Manufacturing Enterprises Information Platform Construction Based on the Full Value Chain Concept

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Abstract. The key to the effectiveness of management is undoubtedly to do the right thing and do the right thing. At present, with the rapid development of information technology in the Internet era and the increasing complexity of enterprise management level and business chain, how to make good decisions on what to do, how to do it, who to do it and other issues, to ensure that the overall operation quality and efficiency of enterprises are better, and steadily achieve the strategic objectives of enterprises, has become a management problem faced by most enterprises, especially group enterprises. Therefore, how to effectively allocate resources and realize a virtuous circle of the entire value chain during the dynamic operation of the enterprise is of vital importance. Based on the concept of operating Rubik’s Cube, this article establishes a management and control model of the enterprise value network system to continuously improve the comprehensive competitiveness and resilience of the enterprise, and provide solutions for other groups.

Keywords. Full value chain; financial engineering cube; information platform; strategic management.

1. Introduction
Large enterprise group is a complex large system, which is composed of many subsystems. Each subsystem interacts and coordinates the operation around the strategic objectives of the enterprise. How to promote the integration of R & D, supply and marketing services and effectively support the group’s corporate strategy? The traditional approach is mainly to use a single or several management tools, but in the specific implementation process, it is often implemented by a variety of management tools that are independent, difficult to integrate the strategy into the overall management process, always lack a systematic platform as the management carrier, do not form a positive, orderly, unified and efficient system, business island is not effectively integrated, most enterprises are difficult to achieve 1 +1> 2.

With the gradual deepening of the integration of the two modernizations in the Internet era, information technology has become the core factor affecting the innovation of enterprises. How to use information technology to enhance the core competitiveness and promote the transformation and upgrading of enterprises has become the key to enterprise management. In order to effectively provide all-round and effective support for the implementation of enterprise strategy, it is necessary to plan and promote the integration of information technology and management mode, manufacturing technology and R & D mode, establish a first-class lean management platform, realize R & D digitization, manufacturing production flexibility, management process visualization, management mode networking and operation management lean, and enhance the core competitiveness of the enterprise. In the actual process of informatization promotion, many enterprises stand on isolated islands and fail to effectively support the improvement of operation efficiency and efficiency.
Therefore, in order to ensure the timeliness of operating information in the implementation of the company’s strategic goals, and at the same time continuously improve the company’s adaptability to the external environment, the group company should establish the concept of financial engineering, build a highly comprehensive plan application at the strategic level, and establish a complete set of the company’s strategic management and control system receives and processes various business information in a timely manner to ensure the effective operation of the entire value chain of the enterprise and achieve strategic goals.

2. Complete Value Chain and Financial Engineering Concepts
The value network is a value creation system centered on the enterprise, including all stakeholders. The source of the value chain is the customer; the inside of the enterprise is the value chain composed of R&D, production, supply, marketing and aftermarket; the outside of the enterprise is realizing The goal of a win-win model is to enable all stakeholders in the value chain to obtain profits and create lasting and reasonable value with banks, governments and other social resources.

Based on the management magic cube idea and management accounting management innovation, XCMG has established the management accounting management magic cube “315” management and control mode, forming three balances, one closed-loop and five foundations:

“One closed-loop” means to open the management closed-loop of strategy plan budget analysis assessment, which involves two dimensions: one is to define the strategy and operation direction around the strategic clock, the other is to build a comprehensive budget information management and control system based on the operation Rubik’s cube, which spans one year’s operation. Through the medium and long-term strategic planning, the short-term strategy will be revised in a rolling way, and then the strategic review will be carried out from the middle of the year. The strategic optimization will be formed in September of each year, the revision plan will be formed in October, the next annual budget will be formed in November December, and then the assessment responsibility will be formed in January of the next year. Then, according to the audit report in March of the next year, the business performance of the general manager of this year will be assessed, evaluated, and the annual salary will be paid Cash in, and through the Bi analysis of every month, monitor the operation index of every day, to open the management loop of the whole business process.

“Three balances” refer to target balance, professional balance and hierarchical balance. Target balance refers to that through improving profitability, capacity planning, marketing, financing platform and budget management need to be embedded into each sub goal of the annual budget after each business balance. Professional balance is mainly to balance the annual business goals through periodicity and professionalism. Hierarchical balance refers to that all the cost elements and business activities in the budget year should be covered in the budget system from the group level to the business unit level and all the subsidiaries.

“Five foundations” refers to the coordination and operation of organizational structure, resource allocation, intelligent management, system process and system construction through positive management.

The essence of the management and operation mode of “315 operation magic cube”, as figure 1 below shows, is to realize the management of people and processes through a closed loop, realize the coordination of departments and businesses through three balances, and allocate resources through five foundations. This mode aims to run the group’s strategic objectives efficiently and the coordination of resource allocation of each subsidiary company, the magic cube system with system and intelligent rotation Bi information system as the carrier, to realize the intelligent and effective allocation of human, financial, material, system and other resources, and constantly improve the process control of production, technology research and development, supply chain management, lean manufacturing, after-sales service, spare parts outlets, etc., and continuously improve The overall profitability of the enterprise, to achieve the group’s long-term strategic development goals. Its management model is as follows [1].
3. The Content of Information Management and Control of Enterprise’s Full Value Chain

3.1. Based on the Overall Structure of the Whole Value Chain of Group Enterprises

In order to realize value maximization, group enterprises should follow the design principle of unified standard and unified process, and gradually establish the management and control platform of the whole enterprise value network by optimizing and integrating the relevant parties involved in the enterprise value network. On the one hand, it supports the transformation of group enterprises’ management and control mode of subsidiary companies, and improves the strategic coordination between the group and the subsidiary companies; on the other hand, it realizes the integration of the core business of the whole group and realizes fine management, covering the whole process management from R & D to production, procurement, marketing and service [2]. By continuously solidifying the process, promoting business process coordination, improving the overall business performance of the enterprise, establishing an effective management and control platform: combining with business and finance, and promoting with comprehensive budget management; comprehensively implementing nine economic business cycles to realize the optimization of resource allocation; cooperating with the implementation of performance appraisal of subsidiaries to improve the vitality of enterprises [3].

3.2. Group Enterprise Management Control Platform Based on Strategic Landing

Based on the overall strategy of the group enterprise, taking the integrated ERP system as the core, a reasonable application software system integrating financial, purchasing, office automation, knowledge management and other business functions is established to establish an enterprise level information management platform. Through the construction of ERP system, the integration of enterprise daily management and main business information is realized, and the effective integration of personnel, finance, material resources and financial engineering control is realized [4]; through the integrated business data, the group can obtain all kinds of business information in time and make decision adjustment in time, so as to effectively cope with the change of environment. Group headquarters use cash pool, internal bank and other centralized fund management methods to improve the liquidity and profitability of funds. Through the establishment of the group and the summary and analysis of various information channels, the group headquarters can realize management visualization, improve the decision-making level and adaptability.

3.3. Supporting Platform of Strategic Control under Nine Economic Business Cycles

The nine economic cycles of an enterprise are the effective operation of its core business processes,
including sales collection cycle, investment economic cycle, financing economic cycle, procurement and payment cycle, production cycle, inventory cycle, R & D cycle, cost management cycle, and capital flow cycle. As shown in figure 2 below, the nine economic cycles cover the main aspects of enterprise management. In order to ensure the effectiveness of the nine cycles, each enterprise of the group needs to establish a streamlined and effective internal control system [5]. The information management and control platform can provide timely, effective and accurate management information for the Ninth National Games business cycle evaluation, and promote the enterprise operation efficiency.

![Figure 2](image)

**Figure 2.** The information management platform based on full-value chain.

### 4. The Realization Method to the Information Control and Management Platform of the Full Value Chain

#### 4.1. Solutions to Full Value Chain of Group Company

Full value chain of enterprise includes: research, production, supply, marketing, services five key areas.

In terms of production, the group shall implement the functions of master data management, production plan management and production execution management for key products, and the designed business process will open the bottleneck between design and production. As the main data generation of project BOM and project engineering process route PLM, PLM transfers EBOM to production management and converts it into executable MBOM; PLM transfers design process route to production management by maintaining MBOM and process route, generates executable process route, project change management, and realizes the integration of R & D data and manufacturing data [6]. In terms of production planning and implementation, it realizes automatic assembly line production and improves the scientificity of the general production plan. At the same time, according to the results of the general production plan, through the calculation of MRP, it makes some internal plans and external purchase plans, supports production order management, supports a variety of means of production including material consumption, and improves production efficiency.

On the supply side, the group should focus on the automation of material master data management, procurement planning and supplier collaboration. At the same time, the main material data and PLM system are realized. The material information related to production comes from PLM, which can solve the problem of Information Island of basic data of R & D; D and manufacturing for many years. Through the project agreement, the group can realize the automation of the branch’s purchase business and improve the efficiency of the purchase business. Through SRM interface and shared procurement...
plan, work coordination with suppliers and on-site delivery of suppliers are realized, informatization of upstream industry is promoted, and overall benefit of industrial chain is improved. Through MRP simulation, the long-term purchase plan of goods (including key import projects) can be calculated automatically, which solves the problem that the long-term purchase plan relies on manual establishment of long-term plan.

In terms of sales and service, the group shall realize the functions of product sales contract management, order management, delivery management, inventory management, etc. This paper focuses on the vehicle management system (VMS) in the construction machinery industry, which tracks and manages the status of the whole life cycle based on the unique vehicle identification number (VIN) on the vehicle, effectively supports the sales and services related to the business process, and links its main businesses in this field [7]. By establishing the contact person and the above system voucher through the status code, the vehicle status information can be displayed intuitively.

4.2. Implementation of Strategic Control Management Platform for Enterprise Group
In order to strengthen the management and control of the branch companies, the group headquarters needs to improve the group-level capital, human resources and business management and control capabilities, and financial data can effectively improve the headquarters’ analysis and control capabilities. This requires the group headquarters to have an integrated, integrated management and control information system platform to support the improvement of the group’s operational management and control capabilities and the effective integration of resources, thereby achieving the group’s strategic goals [8].

4.3. Nine Business Cycles and Implementation of Strategic Control Platforms
In order to ensure the effectiveness of the group’s economic cycle, group companies should establish and improve a streamlined and efficient internal control system. In the new information control platform, through comprehensive budget management, sales business statistical analysis and profit forecasting, investment project income management, cost management and control, and overdue accounts receivable management, the group can realize the previous analysis of the economic cycle and is in control. With the support of subsequent analysis and evaluation, we can make reasonable predictions on the company’s future earnings and make control in advance.

4.4. Prospects of Implementation Effect of Information Management and Control Platform Based on Full Value Chain of Group
By strengthening the group’s control in vertical and integration in horizontal of various enterprises, the group can meet customer’s needs better and enhance the competitiveness of enterprises, to achieve the changes of group from the strategic holding model to a strategic business model, support groups provide an effective rapid expansion of information technology platform.

4.5. Strong Support for the Leapfrog Growth of Enterprises and Steady Improvement of the Scale Advantage of the Main Business
The company has achieved unconventional and leaping development, consolidated the company’s management foundation, competitive advantage and risk control power, and maintained the leading position in the industry for 26 consecutive years. From 40 billion yuan in 2008, the operating revenue has exceeded 100 billion yuan in 2012, becoming the first 100 billion level enterprises in China’s construction machinery industry. Despite five consecutive years of decline in the construction machinery market, the operating revenue still reached 95.1 billion RMB in 2018.

4.6. The Effect of Financial Control Has Been Significantly Improved, Effectively Promoting the Value-Added of the Whole Value Chain
The construction of management accounting Rubik’s cube management and control system has not only changed the original management and control mode of the group, deepened the management and
control depth of subsidiaries at all levels, but also effectively integrated the core business links of R & D, production, supply, sales and service, strengthened the integrated construction of business processes of the enterprise, improved the refined management of the enterprise, and promoted the innovation and development of the enterprise. It provides strong support to further consolidate the leading position of the group in China’s construction machinery industry and enhance the competitiveness of the industry.

4.7. Create a New Template of Management Accounting to Effectively Support the Implementation of Strategic Objectives

The magic cube management and control system of management accounting takes comprehensive budget management as an effective means to run through all major management tools and implement the group’s development strategy, and realizes the group’s closed-loop management system from strategic planning to effective planning, planning to budget management, implementation monitoring to regular analysis, regular analysis to assessment and evaluation, giving full play to the group’s “integrated” operation advantages, and providing the realization of strategic objectives provides strong support. The model has significant economic benefits, strong innovation and popularization, and provides a replicable successful practice template for management accounting for the industry.

4.8. Realize Efficient Decision Coordination with the Help of Business Function Analysis Technology

Based on BI (Business Intelligence) technology, XCMG has established a real-time and dynamic hierarchical visual monitoring and analysis platform, which provides great convenience for decision-making analysis of management personnel at all levels of XCMG, effectively promotes the decision-making process of the enterprise, enhances decision-making efficiency and improves decision-making quality, and effectively promotes the transformation of management accounting from control function to value promotion function.

4.9. Training Budget Information Talents and Continuously Promoting Management Accounting Innovation

In order to adapt to the continuous upgrading of the group’s development and management requirements, XCMG has trained a large number of management accounting personnel with professional knowledge and technical basis to carry out targeted and personalized management innovation activities. These management accounting talents will also become a wealth, and constantly promote the process of enterprise management innovation, transformation and upgrading.

5. Conclusion

Therefore, based on the concept of operating the Rubik’s Cube, it is essential to establish a management and control model of the enterprise value network system, effectively allocate resources in the dynamic operation of the enterprise, and realize a virtuous circle of the entire value chain. So as to continuously improve the comprehensive competitiveness and flexibility of the enterprise, and then realize the strategic coordination and goal landing of the group enterprise.

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