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General Problems with the Production Cycle in Business

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Abstract

In the context of the 4.0 Industrial Revolution, it is inevitable for manufacturing enterprises to deploy human resource planning-oriented management software. In terms of overall software application, the accounting information system at manufacturing enterprises needs to be completed with an appropriate approach—a cyclical approach. Based on the basic characteristics of manufacturing enterprises, the

article explores the contents of the organization of accounting information systems according to the production cycle in enterprises, including contents such as planning and production control, production execution activities, inventory control, and production cost accounting. The article also learns about production methods, including traditional production and lean production.

Keywords: Production Cycle, Enterprise

1. Introduction

Production is the conversion of inputs into outputs. The production process uses resources to create goods and services suitable for use or exchange in a market economy. This process can be carried out in a certain cycle, including production, construction, storage, transportation, and packaging. Each business has a different production cycle and product characteristics, but basically, the production cycle in each company includes the following activities: planning and controlling production, implementing production, and controlling goods. Inventory and cost accounting. Each activity in the production cycle performs its own function. Processing information streams according to certain contents of each activity, creating information streams that represent the function of each activity, and providing for other activities inside and outside the cycle.

2. Production Cycle in an Enterprise

Production Cycle Concept

A company's production cycle can be understood as the process of converting initial input resources such as raw materials, labor, and general production costs into products and services to provide to the market. The production cycle includes reflecting on and providing information related to the production of products for sale. The data flow diagram (Figure 1) depicts the main role of the production cycle and its impacts on other business cycles. Production is initiated by customer orders from the revenue cycle or by consumption forecasts from marketing. These inputs are used to determine production goals and planning (two factors that drive production activities). Requests for purchasing raw materials will be sent to the purchasing department. This department will be responsible for preparing purchase orders for suppliers. Labor used for production is transferred to the payroll system to serve the payroll process. Production costs related to products in process and finished products are sent to the financial reporting system and general ledger.

Objectives of the Production Cycle

Develop production plans to both ensure an effective response to current orders and short-term expected demand while also minimizing inventory balance.

Inventory control, monitor the purchasing and consumption of inventory. The production cycle provides those involved in the production process with information about input factors as well as output factors such as quantity, quality, and time of information provision.

Provide information on monitoring, controlling costs, and evaluating production activities. The production cycle helps manage the tasks of manufacturing operations effectively. On that basis, production plans have been made.

Control and allocate costs during the production process.

Provide input data for the overall estimate. The production cycle provides reports on costs and prices, providing appropriate information for the process of purchasing raw materials, production, and consumption to serve the preparation of financial reports.

3. Content of the Production Cycle

Production Planning and Control

Production planning is determining the necessary resources for the production process to meet the current needs of orders as well as forecasted product demand. For the purpose of production planning, the company needs to make a product description, determining the quantity of products intended to be produced. The company plans production machinery, equipment, factories, etc. that need to be used according to expected production methods. Determine human resource requirements and prepare operating cost estimates. Determine which competitive factors are the main and influencing factors in making decisions about choosing production options and investing in machinery and equipment, including quality, scale, technology, price, ability to respond quickly, experience.

Production control is the ability of the management subject to identify the content of production costs: product quality, quantity, production time, technological process, etc.

Production planning activities are the basis for production implementation activities and the collection of costs to calculate the cost of the production process.

Production Implementation Activities

Based on the production order, the system of raw material costs, labor costs, and other costs that have been established from the production planning stage, the company implements the production plan, including:

- Organize production according to process and product design.
- Reflect and record the use of resources such as the actual use of raw materials, labor time, machinery, and equipment used for the production process.
- End of the production process, reflecting the quantity and quality of completed products, unfinished products, and recovered scrap (if any) of the production period.
- Production activities reflect the actual production situation (number of completed products, unfinished products, use of resources in the production process, etc.). This is an important basis for gathering costs to calculate product prices.

Inventory Control

To make the most effective use of raw material costs, managers need to answer the question: What are the standards and norms for raw material costs? Which raw materials are not suitable? The reason why? Solution? From there, determine the need to use and inventory materials, what is the quality and quantity, who is the supplier, what are the replacement materials, and the optimal purchase quantity, production methods, and possible risks.

Cost Accounting

Gathering production costs and calculating product prices is to provide information on planning, control, and evaluation of the production process, providing cost data for pricing, and determining product structure. It also collects and processes information to determine the value of inventory as

well as the cost of goods sold to serve the preparation of financial reports for the business.

Based on the actual production situation, the company collects production costs and calculates product prices, including: classifying and collecting each type of cost of the production process; Summary of production costs; Evaluation of unfinished products; as the price of the product. On that basis, information is provided for the accounting bookkeeping process and processed into accounting information for the production cycle. Information from this activity will also be used to prepare reports on actual cost performance in order to make necessary adjustments in making appropriate management decisions.

4. Production Methods

Traditional Production

Traditional production is a production method in which people occupy a very important position; all activities in production require the direct participation of people. The factory is formed by workshops located quite far apart geographically. Products being processed follow a detour through different production steps in the factory, so it takes a lot of time to move unfinished products from one factory to another to complete the stages of manufacture. According to this method, production plans are often based on sales forecasts and the factory's production capacity, not on customer demand. In centralized quality control, responsibility belongs to inspection staff.

The inventory between stages is very large. The production cycle is long, and production activities can be interrupted due to many objective reasons, such as a lack of raw materials, a lack of labor, etc.

Lean Production

The traditional manufacturing cycle described in the previous section represents the way many manufacturing companies operate today. However, with rapid changes in customer needs, short product life cycles, and global competition, companies aim for lean production. Lean manufacturing is derived from Toyota's production management system, a system that was implemented in the 1950s and is better known for its efficiency when implementing a "just-in-time" production system." Lean production has been increasingly widely applied at leading manufacturing companies around the world, especially in the automobile and motorcycle manufacturing industry and equipment suppliers for this industry. Lean production is a system of production management tools and methods to eliminate waste and irrationalities in the production process to reduce production costs and increase output for businesses in all stages, including product design, supplier interactions, factory operations, labor management, and customer relations. Lean means putting the right product in the right place at the right time in the right quantity, minimizing waste while maintaining flexibility. The key principle of lean manufacturing is to add value to customers through the continuous elimination of waste throughout the process of providing products and services. In lean manufacturing, the value of a product is determined entirely by what customers actually require and are willing to pay for. Based on market demand, the company determines quantity, quality, and production time; determines the use of input factors to achieve the highest efficiency; and

minimizes product inventory. Establish good relationships with suppliers and customers to ensure the most effective purchasing, production, and sales. It can be said that lean production is a solution to reduce production costs in the entire system by increasing productivity, reducing inventory, reducing production time, and increasing production capacity without increasing investment in capital and other resources.

Principles of lean manufacturing:

Pull production: Products are pulled from the customer side (demand) rather than pushed from the production side (supply). Production plans are based on customer needs, not on the factory's production capacity.

Perfect quality: To be successful in the pull manufacturing model, there must be no errors with raw materials, work in progress, or finished products in the warehouse. Reduce costs related to recycling waste products, eliminate unnecessary features on products, and minimize rework to fix product errors.

Minimize waste: All activities that do not add value and maximize the efficiency of using inputs (raw materials, human resources, fixed assets, etc.) will be eliminated. Waste can be expressed in a number of ways: overproduction; products and services are provided at the wrong time; unplanned production stoppage; the production process is not minimalist; some redundant and unnecessary activities; If labor safety is not paid attention to, it can cause major consequences.

Reducing inventory: A notable feature of companies that apply lean manufacturing is their success in reducing inventory. Minimize inventory levels at all stages of production, especially unfinished products between stages. Reduce waiting time, processing time, and travel time between the current workshop and the next production workshop.

Flexibility in production: the ability to produce many different types of products more flexibly with the lowest costs and changeover times.

Build supplier relationships: A lean manufacturing company often establishes collaborative relationships with suppliers. Delayed deliveries, problems with raw materials, or wrong deliveries can cause immediate production stops because this production model does not allow for inventory holding.

Collective spirit: Lean production depends largely on the collective spirit of all employees involved in the production process. Including purchasing staff, receiving staff, production staff, shipping staff... Each member needs to be alert to problems that may occur that affect the continuous operation of the production line. Lean manufacturing requires continuous quality control along with the competent ability to deliver immediate implementation.

Techniques and technology that support lean manufacturing: Modern consumers want quality products and fast service, and they want a variety of choices. These needs have created a fundamental contradiction for traditional manufacturers. In today's environment, it is the inflexible structure and direction of this group of manufacturers that push them to the point of inefficiency. In contrast, lean manufacturing companies overcome the challenges of modern consumption by striving for flexibility in production. The following are techniques and technologies that lean manufacturing companies apply to keep production flexible.

Rearrangement of production facilities: Traditional production equipment over the years has tended to gradually develop into snake-shaped chains of meandering operations. Products are moved back and forth throughout the manufacturing plant, then passed up and down between floors through different workshops. The inefficiencies inherent in this structure increase handling costs, production time, and even inventory for the production process. Furthermore, because production activities are always organized according to functions and tasks, this structure tends to create selfishness among employees, stimulating a spirit of confrontation.

A production system that is simplified to support more efficient production is called lean production. This lean manufacturing system is organized around a smooth flow of activities. Machines are controlled via computers, and the robots and manual operations within this flow of operations are grouped together into units within the factory, also known as assemblies. This arrangement shortens the physical distance between operations, thereby minimizing setup time, production time, loading and unloading costs, and the amount of inventory passing through production facilities.

Automate the production process: Automation is at the core of lean manufacturing principles. Automation is the use of control systems along with information technology to handle processes and machine operations in the production process with very little direct human intervention to minimize labor. Reduce waste, increase efficiency, and improve quality with high precision. For different manufacturing companies, the implementation of automation is different.

Modern Technology Clusters: Technology clusters are used to describe a manufacturing environment in which automation exists as distinct groups within a traditional structure. These clusters use machines controlled by digital computers that can perform many operations to produce products with almost no need for human intervention through human computer programs. Previously set up. An advantage of digital computer control technology is that when switching back and forth between production stages, it takes almost no time and setup costs.

Computer-integrated manufacturing: Computer-integrated manufacturing is a fully automated manufacturing environment with the goal of eliminating non-value-adding activities. Computer-integrated manufacturing will utilize technology clusters consisting of different types of digitized computer-controlled machinery to produce a part of a complete product from start to finish and completed at one location. In addition to machines controlled by digital computers, this process also applies to automated storage and recovery systems with robots. Computer-integrated manufacturing supports flexible manufacturing by enabling faster development of high-quality products, shortening production cycles, minimizing production costs, and accelerating delivery times.

Automated storage and retrieval systems: Automated storage and retrieval systems are combinations of equipment and controls that handle, store, and retrieve materials with precision and accuracy. This system is a computer-controlled conveyor system that brings raw materials from the warehouse to the production area and finished products to the warehouse. The operational advantage of automatic storage and retrieval technology compared to manual

systems is the reduction of errors, increased inventory management capabilities, and lower inventory storage costs. Robot: A robot is a type of machine that can perform tasks automatically under the control of a computer or programmed electronic circuits. Robots are programmed to repeat a few specific operations with high precision and are used for assembly, production, or product processing. They are very useful in harsh, toxic environments or for doing dangerous and boring jobs that pose a risk of workplace accidents.

Computer-aided design: Computer-aided design is a computer technology that designs a product and documents that design process. Engineers use computer-aided design techniques to design better products in less time. Computer-aided design systems increase the productivity of engineers, improve accuracy through automating repetitive design tasks, and enable companies to respond well. more responsive to market needs. First applied in the aerospace industry in the early years of the 17th century, computer-aided design technology has truly revolutionized *product* design. Computer-aided design technology significantly shortens the time from the first design to the final product design. It also allows companies to quickly shift production as market demands change. At the same time, it also allows companies to meet customers' requests for unique and different products. Computer-aided design systems also link to external communication networks to allow manufacturers to share product design details with their suppliers and customers. This traditional connection also allows manufacturers to receive product design details via email from suppliers or customers for review. Innovative computer-aided design systems can also design both the product and the manufacturing process simultaneously. Therefore, managers can evaluate the technical feasibility of the product and thereby determine its "manufacturability."

Computer-aided manufacturing: Computer-aided manufacturing is the use of computers to support the manufacturing process. Computer-aided manufacturing focuses on the production area of the factory and the management of the actual production process. The output of the computer-aided design system is fed into the computer-aided manufacturing system. Through this manufacturing system, the design of the computer-aided design system is thereby converted into a series of manufacturing processes such as drilling, turning, and grinding performed by controlled machines by a digital computer. The computer-aided manufacturing system manages and controls the production process of the product line through the technology cluster. The advantages of applying computer-aided manufacturing technology include increased production productivity, fewer time and cost estimates, improved production quality, and reduced setup time and costs, labor fees.

5. Conclusion

In the management and operation of businesses in general and manufacturing businesses in particular, a management information system is indispensable, in which the accounting information system plays a key role. There are many aspects to organizing an accounting information system in an enterprise, but a cyclical accounting information system in manufacturing enterprises is extremely necessary. Cyclical accounting information systems help manufacturing businesses create accounting

information that meets information quality standards to provide maximum support to users and serve their decision-making managers. Therefore, a scientific and reasonable accounting information system will increase the value of the business through improving operational efficiency, increasing operating efficiency, increasing competitiveness, and supporting control.

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