

A Brief discussion on the standardized management of material master data in Enterprise Resource Planning system for engineering enterprises

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Abstract. Taking the Enterprise Resource Planning system of a leader enterprise as an example, this paper expounds on the principle of master material data coding, the existing problems in the standardization process of master material data and the measures taken.

1 Introduction

With the rapid development of today's world economy, along with the application and development of information technology, the informatization of construction machinery enterprises is unstoppable. Most enterprises are following the pace of The Times, developing and building Enterprise Resource Planning systems, and improving the competitiveness of enterprises through Enterprise Resource Planning systems. ERP is the resource plan of an enterprise, which mainly includes inventory, purchase, sales, BOM, receivable, payable, fixed assets, inventory cost, general ledger and other business modules. In Enterprise Resource Planning, master data mainly includes material master data, supplier master data and customer master data. The quality of data directly affects the running speed and accuracy of each business flow in the system. Material master data is one of the most important data in an enterprise's basic data system. Therefore, the management and standardization of material master data is particularly important in an Enterprise Resource Planning system.

2 Meaning and composition of material master data

2.1 Material master data meaning

Material master data includes all kinds of raw materials, auxiliary materials, homemade parts, purchased parts and finished products used by the company in the production process. In this case, for example, 45# steel, labor protection supplies, vehicle frame, pedestal, engine, air after pump, etc. Material master data runs through procurement, BOM, production, sales, parts service and other modules. The management of material master data

is the most basic and important link of enterprise data management. As long as the material master data is imported into the system, the relevant business end with authority can query the material information, ensuring the timeliness and uniqueness of the information.

2.2 Material master data composition

The main data composition of materials is very complex, and each attribute of data has a direct impact on the following business flow. It mainly contains the following information: material code, material description, material status, material template, sequence control, custodian, a unit of measurement, receiving mode, etc. The material code is the unique code information that distinguishes the material and must be unique in the same material owner organization. In order to improve the accuracy of input operation and the authenticity of financial data, the Enterprise Resource Planning system, in this case, is not allowed to change the material code that has been input into the system. Material description of the material text description, to be concise and to the point, generally have character limit requirements; The status of materials is to control whether materials can participate in/participate in business activities, including enabling, disabling and disabling. Generally, materials are required to have financial costs before they are allowed to be enabled. The material template is the function of the material template definition provided by Resource Planning system. In order to reduce the workload of manual maintenance or the complexity of code development when material master data is synchronized through interfaces, the collection with the same attributes is set as a material template, which is directly referenced when the material is defined. The main material templates include purchased parts, homemade parts, finished products, inspection-free parts, etc. The corresponding material templates are selected according to the properties of the materials; Sequence control is

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mainly used to store fine items. If enabled, sequence information needs to be entered in all inventory transaction operations for the material. Sequence control is enabled for general finished products in the enterprise.

3 Material master data coding principles

Material code is also called material code. It is one of the main bases for computers to manage material retrieval. It is the basic work of Enterprise Resource Planning material master data to code materials. When the type of material is single or the quantity is small, the role of material coding is not prominent, and the use of material coding may also reduce work efficiency. When there are hundreds or thousands of kinds of materials in the enterprise, material coding is particularly important in production, receipt and delivery, inspection and daily work communication.

Based on the principle of coding informatization, the following coding principles are formulated by comprehensively considering the requirements in actual production and operation and the requirements in the actual use process:

Scientific principle: Each type of material should be coded according to the coding specification. It is not recommended to use the material specification, supplier number or abbreviation as the material code.

Principle of uniqueness: The same kind of material can only correspond to one code, and the same code can only represent one kind of material. It is not allowed to appear that one type of material corresponds to multiple codes or that code represents a variety of materials. In the actual production process, the same material has slight differences in the production of different suppliers, at this time, can be treated as the same material. When the enterprise runs for some time, the material code should be cleaned, and the cleaned code is not allowed to be used again as the code of new materials.

Normative principle: the principle and composition of similar material coding should be consistent. The encoding length and characters should be as uniform as possible, generally using only numbers, letters, and

hyphens. The type of code, structure and code writing format should be unified in a coding system. Must consider when coding input convenience, such as coding, as far as possible, do not use special symbols and letters, such as "*", "#", "%", "|", "E", "I", "O", and so on.

Usability principle: coding length is not an easy process, generally not more than 20 bits. Too long lead to complex recognition memory but also affects the efficiency of daily work communication.

Extensibility principle: Coding rules should meet enterprise's the current and future management needs, and material coding should consider the expansion or change of material due to the development of new products and the change of product specifications in the future. At the same time, once the material coding rules are formulated, they must also have relative stability, which generally needs to ensure the life cycle of system operation. For example, the last 3-4 digits of the material code of the same kind are left with sequence codes to ensure that the new material does not disturb the coding rules of the previous material.

Clarity principle: The code should be clear and not confusing. Therefore, if there are letters in the code, O and I are not applicable.

Readability principle: the material code does not necessarily require knowing what kind of material it is at a glance. Still, it should be able to identify what type of material it belongs to at the sight of the code or the meaning of each bit or 2-3 bit code. The user of coding should have a general understanding of the way of coding in a short time, which can improve the speed of coding verification in practical work.

4 Material master data classification and coding rules

According to the different intrinsic properties of materials, the materials, in this case, are mainly divided into raw materials, auxiliary materials, product parts, standard components, etc. Materials can be coded according to a category, middle category, small category and how to add a distinction code. For example, in raw materials,

1	2	3	4	5	6	7	8	9	10	11	12	13
A	7	1										

Figure 1 Material coding structure

The first digit is the capital letter A, representing the unit's abbreviation; the second and third digits are the categories. 71 represents the raw materials, the fourth and fifth digits are the middle-class code, the sixth and seventh digits are the minor class code, the eighth and ninth digits are the material code, the 10th, 11th and 12th are the main parameters of the material, such as the diameter of the round steel, the width of the channel steel, etc. the data is not enough three is the front to fill '0' (such as round steel diameter 50 mm, then 10, 11, 12 code is 050). 13 is the distinction number 0, 1, 2..... 9. It is used to distinguish different materials with the same

main parameters to ensure the uniqueness of material coding. For example, steel pipes with the same diameter and thickness can be differentiated by thickness. For channel steel with the same width and height and different thickness, the thickness can be the distinction number, etc. If the distinction number is ten digits, the single digit can be the distinction number. If there is a decimal point, the integer can be used, but the principle is not repeated if the repeated number can be processed according to the sequence number. If there is no distinction, it can be "0". This coding method can meet the enterprise a long time to add material code

requirements. Example: The steel plate with a thickness of 10 and material Q235-A is numbered A710101010100, and the 160*65*8.5 channel steel with material Q235-A is numbered A710104011608.

In the production process, to facilitate the procurement, storage, and distribution, a product can be used in a supplier of a variety of similar materials for packaging processing, such as a car all the rubber hose packaging, make a packaging number input system, improve work efficiency.

5 Problems existing in material master data management

With the continuous development of enterprises, and more and more kinds of materials, master data has become more and more huge. In the operation process of various business flows. There are many problems, such as multiple sizes of one thing, various objects of one size, non-standard material description, etc., which not only affect the efficiency of material distribution but also inconvenience the communication between colleagues in different departments. It is often encountered that sometimes they do not know whether the same material is discussed or not, which significantly affects work efficiency. It is believed that the following aspects are the main reasons leading to the problems of material master data:

5.1 Faulty in management system and its implementation

The enterprise has been in the original production mode for 60 years, and the old concept has been deeply rooted. There have been two sets of coding systems in the production process, namely design coding and financial coding, so the basis of data standardization is weak. Although the enterprise has adopted an Enterprise Resource Planning system when applying for new material codes, some personnel does not submit material information according to the system's requirements, or the information point of submission is not standard. Instead, they adopt the original habit of explaining the choosing the measurement unit according to their understanding, such as a pipe clamp. Some R&D personnel uses the correct pipe clamp unit in the BOM list. Some R & D personnel use a, which causes great trouble for procurement, distribution, and financial links, increasing the probability of material error. All these cause the same material due to the difference in material description and unit of measurement; the problem of one object and multiple codes appears, resulting in the error of the primary data material at the source.

The assessment system of material master data is not meticulous, and the lack of supervision barrier results in the absence of content information reporting personnel's understanding of the seriousness of material irregularities. When there is a problem material, the relevant personnel of various departments blames each other. Sometimes, some research and development personnel lack the understanding of one thing, one code,

and issue new material code by regulations after the material has been greatly improved. To reduce the workload of changing the drawing details, they often choose to continue to use the old code.

5.2 Bad specifications of material master data

There are various types and states of materials used in the production of enterprises. Sometimes, when new material coding is encountered, there is no relevant standard technical document, usually decided by three or five technical personnel based on their work experience. It takes a period to determine whether each attribute of the primary material is scientific.

5.3 Overdue Data cleaning

After Enterprise Resource Planning operation for some time, there will be some zombie data in the system. Some zombie data is input into the system according to the needs of personalized business in the early stage of Enterprise Resource Planning system operation, but no business has occurred in the later stage, so it cannot be reused. These data exist in the system; on the one hand, the procurement, financial and other business departments bring trouble; on the other hand, affect the system running speed.

5.4 Lack of professional knowledge for business personnel

The reserve of professional knowledge of business personnel is an important guarantee for the standardization of material master data. The problem of materials is often caused by the lack of professional knowledge of business personnel. For example, business personnel is unfamiliar with the Enterprise Resource Planning system, they can only operate the module, do not understand the system logic in place, and the problem cannot be solved independently. Business personnel does not have a deep understanding of material master data standardization.

6 Improve the management of material master data in the next step

According to the problems existing in the process of Enterprise Resource Planning material master data management and use, the corresponding measures are put forward from four aspects: management system, standard system construction, data cleaning and professional team construction, to provide various support for the standardization of material master data.

6.1 Improve the management system

Organize relevant personnel to deeply analyze the problems existing in the management and use of Enterprise Resource Planning material master data. Adhering to the principle of the specially-assigned post

further improves the material master data quality management system. Make clear the specific responsibilities of each post, achieve no difference in work and full coverage, and form a standardized management system of material master data.

6.2 Improve data standards

Based on the corresponding management system of the material master data in the enterprise and the technical standards in the national industrial enterprises, the formulation of attribute specifications such as material description and measurement units should be strengthened. In order to meet the needs of each business

department, it is also necessary to develop a part of the standards to adapt to the personalized business process and finally achieve the various attributes on which material can be based. Continue to update new material standards and do an excellent job of material master data standardization source control.

6.3 Strengthen material maintenance process

In order to strengthen the standardization of material master data, the maintenance and management process of material master data can be established, as shown in Figure 2

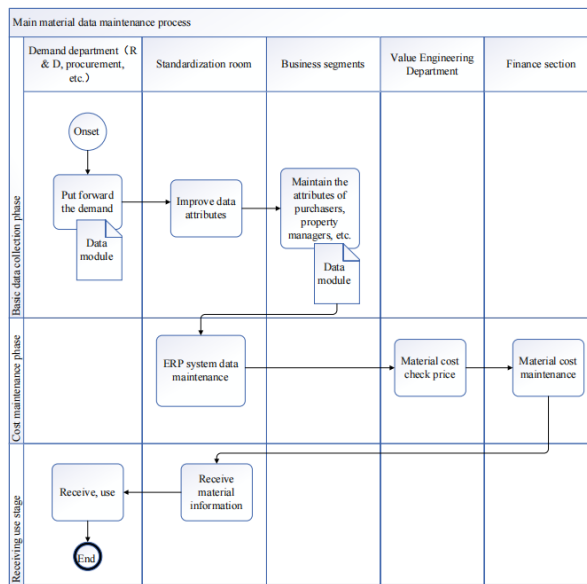


Figure 2 Process of material master data addition and maintenance

Important work of each business department in the process of material master data addition and maintenance:

- (1) the business department needs to query the material information in the material database of the Enterprise Resource Planning system. Only when the material code cannot be found can it apply for a new material code and submit the material information to the standardization department.
- (2) After receiving the demand process, standardized material maintenance personnel should form a new material code according to the established code rules of various materials and check the system. After the inspection, the material maintainer will input further material information into the Enterprise Resource Planning system.
- (3) Finance Department cost accounting maintenance cost, and inform material maintenance personnel.
- (4) The material maintainer changes the status of the material from no cost to enabled, the material is officially released, and the business department carries out the business process.

6.4 Data cleaning

Establish a master data cleaning mechanism and process to periodically clean zombie data. Zombie data is often

caused by non-standard material attributes. Professional personnel are organized to check and clean zombie data before the financial accounts are opened at the beginning of each month, so as to improve the standardization and standardization of material master data.

6.5 Improve the quality of professional personnel

Material master data involves a large number of business departments and business personnel, which requires a large number of professional and technical forces. Invite professional personnel to carry out regular specialist training and organize examinations for personnel related to material master data, re-ward those who are excellent in the examination, encourage the following staff to catch up, and form a working atmosphere of catching up. In the production of enterprises, there are various kinds of materials, so the material master data personnel should go to the site regularly to learn and constantly update the business knowledge.

7 Conclusion

The standardization of material master data is of great significance to the in-depth application of Enterprise Resource Planning in enterprises. High-quality data can

realize the information sharing of each business end, the rapid flow of business flow, greatly improve the work efficiency, and play a decisive role in improving the efficiency of enterprises.

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