment of each project team, at this time it is necessary to create the position of project manager responsible for the management of project progress, quality, cost, etc., the arrangement and distribution of project resources, to maintain the normal operation of the project and to ensure that the project deliverables. Venus Electrical appliances company has been in the phase of several projects in parallel, but the company's investment in human resources, production equipment, test equipment, testing equipment and R & D funds are all limited. The emergence of project managers has strengthened project management, but at the same time, project managers of different projects will try their best to the struggle for more resources to ensure the smooth running and delivery of projects may instead lead to competition and conflict between projects. This puts forward the requirements for the allocation and mobilization of the resources that the Venus Electrical appliances companyurrently possesses: not only to ensure reasonable access to a variety of resources in each project, but also to meet the normal operation of the project. This is the only way to maximize the utilization of available resources [45]. This requires the establishment of a Project Management Office (PMO) to harmonize and allocate resources to projects according to the existing projects.

2. Relationship between project managers and functional managers. In the process of transforming the organizational structure of a project, many obstacles arise, including conflicts between functional managers and project managers. The increase in the number of project manager positions and the establishment of a

matrix-type organizational structure, each project has one more leader to manage the project work with full authority, which means that, in terms of the work process and psychological aspects of each functional manager will receive a great deal of change and impact, part of the functional manager's authority will be passed to the project's manager.

In the matrix-type organizational structure, the employees of each functional department will be distributed to different projects according to the requirements of the project, in the process of running different projects, listen to the management of the project manager, and under the functional departments, to obey the management of their own functional manager, which results in an employee to report to two leaders at the same time, the contradictions in the rights of the functional manager and the project manager, will often cause some project members The conflict of rights between the functional manager and the project manager often has a certain impact on the project members, and it is also unfavorable to the normal operation of the project in the long run. Therefore, the clarification of the scope of authority and responsibility of the project manager and functional manager and the handling of the relationship between the two roles also play an important role in the transformation of the organizational structure.

3. Reasonable adjustment of employee performance appraisal system. In the process of transformation from functional to matrix organizational structure, the reasonable adjustment of employee performance appraisal system is also necessary [44].

In the functional organizational structure, employee performance appraisal only from the functional manager of the assessment, there is no internal project assessment, project operation and ultimate success or failure is not a strong basis for assessing employee performance, employees in their respective functional departments to obtain the functional manager's satisfaction can be obtained by a high evaluation of the assessment results. However, after the project organization is transformed into a matrix-type organizational structure, the project manager is given the power to increase the appraisal of members within the project. The

project manager will be based on the performance of the members of the project assessment, the project staff will have a certain degree of evaluation of the assessment, so that employees will be subject to the functional manager and the project manager's assessment at the same time, in the reasonable appraisal system, will make the project staff in the project to work more actively and seriously, with the project manager's work for the project to make the project progress more smoothly. In this performance appraisal system, often not understood by the functional manager but can play an important role in the progress of the project staff will be more accurate assessment. However, the weights and relative emphasis of the functional manager and the project manager on the employee appraisal need to be reasonably designed to avoid the occurrence of the appraisal can not accurately reflect the true performance of the employee.

4. Improved Organizational Structure According to the analysis of the current problems of Venus Electrical appliances company, the company's project organizational structure is adjusted and re-improved to a matrix-type organizational structure, with the same dotted line box for the members of the same project team. Compared with the functional organizational structure, the matrix-type organizational structure can improve the responsiveness to customers, increase the separate project management unit, with the project resource management mechanism, can effectively deploy the project resources for the research and development of new products, increase the project results-oriented incentive assessment mechanism, mobilize the enthusiasm of the staff, and improve the interdepartmental collaboration ability, which can effectively solve the current problems of Venus Electrical appliances company. After the adjustment, each functional department maintains the original management structure, and each functional department manager reports to the chairman and general manager., the improved organizational structure will establish the position of project manager. The function of the project manager is to manage the schedule, scope, quality, cost, resources and other aspects of the respective project.

Considering the fact that Venus Electrical appliances company does not

want to increase labor costs at this time, and has no need or plan to recruit additional personnel, the project manager position requires not only an understanding of the company's products, but also a clear understanding of Venus Electrical appliances company's current development and production processes, as well as good communication and coordination skills, the additional project manager position can be considered to be selected from the current staff in the Technology Development Department or the Production and Supply Department. The additional project manager position can be considered from the current technical development department or production and supply department staff to select the staff with the above project manager position qualities to play.

In the original organizational structure of the functional departments, Quality Management Department, Technology Development Department, Production Department, Business Department, according to the project needs, respectively, from the functional departments to assign employees to the various projects, according to the current human resources of the company, the tentative allocation of according to the current human resources of the company, it is tentative to assign one employee to each project. According to the needs of the project, the production department will reorganize the employees of each workshop of different processes into different shifts.

Each project manager plans the required human resources according to the actual situation of the project, and can communicate and coordinate directly with the project management office application or other functional department managers to ensure the required resources for the project and promote the project under the premise of minimizing the impact on other projects of the company. The project manager is responsible for communicating with the customer after the project has been established. If the customer has new requirements or changes to the project during the project development process, the project manager will communicate with the project manager and convey the information to the internal links of the project.

Since Venus Electrical appliances company is in the early stage of

organizational structure improvement, the actual power of the project manager is relatively low, and most of the time he acts as a project coordinator, so the communication and coordination with customers, developers, production staff, purchasing staff, and the delivery of the project products in accordance with the specified scope, cost, and schedule have become the primary focus of the project manager.

The establishment of the project manager position can effectively solve the problem of unclear functional boundaries in Venus Electrical appliances company. In the fuzzy area of the previous division of authority, if there is an overlap of functions or functional vacancies, since the project manager is responsible for the final results of the project, the project manager will assign the project members to deal with the project or the project manager will solve the problem on his/her own.

The Project Management Office (PMO) is a newly added management organization, which is on par with other original functional departments in terms of administrative level, and the PMO manager reports to the chairman and general manager. At this stage, the type of PMO that fits the situation of Venus Electrical appliances company is the supportive PMO, and the PMO will gradually change from the supportive type to the controlling type when the concept of project management matures in the company.

The addition of PMO is to solve the problem of conflicting priorities and resources among multiple projects, and will provide better support for communication between project managers and functional department managers. In the process of organizational structure improvement in Venus Electrical appliances company, the type of PMO should be a support PMO, which acts as a consultant in the process of company's functional management as well as the construction of the project management system, providing templates, training, and information and lessons learned from other projects. This type of PMO model is characterized essentially as a project database. Although this type of PMO model has a lower degree of control over projects, it is more important for employees to adapt to the project management model and accept the PMO's existence during the early stages

of the organizational transformation.

The establishment of the PMO will serve the following roles in Venus Electrical appliances company: The PMO should ensure that the projects to be established by the company are strategically aligned with the company's strategy, and the PMO will strengthen the awareness of project management within the company, establish the company's project management system, provide training in project management, establish the company's project management business process, and ensure that the operation of each project is in line with the company's strategic goals and fundamental interests. fundamental interests of the company.

Supporter and guarantor of project management. Participate in project planning and determine the feasibility of each project before the project is established. Evaluate the difficulty of project management at the early stage of the project and provide support for the upcoming project management. Provide project management knowledge and support to provide project managers with project management knowledge and technical advice, and collect and organize organizational process assets during the project process.

Project Resource Allocator: After the establishment of PMO Venus Electrical appliances company, the company's internal project management model has gradually matured, and the PMO will prioritize the company's existing projects and upcoming projects, and plan and optimize the resources of each project during the operation process. When there is a conflict of resources between projects, each project manager can report to PMO for reasonable allocation of the conflicting resources, and check whether the schedule and WBS of each project are reasonable. The establishment of PMO will effectively solve the problems of resource balancing and asset management in the project organization process.

After the adjustment, each functional department maintains its original management structure, and each functional department manager (including the newly established PMO manager) reports to the chairman and general manager. After the organizational restructuring, the original departments are equivalent to the human resource pools of different functions, and the human resources are reasonably

allocated from each functional department to each project according to the assessment of the project by the PMO and the project manager after the project is established. Specific changes in the functions of each department are as follows:

President General Manager. As the highest leader of the company, he is responsible for the formulation of the company's strategic objectives, decision-making on the direction of the company's development, and decision-making on the solution of the most important problems in the current operation of the company. Listen to the reports of the existing functional managers and the newly added PMO manager.

Project Management Office (PMO): PMO is a newly established functional department, in principle, the administrative level is equal to other functional departments, but for the newly established department, the main function is to provide services for projects and inter-project coordination, and to participate in the decision-making of the company's senior management and give opinions based on the perspective of project management. It manages the project managers, provides training on project management knowledge and skills for the operation of each project, and calibrates the project plan, human resources and production material requirements of each project. Provide communication and coordination support to project managers when they have difficulties in coordinating with other functional managers in the operation of each project.

Quality Control Department. The Quality Control Department has two main functions, quality system management and quality inspection management. Quality system management in the project after the project in accordance with the GJB9000 military quality management system on the project program stage, the initial sample stage, trial production stage and finalization stage process quality management. Quality inspection management is to carry out quality inspection on the products produced (including prototype and batch products), and to carry out quality inspection in accordance with the customer's requirements and inspection procedures stipulated in the relevant standards. there are only three people in the quality control department of Venus Electrical appliances company. After the

organizational restructuring, the same quality engineer is responsible for the management of quality system and quality inspection management in each project, and the work will be completed according to the progress plan of the project manager. Work. In view of the current limited staff, PMO should reasonably allocate the staff according to the urgency of the project and the size of the project, and one quality engineer can be responsible for the quality management of several projects at the same time if appropriate.

Technical Development Department. The Technical Development Department is managed by the Deputy Technical Manager, and three types of work are routinely performed within the department: design development, standardization management and design data management. Standardization management and technical data management are operated in the original way.

The standardization management and technical data management are operated in the original way, with one standardization engineer in charge, and no change will be made, and the more important technical development tasks will be assigned according to the actual situation of each project. PMO will communicate and coordinate with the vice manager of technology according to the actual situation of the project and the knowledge and skills required for the development and choose the appropriate developers to carry out the product research and development, and select multiple personnel for a project at the same time for the projects that are more difficult to appear. The deputy technical manager is responsible for training the technical engineers in specialized knowledge.

Production Department. The Production Department is managed by the Deputy Production Manager. There are three sub-departments: the Production Supply Department, the Finished Product Workshop and the Machine Shop. The former Production and Supply Department is responsible for planning and arranging the production plan, coordinating the production cycle, and scheduling the various processes in the workshop, but now, according to the needs of the project, the personnel are drawn from it to enter the project, and they are only responsible for the production plan and production supply management in the project. Finished

products workshop and machinery workshop according to the project products need different processes, divided into various groups, each group is responsible for the products of their respective projects. If the same process is needed by both projects at the same time in the two workshops, or if there is a conflict between the process, equipment, or production personnel needs, the project members of the Production and Supply Department will report to the project manager, who will coordinate the production resources with the PMO and the deputy manager of the production to arrange the production.

Finance Department. The finance department is directly managed by the chairman and general manager. As there are only two finance staff in Venus Electrical appliances company, the department's attributes are more sensitive in the company and it is impossible to create additional positions for the time being, so the Finance Department works according to the original functional model. Each project manager according to the project plan to report the funding plan, by the project separately reported to the Finance Department, the Finance Department to review and approve, issued by the project required funds.

Operation Department. The operation department is managed by the deputy manager of the operation department, and the daily work of the operation department includes maintaining external customer relations, selling and signing ordering contracts, storage of finished products and product delivery. External sales can not be split into projects due to Venus Electrical appliances company's unique order model, and the maintenance of customer relations and changes in customer requirements are now left to the project managers, after the project is signed, the Operations Department is no longer responsible for communicating with the customer, and the project manager is the only channel of communication for each project. Internally, different employees are assigned to different projects in terms of finished goods storage and product delivery. Each employee is only responsible for the storage of finished products and the packing and shipping of their own project [43].

The management of the finished goods warehouse is adjusted so that the

finished products are managed according to each project, and the project manager can know the number of finished products in the current project in time and project whether the delivery date is met or not, so that the plan can be adjusted in advance if there is any problem with the production schedule.

Integrated Management Department. The Integrated Management Department is managed by the Deputy Manager of Administration, and the Integrated Management Department carries out daily operation according to the original mode. When carrying out human resource management, the original performance appraisal mechanism needs to be adjusted, and the project-based appraisal system needs to be added. When PMO communicates with functional department managers about human resources, it needs to be filed in the Integrated Management Department, and the company's human resource management staff should keep abreast of the staff's mobilization in different projects, so as to make real-time adjustments to their appraisals. At the same time, in the process of organizational structure change in Venus Electrical appliances company, the Integrated Management Department should also pay real-time attention to the psychological acceptance of the employees of the company's various functional departments, whether there are changes in the work attitude and motivation of the employees, and communicate with the PMO manager in time, so as to solve the human resources problems that may arise.

The addition of a project manager position allows for more precise control of the progress and cost of each project. Under the premise of maintaining consistency with the company's overall strategy, a more reasonable process is formulated for the project, so that when the company management needs to know the progress of the project, they only need to know the progress of each link of the project from each project manager, and they do not need to have meetings with the managers of each functional department to listen to the opinions of each functional department on the progress of the project.

There is no need to meet with the functional department managers to listen to the functional departments on each project report, thus avoiding the situation that the focus of discussion is shifted to departmental disputes due to the fact that each

functional department has its own duties and ignores the progress of the project.

1. Compared with the structure before the improvement, the project manager's mastery of the project is far more than that of the functional department managers, and in terms of the use of company resources, he/she can directly communicate and coordinate with the functional department managers or report to the PMO, so that the company's utilization of resources is more reasonable, and the utilization rate of human resources and production resources will be improved to meet the operation of the project at the minimum without hindering the research and development and production of other projects.

2. Internal and external communication interfaces of the same project are unified, no matter customers, suppliers or other related parties have project managers to communicate, the unification of communication channels makes communication information more accurate, and there will not be different communication information from different people, which will lead to mismatch or contradictory information sources.

3. When a project encounters sudden external changes, the project response becomes more timely. After improvements, the project manager can directly decide whether to implement the changes. If the changes are approved, the change requirements are directly communicated to the developers for design modifications. Compared to a functional organizational structure, this approach allows for rapid adjustments to the project's direction in the shortest possible time.

4. Human resources in the functions are more fully utilized, and at the end of the project, project personnel return to their functions and will soon be assigned to other projects. There will be fewer idle staff in the functional units.

5. The problem of unclear boundaries of authority and responsibility of the original functional departments during the project will no longer occur, in the project managed by the project manager, everything is to deliver the project as the primary goal, the members of the functional departments in the project are managed by the project manager, and if there are unclear boundaries of the functional members of the project team, the project manager can directly resolve the conflict, and will not

lead to the problem that the project can not continue to progress.

6. Projects in the project operation process will continue to project problems encountered, lessons learned collated and summarized to the PMO, the PMO will manage these project organization process assets, if the precursor of similar problems in new projects can be avoided in a timely manner, reducing the cost of training in various departments, and increasing the efficiency of project management.

7. Project pressure is more evenly distributed. Project pressure is distributed more evenly among project managers and project members, avoiding the situation where a single department or employee is under high pressure while other departments or members are under low pressure. This even distribution of stress levels allows employees to have a healthier work mindset and does not lead to staff turnover due to imbalance.

8. The progress of the project can be more clearly shown and controlled by the project manager, the project progress will be easier to control, and the possibility of completing the project before the delivery date is increased. R&D costs and product quality can also be better controlled.

9. The emergence of the project manager shares the pressure of the management of the functional managers, so that the functional managers can better train the employees of the departments under their management to improve their professional skills and improve their professional ability, and the human resources department can better manage the resources.

10. The establishment of PMO can monitor the progress of multiple projects at the same time due to the management of project managers, and if there is a conflict between two projects, PMO can quickly resolve the conflict to prevent the expansion of such conflicts and bring the risk of delays to both projects.

Under the original organizational structure model, in the pre-planning stage of a project, the management department hands over the technical specifications to the technical development department. The Technical Development Department makes a technical feasibility analysis of the company's internal R&D, production, testing

and other capabilities, and analyzes the feasibility of outsourcing the parts that may be outsourced for processing or procurement. The operation department cooperates with the technology development department to conduct market research, analyze and compare the related products in the market. The project manager will conduct preliminary market research, analyze the ROI of the project and whether it is worthwhile to set up a project to carry out, and meet with PMO and the company's senior management (including the managers of each functional department) to report the results of the research and discuss the feasibility of the project.

After the project passes the meeting and is finalized, the company executives and PMO will clarify the project manager's authority and the scope of responsibility in the project meeting. The project manager reconfirms the requirements with the customer according to the customer's project specifications, and develops a project management plan based on the project, plans the progress, quality management objectives, puts forward human resource requirements, forms a document and submits it to the PMO, which communicates with the functional manager and the deputy general manager about the project members' arrangements.

After the establishment of the project team, in the program demonstration stage, the project manager develops the project plan according to the technical specifications, and the project development program is designed by the technology development members, and the program review is conducted by the members of the project team after the design, to review the functional performance of the product, technical parameters, process capability, outsourcing and procurement needs, and acceptance criteria. After the evaluation to form a project program demonstration report and evaluation comments, the program demonstration phase of the project is over, into the product development and design phase.

In the product development and design phase of the project, technology development members of the project product development and design, standardization management and technical data management members to complete the management of technical data, design output drawings by members of the technology development members, members of the production department,

members of the Department of Quality Management, members of the standardization of members of the management of the signatures to confirm that if there is a problem should be put forward to a meeting in a timely manner for discussion of process and quality issues in the initial sample of the product. Avoid process and quality problems in the design stage of the first sample of the product as much as possible, to prevent omissions in the quality inspection process of the first sample of the product and rework in the mass production stage.

In the prototype trial production stage of the project, the production supply members will plan the prototype production according to the prototype drawings and technology issued by the technical development members, and report to the PMO according to the organized production plan, and make the production arrangement according to the needs of other projects for production materials in the same period.

During the trial production process, the quality management members will keep detailed records, and if problems are found, the Technology Development Department will implement corrective actions one by one. After the prototype production project team members will be prototype process verification, finalization test verification, prototype design review, the review can be invited to other projects related to the professional members of the review together, through the verification and review of the prototype can enter the design stage of finalization. Before the finalization stage, the project manager should always keep in touch with the customer to confirm that the customer has no new requirements or changes, if there is a change should be communicated to the project internal meeting in a timely manner to adjust the initial product design, and enter the design stage this morning.

Design finalization stage of the project, in this stage will be the previous stages of the design changes occurring in the review to verify and confirm the project internal summary of the experience of the research and development process, standardized review. After that, design finalization review, design finalization review can invite other project-related professionals to participate, but also should invite the project in the company's main stakeholders to participate in the review mainly from the following aspects: prototype and the overall program compliance;

design changes in the previous stage of the situation the rationality and completeness of the tooling and process documents; the ability to work under the intended use and environmental conditions; the maintainability of the product; the completeness, uniformity and consistency of the technical documents, and the completeness of the product technical document output. After the review of the prototype output document completeness of the provisions of the finalized product drawings, processes, technical documents, collated technical documents will be issued to the production and supply team members, ready for mass production of products and archiving.

The mass production stage of the project, through the finalization stage of the product, by the project within the production department of the production team in accordance with the order contract for mass production, the production process by the technical development members to give technical support, quality management members of the product production process for quality control.

Acceptance stage of the project, after the mass production of the developed product is completed, the project manager contacts the customer representative for final quality acceptance of the product, and the product that passes the acceptance is packaged and delivered by the members of the operation department. If the product does not pass the acceptance, the project team will meet to discuss measures to rectify and solve the problems raised by the customer, provide written documents to the customer on the solutions to the problems and invite the customer to re-rectify the product acceptance, delivery after acceptance. If the problem can not be solved internally, the project manager will report to PMO to discuss with the senior management of the company, and apply for external resources to help solve the problem if necessary.

3.2. Improvement and Implementation of Venus Electrical appliances company's Organizational Structure

During the management process of Venus Electrical appliances company's

original functional organizational structure, due to the existence of unclear boundaries of functional departmental responsibilities, the efficiency of interdepartmental collaboration and communication underground, and disorganized resource management, etc., it is proposed that measures be taken to improve the organizational structure. To change to a matrix organization structure, the first step is to establish the concept of project and project management in the company, for which the project management process needs to be established.

The establishment of PMO is to build the project management process applicable to Venus Electrical appliances company at the early stage of organizational structure transformation and to provide support services for the operation of projects. The establishment of project management process and mechanism should have the following aspects:

Train all staff on project management awareness, Let the company from the leadership to the grassroots have the idea and awareness of project management. At present, the company's top management has found many problems in the current management, and also has the will to transform to the project management mode. PMO should train the project management awareness of each functional department and explain to the employees from the company's strategic level how the establishment of the project management process will help the company to bring about better development, so that the senior management understands that the success of the project is the key to the company's long-term development, and the grass-roots employees understand that project management will be more helpful to the company's development. Let senior management understand that project success is the key to the company's long-term development, let grassroots employees understand that project management will be more conducive to the development of the company and personal growth, from all employees from the mentality of a gradual change, which is the basis of project management process. If the employees resist the project system, the PMO and project manager's future work will be hindered and the project will be affected.

Project management in parallel with functional management, Traditional manufacturing industry has a hundred years of inheritance of production and

operation management system, the company's management system can not be completely rebuilt, the need to retain the original functional department operations management, management from the project and functional two lines. To the success of the project as the goal, supplemented by daily departmental operations management to product development process oriented to assist the completion of the project objectives, the purpose of matrix management is ultimately to deliver for the purpose of the project. For example: R & D staff to carry out daily R & D work, managed by the deputy manager of the technology, the project manager is responsible for the project's R & D phase of the progress of the control of the R & D phase of the inputs required for R & D and the customer docking communication, to assist the R & D staff of the R & D of the technical development of the work of the support, if there are additional R & D resource requirements, the PMO can intervene in the internal or even external coordination of resources to assist in the development of technology work.

Establish project management system, PMO should establish a project management knowledge system in the company and train project managers in project management skills. After each project is established, the project manager will manage the project according to the project management system established by PMO in line with the project management system of Venus Electrical appliances company. At the same time, PMO should monitor the progress of each project in real time, and deal with and solve the feedback and nuclear problems of the project manager in a timely manner. Formulation of project quality management plan, project resource management plan, project communication management plan, project risk management plan, project schedule plan, WBS, project Gantt chart and other project management templates are unified to form the company's project management knowledge base, which is continuously improved during the operation and completion of each project to provide organizational process assets for later projects.

Ensure the effectiveness of project management system, Ensure that projects can be run in accordance with the project management system. Project managers and

PMOs are new positions, and there are bound to be objections to them. PMOs and the company's senior management should ensure that project managers can manage projects in accordance with the project management system that has been developed, openly authorize project managers at the beginning of the project, and in the operation phase of the project, they should also solve the problems that cannot be solved by the project managers but reported to them in a timely manner, and reasonably communicate and coordinate with the departments to cooperate with the project. Project cooperation.

Project Evaluation and Summarization, the project should be evaluated and summarized at the end of the project. During the execution of the project, each functional department manager and PMO should evaluate and summarize the work progress and results of each phase of the project when it is completed, and form a document to be managed by the PMO. At the completion of the project, the company's senior management and PMO should also be the completion of the project, the project management of the situation for a full range of summary and evaluation of the work, put forward the implementation of this project can be drawn from the experience of the implementation of the project, project implementation of the process of the existence of the problem, to avoid or deal with the solution to the way, for the follow-up project to provide reference. The evaluation and summary of the project is an analysis and summary of the experience and lessons learned from the project management practice, which will improve the project management level of Venus Electrical appliances company and is an important basis for the continuous improvement of the project management organizational structure.

Establishment of resource management mechanism under the existing organizational structure of Venus Electrical appliances company, due to the simultaneous implementation of multiple projects, the problem of conflict between human resources and production resources often arises, and after the improvement to a matrix-type organizational structure, the human resource management mechanism is bound to be different from the original mechanism. A reasonable resource management mechanism should be established to guarantee the

coordination of the management of various projects and functional departments. The establishment of resource management mechanism has the following aspects:

Establishment of human resource management plan the human resource management plan is divided into two major parts. One part is the project human resource management plan within the project. As part of the project management plan, the HRM plan is to provide guidelines on how to categorize, assign, manage and release project human resources. The Project Human Resource Management Plan is developed by the Integrated Management Department in support of the Project Manager after the project has been established, and needs to include methods for identifying and quantifying the human resources and production resources required by the project for each function, the roles, authority, responsibilities, and competencies of the team members within the project, methods for team building, and methods for securing the human resources and production resources within the project. A responsibility assignment matrix, as shown in Table 3.1 below, can be applied to provide a clear and unambiguous description of the resources and responsibilities within the project and to ensure that one person is responsible for each work item.

Table 3.1.

RACI Responsibility Allocation Matrix

RACI Matrix	Personnel	
Work Item	Employee A Employee B Employee C Employee D	Employee E
Work Package 1	A R I I	I
Work Package 2	I A R C	C
Work Package 3	I A R R	C
Work Pack 4	A C I I	R
	R=Responsible A=Accountable C=Consulting I=Informing	

Once the project human resource management plan has been developed, it provides information on the human and production resources, estimates of costs such as R&D, travel, and other foreseeable costs. It is an important basis for developing the project budget.

The other part is the resource management plan between projects, and the Integrated Management Department assists the PMO to make the plan. It mainly includes the assessment and prioritization of projects. The plan should be integrated with the strategic objectives of Venus Electrical appliances company and assessed before the projects are set up. It should include the evaluation of potential projects, the evaluation of established projects, and the evaluation of ongoing projects. After the assessment, multiple projects are ranked and prioritized, with resources prioritized for urgent and important projects, while non-urgent and unimportant projects can be put on hold. The project assessment is an important basis for coordination and allocation of resources in case of conflict.

Improve the training system and cultivation program In the matrix-type organizational structure, the role of the project manager is very necessary, this position belongs to the comprehensive talent, in the company's current organizational structure, each functional department has its own responsibilities, there are departmental barriers, and do not know and understand the work done by other departments, the formation of the other departments work regardless of the situation. In the long run, employees with the quality of the role of project manager will be fewer and fewer, so the company should be in the original functional departments of the professional skills training at the same time, increase the project management training system, increase the project manager reserve candidates. In the process of project operation, when there are objections to the project management process, the project manager or PMO should train the project members on the project management system. Through professional skills training and project management training, professional talents and management talents can be screened out. For professional talents, they can continue to strengthen the training of professional skills, act as experts in the project, and can be promoted to management positions in functional departments in the future. For managerial talents, they can be rotated to the role of project manager in the future multi-projects, and trained to be managerial talents through the assistance of PMO, and play an important role in project management.

Improve the performance appraisal system The appraisal system should be divided into three parts, one part is the performance appraisal of project employees and project managers based on the completion of the project, and the other part is the personnel and functional appraisal of employees' professional ability and daily work based on the functional manager of the functional department.

One part is the performance appraisal of project staff and project managers based on the completion of the project, one part is the performance appraisal of staff in the functional department by the functional manager on their professional ability and daily work, and one part is the performance appraisal of PMO and senior management on the management of multiple projects. In the original performance appraisal system, even if the progress of the project is not good, the staff only accepts the personnel assessment from the functional manager, the assessment results and the completion of the project does not have a strong correlation between the project manager and the project completion of the assessment, the project manager to the project members of the assessment, the assessment will be more accurate, but also increase the staff's motivation for the implementation of the project to play a role in motivation. As there are multiple projects in parallel in Venus Electrical appliances company, senior management and PMO will monitor and manage multiple projects at the same time. In the operation of multiple projects, the coordination between multiple projects becomes very important, and the success of the coordination between projects directly affects the implementation of the company's strategy, so it is necessary to conduct performance appraisals for multiple project managers.

Increase the project reward and incentive system One of the major reasons for the lack of employee motivation in Venus Electrical appliances company's current operations is that there is no incentive system to motivate employees, even if the developed products are completed in quality and quantity and delivered on time. Employees just do their daily work according to their functional requirements. After the improvement of the organizational structure, the operation and completion of the project can be clearly known to the project team members, the progress of each

project senior management and PMO will also be grasped in real time, should be added to the project results-oriented incentive system will be clearly shown to the staff, the project members will also be adjusted for the success of their own project work attitude, increase the motivation of the work, and work hard to achieve the success of the project.

Optimize Communication Mechanism A communication management plan should be developed to optimize intra-project and interdepartmental communication mechanisms. Inter-project communication management plans are developed by the PMO and the intra-project communication management mechanism is developed by the project manager.

The project manager plans the communication management plan for the upcoming project based on the input documents of the project, and defines the communication tools and methods within the project. The original problem of poor communication between functional departments mainly stems from the departmental wall, the existence of barriers between functional departments, resulting in untimely communication and inefficient communication. After the improvement of the organizational structure of each functional department to allocate resources to the project, all communication within the project for the project services, there is no departmental wall, a clear project member of equal communication, to avoid the occurrence of cross-level communication. If there is a communication problem, the project manager is responsible for resolving the conflict. Project communication management plan to develop the premise of a clear stakeholder with the interests of this project, the communication interface outside the project only for the project manager alone, project members without the authorization of the project manager does not communicate with other departments related to the progress of the project, to prevent the interface is not uniform resulting in duplication of information or conflict situations. Communication channels and methods with stakeholders should be confirmed by PMO and senior management and implemented in the project communication management plan.

The PMO formulates the communication management plan between projects

according to the company's functional departments and the operation of each project. Help each project manager to communicate with each functional manager, customers and other stakeholders, and the communication between projects mainly focuses on the coordination of resources. PMO formulate the communication management plan should clarify the external communication methods, communication templates, communication frequency and so on. Create a good communication atmosphere, increase two-way communication, reduce one-way communication, the timing of communication and the order of communication should be reasonably grasped, and try to avoid cross-level communication.

Expected goals and effects after improvement in Venus Electrical appliances company After the change of organizational structure, Venus Electrical appliances company has set up a project management office to control each project, provide project management support and guidance to project managers, and set up the position of project manager, who participates in the management of each project as a project coordinator at the early stage of improvement.

Expected goals and effects after improvement: PMO and senior management evaluate and prioritize projects, allocate resources appropriately, the original production and R&D processes are retained within the project after the establishment of each project, and the project manager is assisted by various functional members within the project, and based on the actual situation of the project, a project management plan is formulated in the early stage of the project, including the schedule, scope, quality, resources, cost, procurement and other related plans. Plan, tracking, coordinating and managing the project by each R&D and production phase. The project manager carries out unified communication with customers and management to ensure the consistency of information. In the course of project operation, risks and problems are recorded in a timely manner, and changes proposed by the customer are quickly followed up and implemented, and reported to the PMO to form the company's organizational process assets. The PMO and senior management evaluate and summarize the project at each stage. After each project is completed, members are disbanded and assigned to other projects.

Expected results after improvement: Faster response time to customers, smoother internal communication, and more accurate information for each project. Project progress management is more accurate, project cycle is shortened, multiple projects running at the same time conflicts are reduced, and project success rate is increased. Increase the company's profit and help to achieve the company's strategic goals.

CONCLUSION

Aiming at the current industry background and the characteristics of R&D projects of Venus Electrical appliances company, this paper analyzes the current organizational structure of the company, the R&D project process, and the operation of each project, and puts forward the existing problems of unclear departmental functional boundaries, poor interdepartmental collaboration, low employee motivation and efficiency, and inefficient parallel management of multiple projects. In the study of related management theories and methods, the management mode of functional organizational structure is found to be the main problem hindering the product development of Venus Electrical appliances company at present. By analyzing the requirements placed on the company by C's external competitive environment, internal departmental collaboration, and parallel management of multiple projects, the need for improvement of the company's organizational structure was identified.

In view of the above problems and the need for improvement. This paper proposes a concept for the improvement of the organizational structure of Venus Electrical appliances company. The concept is based on the analysis of functional, matrix, and other types of organizations. By analyzing the characteristics, advantages and disadvantages of functional, matrix and project-type organizational structures, the matrix-type organizational structure is adopted as the basis of the company's multi-project management. Specific improvement measures include the following: first, adding the position of project manager to coordinate and manage each project; second, adding a project management office (PMO) to provide guidance and support for project management; third, clarifying the boundaries of authority and responsibility of each functional department; and fourth, optimizing the project workflow.

In the process of organizational structure improvement, appropriate and reasonable safeguards are needed. This paper identifies the following three measures for Venus Electrical appliances company, which is in the early stage of

organizational restructuring: i. Establishment of project management process; ii. Establishment of resource management mechanism; iii. Optimization of communication mechanism.

Through the above improvement measures and safeguard measures, this paper describes the improved organizational structure and management mode, and expounds the expected goals and effects after improvement. It is demonstrated that Venus Electrical appliances company can solve the existing problems of R&D management after improving its organizational structure.

However, in this paper, there is no in-depth quantitative analysis on how to allocate the resources needed by each project quantitatively, and what communication technologies and methods should be adopted within and between projects, which needs to be further improved in the future work.

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