

Research on the Cultivation Mode of Quality Culture for Military Enterprises

Yuan Li¹, Lu Li¹

¹ China Aerospace Standardization Institute, Beijing, China

Abstract. This paper aims to develop a method to cultivate quality culture for military enterprises. Firstly, the meanings of quality culture and military quality culture are summarized through literature review. Secondly, the present practices and problems of cultivating quality culture in military enterprises are analyzed. Thirdly, by studying the transformation mechanism of quality culture at four levels: spiritual level, institutional level, behavioral level and material level, the view that the cultivation of quality culture needs to pay attention to spiritual concept and adaptive system and practical activities is put forward. Finally, the process method of total quality management is applied to design the cultivation mode of quality culture for military enterprises from the aspects of goal setting, leadership promotion, resource allocation, process activities, monitoring and evaluation.

Keywords: quality culture; military quality culture; cultivation; TQM.

1. Introduction

Quality culture plays an important role in improving quality responsibility consciousness, optimizing quality management system, standardizing quality activities and improving product quality. Cultivating quality culture is an essential task for military enterprises. Military enterprises should not only inherit the spiritual requirements and traditions of the military industry for weapons and equipment construction, but also adapt to their own operational reality. At present, there are misunderstandings in the understanding and methods of quality culture cultivation in military enterprises. This paper studies the key elements of the formation of quality culture and constructs a set of basic and universal cultivation mode of quality culture for military enterprises, which can guide the quality culture cultivation of military enterprises scientifically and effectively.

2. Literature Review

The concept of quality culture appeared in 1980s along with the comprehensive research on Japanese total quality management (TQM) in the United States. The research on quality culture in the United States paid more attention to the spiritual concept and value pursuit of promoting the management and development of enterprises. In terms of the definition of quality culture, the concept of quality culture originates from organizational culture. In 1989, Linkow defined an organization with quality culture as an organization with clear values and beliefs, indicating that high-quality quality culture can promote the overall quality behavior [1]. In 1991, Hildebrandt claimed that the changing organizational culture has become one of the main conditions for the successful implementation of TQM [2]. In 1999, Dellana suggested that organizations trying to implement or manage quality plans should pay more attention to the development of quality culture [3]. In 2007, Gryna defined quality culture as habits, beliefs and behavior patterns related to quality [4]. They stressed that having a positive quality culture is essential to achieve the company's quality objectives. In terms of the connotation of quality culture, after long-term expansion of experts in the field of quality management, the connotation of quality culture at present is mostly consistent with the concept of TQM. In 1997, Johnson established a framework, including national culture, professional culture (industry, institution and professional culture) and organizational culture, and believed that the development of quality culture in organizations was influenced by these frameworks [5]. In 1989, Laurent believed that culture can be divided into two main components, internal elements including values, beliefs and visions, and external elements including behaviors, norms, rituals and symbols [6]. Laurent also believed that collective culture, like individual culture,

has internal factors of psychology and external factors of behavior. Although culture is unique to every organization, it is generally believed that quality culture usually contains some specific elements. TQM practitioners and researchers generally believe that 13 typical cultural connotations can be embodied in organizations where culture and TQM implementation complement each other, including the commitment of leaders and top managers, customer-centered, continuous improvement, education and training, teamwork, employee participation, authorization, supplier partnership, reward and recognition, communication, motivation, organizational structure, strategy and quality policy.

Military quality culture refers to the sum total of group quality consciousness, quality spirit, quality code of conduct, quality values and quality image and the quality of products or services provided by the organization, which is gradually formed consciously in the long-term production and operation activities of national defense science, technology and industry [7]. Military quality culture is a kind of industry culture, which represents the spiritual requirements and traditions of the military industry for the quality construction of weapons and equipment. According to the theory of cultural stratification, the quality culture of military industry is divided into four layers: spiritual layer, institutional layer, behavioral layer and material layer [8]. For example, the spiritual layer includes the concept of great quality, the awareness of sustainable development quality and the awareness of zero defect (pursuit of perfection) work quality; The institutional layer includes quality development strategy, quality reward and punishment system; The behavioral layer includes respecting users and implementing continuous quality improvement; The material layer is the materialized part of quality culture, and its constituent elements mainly include product and service quality, brand, logo and so on.

3. Situation of Quality Culture Cultivation in Military Enterprises

At present, the typical way to cultivate quality culture in military enterprises is to compile quality culture manuals and publicize them to enhance employees' quality awareness. The quality culture manual is based on the strategic objectives of the enterprise, and it is formed by selecting the ideas and methods that the organization agrees with from TQM and military quality culture. However, there are many problems in this way. First, quality culture is regarded as static, and the transformation mechanism between spiritual concept and institutional behavior is ignored. As a result, the cultivation method of quality culture is monotonous, and sports and slogan are mostly adopted, which is separated from organization and management. Second, enterprises do not realize that quality culture is a reflection of the overall quality values and behaviors of enterprises, and regard quality culture cultivation as a work of quality departments, which leads to insufficient attention and resources for quality culture cultivation. Third, the cultivation of quality culture is not suitable for the actual situation of enterprises, and it is not combined with the strategic objectives and cultural foundation of enterprises, and the measurement of the present situation of quality culture of enterprises is lacking.

4. Quality Culture Transformation Mechanism

The concept of quality culture cannot be simply transplanted, because the four layers of quality culture are interrelated, mutually restricted, mutually transformed and infiltrated. Fig.1 shows that the spiritual layer is the core of quality culture, and the material layer is the most intuitive expression of quality culture. The transformation mechanism between the four layers can be expressed as "two processes", namely "guidance process from inside to outside; Sublimation process from outside to inside ". "Guidance process from inside to outside" means that in the process of forming quality culture, the idea of spiritual layer guides institutional culture and code of conduct outward, and then promotes the development of material layer. "Sublation process from the outside to the inside" means that the spiritual layer is constantly enriched with the infection of the

material layer, the encouragement of the behavioral layer and the restriction of the institutional layer. Specifically, the spiritual layer of quality culture is a concentrated reflection of other layers, which guides the construction and development of the other three layers and plays a decisive role; The institutional layer is the support of the spiritual layer and the constraint of the behavioral layer and the material layer; The behavioral layer is the external manifestation of the other three layers and the foothold of quality culture; Material layer is the most obvious part of quality culture, the carrier of spiritual layer, the premise of institutional layer, the result of behavioral layer and the foundation of quality culture. Thus, the spiritual layer of quality culture is formed by the corresponding regulations and practical activities.

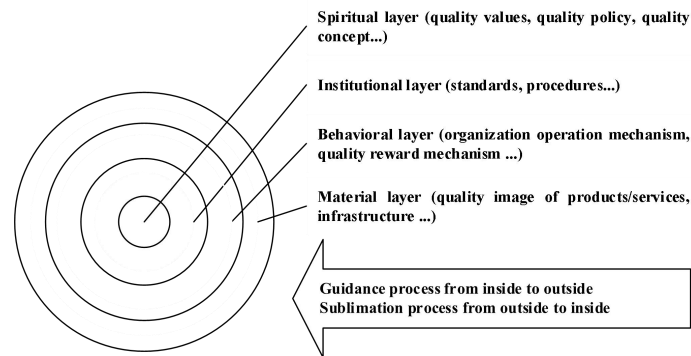


Fig. 1 Relationship among different layers of quality culture

5. Cultivation Mode of Quality Culture for Military Enterprises

Quality culture is formed through the practice of TQM, and the cultivation of quality culture aims at promoting the application of TQM. The cultivation of quality culture should be built together with TQM and complement each other. Quality culture is the part of organizational culture that supports organizations to implement TQM, and TQM practice is the carrier to cultivate quality culture. Therefore, when cultivating quality culture, military enterprises should fully integrate TQM's idea of cross-departmental cooperation through processes to achieve continuous improvement of product and service quality, and pay attention to providing appropriate processes and closed-loop control. By applying the process method of TQM, the cultivation mode of quality culture is designed from the aspects of goal setting, leadership promotion, resource allocation, process activities, monitoring and evaluation.

5.1 Goal Setting

Only a clear direction can guide the cultivation of quality culture and ensure that relevant measures can be implemented. The goal of cultivating quality culture in military enterprises is to determine the concept of spiritual construction of quality culture in military enterprises, which is analyzed and thought by senior leaders from the highest dimension of organization. Goal setting should not only meet the overall mission and vision of the organization, but also consider the current situation, especially the original quality culture foundation, and formulate appropriate goals for the weak links of the organization in quality culture. Quality culture is influenced by many factors, such as the internal and external environment, history and present situation of the organization. According to Johnson's research [5], the cultural factors that have an impact on quality culture can be divided into three categories: national culture, professional culture and organizational culture. In addition, it also includes environmental factors and organizational internal factors. The factors influencing the quality culture of military enterprises are shown in Table 1, and enterprises can use these as inputs to clarify the cultivation goal of quality culture.

Table 1. Influencing factors of quality culture in military enterprises

Types of influencing factors		Influencing factors
Cultural factors	National culture	Chinese traditional culture represented by benevolence, righteousness, courtesy, wisdom and faith; The main cultures of the country in the current period, such as the Chinese dream and the craftsman spirit;
	Professional culture	The concept of military quality culture, such as the policy of "serious, thoughtful, meticulous, reliable"; The historical background of the organization's development;
	Organizational culture	The general direction of organizational culture, such as the mission, vision, values;
Environmental factors		Requirements of policy environment and superior documents for quality culture construction, including various quality laws and regulations, planning at national, industry and group levels, and relevant requirements for quality culture construction in equipment field, etc. Economic, social and regional environmental conditions; The industry attribute of the organization; Relationship between the organization and relevant parties; Information on relevant resources of the organization;
Organizational internal factors		The management policy and development strategy of the organization; Organizational leadership, including senior leaders' quality awareness, leadership, and the importance they attach to the construction of quality culture; Product characteristics of the organization, such as product type, complexity, whether it is a special product, etc;

5.2 Leadership Promotion

Strong organizational leadership is an important guarantee for the successful implementation of quality culture cultivation in military enterprises. Establishing the organizational leadership of quality culture cultivation is the most direct link to ensure the realization of "high-level leadership role". Military enterprises can establish leading team and executive team. The leading team should include the top leaders of the organization and be composed of the heads of various departments. The leading team formulates a strategic framework for the cultivation of quality culture, creates an environment conducive to change and allocates necessary resources towards the cultivation goal. The executive team is the daily management department of quality culture cultivation, which can be composed of members from different functional departments. The executive team undertakes the functions of organization, monitoring, evaluation and improvement.

The cultivation of quality culture needs systematic coordination and full participation. All layers of the organization, from supporting departments to business departments, need to make contributions to the cultivation of quality culture. In this paper, the quality culture cultivation organization is divided into three layers, including decision-making layer, management layer and practice layer, and the function is shown in Fig. 2. The decision-making layer determines the direction of quality culture management and promotion, and its actions can send a clear signal of "attaching importance to quality culture" to all employees. The management layer undertakes the intention of decision-making leaders and the important task of quality culture cultivation, forming a strong promotion team. The practice layer can ensure the transformation and landing of quality culture at the grassroots through "knowing, believing, acting and spreading".

Layer	Responsible Department		Responsibility	Goal
Decision-making Layer	Lead	Leading Team Of Quality Culture Cultivation	Quality Culture Cultivation Strategy, Quality Values, Quality Policy, Leadership And Coordination	Organizational Strategic Compliance, Promote Realization Of Goals
	Support	Party Committee	Control The Direction Of Quality Culture And Make Decisions About Change	Accurately Control, Efficient Decision-making
Management Layer	Lead	Executive Team Of Quality Culture Cultivation	Plan, Manage, Promote And Monitor The Cultivation Of Quality Culture	Steadily Implement The Cultivation Of Quality Culture
	Support	Department Of Human Resources, Party-masses , Propaganda ...	Fully Implement Core Measures Such As Process Construction, Quality-related System, Personnel System, Training And Education, Publicity And Communication, And Incentive System	Ensure That The Measures To Cultivate Quality Culture Match The Objectives.
Practice Layer	Lead	Managers Of Various Departments	Cohesion, Communication, Inheritance And Development Of Quality Culture, Departmental Characteristic Culture, Etc.	Ensure The Knowing, Believing, Acting And Spreading Of Quality Culture
	Support	Employees Of Subordinate Departments	Comply With Regulations, Actively Participate, Offer Suggestions, Self-improvement, Etc.	Self-development Conforms To The Concept Of Quality Culture

Fig. 2 Function of quality culture cultivation organization

5.3 Resource Allocation

In order to support the implementation of quality culture cultivation, military enterprises need to provide support for quality culture cultivation in the following aspects. The first is human resources. The initial stage of quality culture cultivation needs more manpower than the daily operation and management after the completion of the mechanism, and it needs to be equipped with sufficient personnel, and all departments also need to provide corresponding personnel to support it. The second is training resources, such as trainers and examiners within the organization, which can be used to support the construction of quality culture cultivation education and training modules. The third is media resources, which can be used for the internal and external dissemination of quality culture and facilitate the creation of atmosphere.

5.4 Process Activities

Process activities are to construct regulations, mechanisms and carriers that are suitable for the cultivation goal of quality culture.

(1) Rules and regulations construction

Existing rules and regulations need to be sorted out to clarify the rules that need to be newly established, improved and cancelled. The institutional layer of quality culture needs to be gradually established and improved, so as to provide guarantee for the organization's quality management operation and provide basis for employees' quality behavior. Establish and improve the organizational operation process, integrate the concept of quality culture from all aspects such as personnel, business, management, training and promotion, and incentive, and grasp the benign improvement of quality on the "bone" of the institutional framework. At the same time, the organization should issue the corresponding evaluation and management documents of quality culture, and put the cultivation of quality culture into normal and standardized operation.

(2) Carrier and platform

The construction of carriers and platforms needs to be planned. Carriers and platforms are important positions for cultivating quality culture. Through various carriers and platforms, all employees can be provided with channels for learning, consultation, communication and feedback. Traditionally, quality culture manuals and quality case sets can fully enhance employees' understanding of quality culture; Novelty, the communication interaction between social media such as WeChat and Tik Tok and online platforms can spread the connotation of quality culture on a large scale and collect information for the continuous improvement of quality culture; On a large scale, the quality and culture exhibition hall can be used as the propaganda carrier of the organization and provide a position for training, education, publicity and cultural display; On a small scale, quality management cards and slogans can deepen employees' awareness and promote a good atmosphere anytime and anywhere; With regard to intangible carriers, literary forms such as small formulas and popularized songs transformed from rules and regulations can fully stimulate

the enthusiasm and vitality of employees and strengthen the spread of quality culture from consciousness to behavior.

(3) Education and training

The regulations and activities of quality education and training need to be sorted out and supplemented. First, make overall plans for education and training activities, and select appropriate training methods and training contents for all employees and interested parties, covering all levels of employees, covering the ideological education, technical skills and comprehensive ability required by employees at all levels; Second, establish a team of trainers, which can be synchronized with the quality expert database; Third, the measurement and evaluation methods of training effect need to be formulated.

(4) Publicity and communication

The establishment and improvement of communication channels and methods need to be fully considered and designed. First, it is necessary to establish a daily and fixed communication mechanism, for example, to solidify the work conference system, work summary system, and hold exchange meetings every year. Second, establish a temporary communication mechanism during the special activities of quality culture cultivation. For example, carry out quality discussion activities. In a certain period of time, employees' understanding of quality culture and suggestions on ways and means of cultivation are widely solicited. At the same time, it can improve the quality and cultural atmosphere. Third, design internal and external publicity programs. Through the construction of carrier platform, organizations can also consider getting help from media and advertising companies.

(5) Atmosphere improvement

The promotion of atmosphere needs to be fully combined with employees' psychology and values, and designed by using methodology such as organizational behavior. First, in terms of human resources, organizations need to establish an incentive system, improve quality rewards and punishments, and advocate a good atmosphere of advocating quality; Second, carry out team building, and the quality and cultural atmosphere can be better transmitted and developed through the team; Third, hold colorful activities, and fully mobilize the enthusiasm of employees through easy and interesting activities such as speeches, quality competitions, study tours and special discussions. When planning and implementing relevant measures to improve the atmosphere, organizations should not only fully learn from and choose favorite forms, but also coordinate with scientific research and production, and be compatible with organizational life and production practice to avoid adverse effects.

5.5 Monitoring and Evaluation

By monitoring and evaluating the process effect and result of quality culture cultivation, the continuous improvement of quality culture cultivation can be realized. Design a monitoring and evaluation mechanism for the process and result of quality culture cultivation, which mainly includes the following contents. The first is the regular reporting and tracking mechanism. Establish a regular meeting mechanism for project promotion, and report to the leading group on the progress of each work and the output of results according to time nodes, as well as the work plan for the next stage; The second is to hold a special meeting. Discuss and solve the key points and difficulties in the process of cultivating quality culture and obtain supporting resources through special meetings; The third is to establish feedback channels. Set up private interview activities for typical departments and personnel, collect information, opinions and suggestions, prepare improvement reports and implement them; The fourth is the supervision of problem improvement. For the problems found in monitoring and evaluation, no matter how big or small, design the solutions and assign the responsibility to the people for disposal and implementation, and pay attention to checking whether the problems are eliminated in the subsequent monitoring and evaluation.

6. Conclusion

The implementation of quality management in military enterprises is inseparable from the role of quality culture, and it is also an inevitable requirement for military enterprises to inherit the quality culture of military industry. In this paper, it is introduced that quality culture, as a part of organizational culture, is closely related to the implementation of TQM. At the same time, the connotation of military quality culture is introduced as a necessary input for the cultivation of quality culture in military enterprises. The typical practices and problems of cultivating quality culture in military enterprises are investigated to ensure that the research content of this paper is practical. This paper studies the transformation mechanism of four layers of quality culture, and puts forward "guidance process from inside to outside; Sublimation process from outside to inside", which makes it clear that the cultivation of quality culture needs to pay attention to two aspects: spiritual concept and corresponding regulations and practical activities. Based on the above analysis, the process method of total quality management is applied to design the cultivation mode of quality culture for military enterprises from the aspects of goal setting, leadership promotion, resource allocation, process activities, monitoring and evaluation.

References

- [1] Linkow, P. (1989) Is your culture ready for total quality? *Quality Progress*. 22(11), 69-71
- [2] Hildebrandt, S., Kkistensen, K., Kanji, G. and Dahlgaard, J.J. (1991) Quality culture and TQM. *Total Quality Management*. 2(1), 1-15.
- [3] Dellana, S. A. and Hauser, R. D. (1999) Towards defining quality culture. *Engineering Management Journal*. 11(2), 11-15.
- [4] Gryna, F. M., Chua, R. C. H and DeFeo, J. A. (2007) *Juran's Quality Planning and Analysis for Enterprise Quality*. New York: McGraw-Hill.
- [5] Johnson, G. and Scholes, K. (1997) *Exploring corporate strategy*. Great Britain: Prentice Hall Europe.
- [6] Laurent, A. (1989) A cultural view of organizational change, in Evans, P., Doz, Y. and Laurent, A. (Eds), *Human Resource Management in International Firms*, London: Macmillan, 83-94.
- [7] Tong Xuguang, Liu Cunfu. On the quality culture of military industry [J]. *Military industry culture*, 2015 No.93 07 76-78.
- [8] Liu Hao. Theory and practice of quality and culture construction of military industry [J]. *China Military Conversion*, 2013 No.158 06 41-45.