

Innovative Research on Enterprise Management Mode Based on Big Data Technology and Innovation Technical Support

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Abstract. Enterprise business management work in the process, need to comprehensively improve the enterprise market competitiveness as the direction of development, which also determines the future operation of the enterprise, and whether in the fierce market competition to occupy a place, and can fundamentally enhance the market share of resources, but many of China's enterprises in the process of business management work, and do not do a good job of management work in the process of the coordinated development of the management of the development between the target customer is not for the main development of the guide, so there are many problems to be solved in enterprise business management. At present, China's enterprises also exists the problem of backwardness of managers' management concept, which is also the main reason affecting the development of enterprises, the enterprise staff can not clearly recognize the importance of carrying out business management work, so they can not understand the problems in enterprise management, and it is difficult to formulate clear management measures to solve these problems. In summary, if you want to comprehensively improve the level of business administration of enterprises, you need to change the current concept of enterprise management, improve the existing business administration system, and do a good job in the coordinated development between the market and enterprises. Based on the basic background of big data, this paper researches and analyzes the enterprise innovation mode, and makes certain advancement for the enterprise development.

Keywords: Big Data Innovation; Technology noted; Business Management; Optimization Mode

1 Introduction

The various departments of the enterprise in the process of communication there will be a lot of problems, these problems in the process of carrying out business activities in the enterprise there will be more obvious poor coordination, interaction is not enough, these problems will have an impact on the management mechanism of the enterprise's business activities, and can not really put the solution into practice [1]. In the current social context, enterprise development is not smooth sailing, will be hindered by various aspects, want to realize the development of enterprise economy and scale, it is necessary to comprehensively improve the level of business management, China's reform and opening up the implementation of China's economic market revitalization, China's vast land, the population, in order to meet the needs of the people's life and production, the number of enterprises is more and more, more and more scale, the

management of the enterprise has also become more and more important, want to improve the competitiveness of the enterprise's market, to achieve the sustainable development of the strategic objectives [2]. It is necessary to do a good job of business administration in the process of enterprise development, which is conducive to optimizing the internal structure of the enterprise, providing assistance for the development of business activities, thus realizing the long-term development of the enterprise and improving the comprehensive strength of the enterprise. Strength, in the fierce market competition to occupy a place [3].

2 Optimization Strategy of Production and Operation Management in Company Z

2.1 Optimize the objectives of the design solution

After a full discussion with the company's decision-making and manufacturing management personnel, from the company's industry characteristics, combined with the enterprise order structure, manpower structure and the configuration conditions of hardware and software, the production operation management optimization goal is to improve the company's production efficiency, reduce the cost of the enterprise, and increase the core competitiveness of the enterprise, which mainly includes the following aspects:

(1) Shorten the cycle time of returning raw materials to the factory

Consolidate raw material requisitions to gain more economies of scale, aiming to reduce the raw material return cycle time from the current average of 3.2 days to 2 days [4].

(2) Completion of product digital timing

Improve the construction of digital chemical time, increase the planned production capacity of enterprises, reduce the average monthly production number of strokes from the current 580 strokes to about 400 strokes, and improve the scale of production efficiency [5].

(3) Accelerate sample development progress and increase sample to mass production rate

Through higher planned production to meet the sample development department's man-hour needs, the company's current sample development progress from the current 5 days to speed up to about 3.5 days, so as to contribute to the company's samples to mass production rate of more than 80% of the target [6].

(4) Completing the electronic construction of samples to empower quality management

The technical department of the customer's new recognition of the sample for the construction of electronic archives, in order to optimize the current sample management and the use of the process of the various shortcomings, in addition to the part of the mass production has been entered, led by the technical department, through the manufacturing unit, the quality of the unit of the collaboration to complete the sample of the archives, and to ensure that the accuracy of the core information, to promote the standardization of manufacturing and quality management [7].

2.2 Principles of production operation management optimization in Company Z

- (1) Principle of combining science and effectiveness
- (2) Principle of combining normalization and standardization
- (3) The principle of combining operability with foresight
- (4) Lean principles

2.3 Optimization Strategy of Production and Operation Management in Company Z

Through the changes in the current internal and external environments of Company Z, the direction of optimization of Company Z's production and operation management was characterized by the use of corporate core data analysis, literature review, and lean production theory research [8]. For the current management bottlenecks, high labor costs, low scale production effect and other difficulties in the formulation of enterprise operation optimization goals and formulation principles, and actively communicate with Z company business to the advanced industrial computer and industrial control equipment customers, through the assistance of EWAY software company, through the enterprise's professional IT team and the management of the discussion and conclusion of the optimization of the production and operation of the Z company production and management of the program to come up with the following unanimous [9]. As show in figure 1.

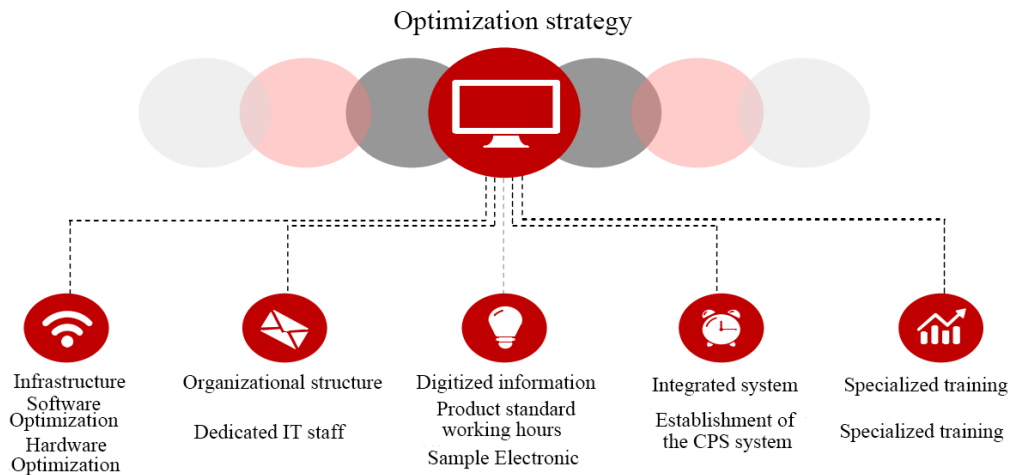


Fig. 1. Optimization Strategy of Production and Operation Management in Company Z

2.4 Organizational optimization

The company from the original ERP management team to draw professionals, the establishment of digital management optimization task force, and the task force for the digital optimization process involves different work content were set up for the hardware team, software team, data IE group and other modules, and the company's hardware vendors and software companies EWAY docking, the use of special projects responsible for the system, from the network and

other infrastructure to follow up the progress of the whole Industrial control industrial computer equipment installation, to the integration of software and hardware to ensure that the perfect technical team support, from the collection of data in the machine operation, to the establishment of data centering, to the processing of data and data rationalization and validation of the establishment of a professional team of personnel [10].

2.5 Product digital data optimization

In response to the problems encountered in the operation management, the company firstly improved the basic information of the products, including the material, size, printing color and processing technology of the products, in order to cope with the conditions of raw material procurement to integrate the demand of the order [11], the material management personnel of the production management department in the procurement of raw materials can be based on the basic information of the products, a large number of fragmented orders for the integration of rationalization of the insufficient please rationing, and this action can be utilized to Greatly optimize the order form of material procurement, reduce the large number of orders can not meet the minimum order quantity and face the long cycle of material back to the factory trouble, and then through this way to improve the long cycle of raw materials back to the factory and the delay in the delivery of the problem[12].

2.6 Integrated CPS system optimization

Information sharing, as a guiding guideline for the construction of the platform, and data interoperability between departments are both a rational utilization of resources and a prerequisite for management promotion. The main points to optimize the CPS platform are as follows[13]:

- (1) Optimization of data and information system authority;
- (2) Stability optimization of software and hardware;
- (3) Optimization of system operation specifications;
- (4) Technical optimization of platform operation.

3 Related Technical Support Analysis

In this paper, we propose a ranking model LSIN (User Long- term and Short-term Interest Network) that combines the long-term and short-term behaviors of users to predict the click-through rate of candidate item v_t . The model network structure is shown in Figure 2.

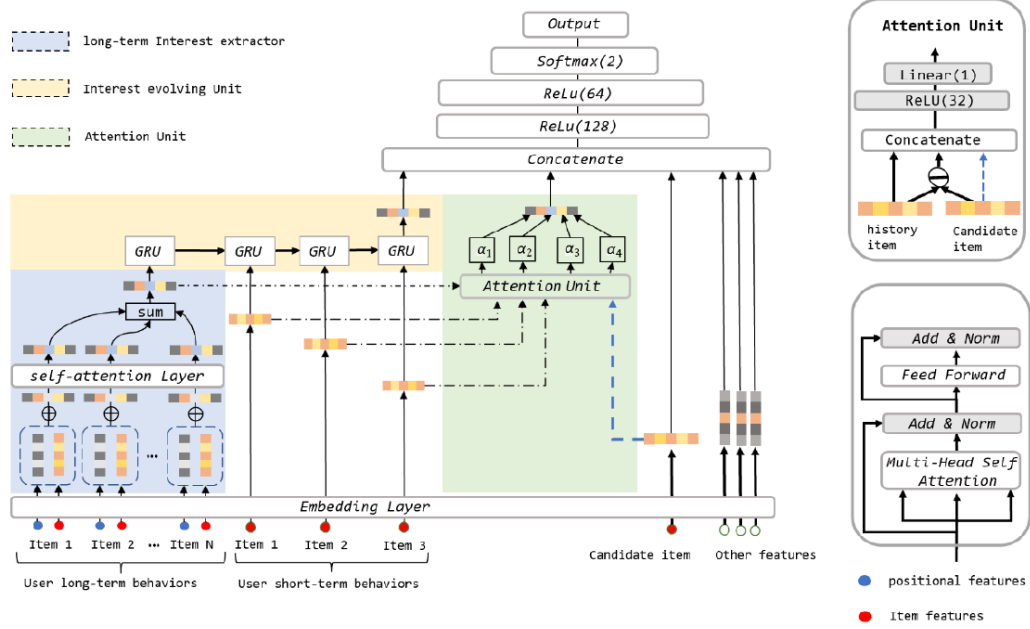


Fig. 2. LSIN model

For user u , the behavioral sequence characteristics can be expressed as:

$$S(u) = \{v_1, v_2, v_3, \dots, v_n\} \quad (1)$$

$L(u) = v_1 \cup v_2 \cup v_3 \cup \dots \cup v_{n-k}$ is chosen as the long term behavior of user u , and the recent k behaviors $v_{n-k+1}, v_{n-k+2}, \dots, v_n$ as the short term behaviors of user u . The model input consists of user's long-term behavior, user's short-term behavior, candidate items and other features, and the output is the user's CTR click probability for the candidate item. The model function can be expressed as:

$$CTR = F(L(u), v_{n-k+1}, \dots, v_n, \text{candidate item}, \text{other features}) \quad (2)$$

The LSIN model consists of input layer, embedding layer, long-term interest extraction layer, interest evolution network, attention unit, and MLP layer, which are characterized as follows:

- (1) The user's behavioral data is divided into long-term and short-term behaviors to be modeled separately. The long-term behavior of the user is feature extracted as the user's stable preference using the self-attention mechanism; the short-term behavior is directly inputted into the model.
- (2) Sequential modeling of multiple short-term behaviors of users and long-term behavioral features extracted through self-attention through GRU units respectively, as well as assigning different attentional weights to user behaviors through the basic attentional mechanism, enables the model to synthesize sequential modeling scenarios and scenarios in which assigning different weights to user behaviors directly governs the user's current interests [14].

3.1 input layer

All the available features in the input layer are shown in Table 1. All input features are classified into three categories for input into the model: long-term user behavior, short-term user behavior, and other features.

Table 1. Available Features

category	features	type
item features	Item_id	one-hot
	genres	multi-hot
	avg_rating	numerical
user features	User_id	one-hot
	gender	one-hot
	Avg_rating	numerical
user behaviors features	Rated_items_ids	multi-hot
	Item_id	one-hot
	rating	numerical
context Features	rating time	numerical

Both long and short-term user behaviors can be obtained from the user's historical behaviors. If the length of the time-ordered user behavior sequence is n , the last k items are taken as the user's short-term behavior, and the rest are taken as the user's long-term behavior. For the user's long-term behavioral features, it is necessary to encode the location of the user and send it into the network for subsequent feature extraction, so the long-term behavior is expressed as follows:

$$v^L = (v_{item}, v_{pos}) \quad (3)$$

$$L(u) = \{v_1^L, v_2^L, v_3^L, \dots, v_{n-k}^L\} \quad (4)$$

The user's short-term behavior $S(u) = \{v_{n-k+1}^S, v_{n-k+2}^S, \dots, v_n^S\}$ is directly input into the network without location encoding, where all the user features, scene features and other features of table $v^S = v_{item}$ are input into the network as other features.

3.2 Embedded layer

The category features in the input layer are often used to represent the unique heat code, high-dimensional sparse unique heat vectors are not suitable for model training, so the embedding layer is used to embed the unique heat code into a fixed-size low-dimensional dense vectors, and the principle of the embedding layer is similar to that of the Word2vec model.

For long-term user behavior, the location encoding is spliced with item features and entered together. The embedding matrix can be denoted as $W^L \in \mathbb{R}^{|v^L| \times d_L}$. where d_L is the dimension of the embedding vector, $|v^L|$ is the length of the user's long-term behavior, and the i th embedding vector is denoted as $e_i^L = e_{(item_i, pos_i)}, e_i^L \in \mathbb{R}^{d_L}$. The short-term behavior

embedding matrix is denoted as $W^s \in \mathbb{R}^{|v^s| \times d_s}$, where d_s is the embedding vector dimension, $|v^s|$ is the length of the user's short-term behavior, and the first term embedding vector is denoted as e_i^s . For the other features the embedding matrix is denoted as $W^o \in \mathbb{R}^{|D| \times d_o}$, d_o for the embedding vector dimension size.

4 Conclusion

With the development of China's social and economic system, in order to adapt to the social development of the situation, the need to innovate the form of business management of enterprises, improve the market competitiveness of enterprises, as the main direction of development, in order to achieve the standardization of the development of business operations, to better adapt to the current social environment, to improve the competitiveness of enterprises in the market, and to promote the long-term development of enterprises. Therefore, in the research process of the development direction and management mode of enterprise business management, it is necessary to comprehensively improve the comprehensive quality of business management personnel, improve the current internal structure of the enterprise organization, realize the improvement of management technology through the use of new management mode, and at the same time be able to better carry out the enterprise financial management work through the improvement of the enterprise business strategy, and comprehensively improve the efficiency of business management work of the enterprise. This paper is based on the combination of big data research, the technology of the Internet into enterprise management, breaking the previous enterprise management research, combined with big data enterprise management may be more authentic and feasible.

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