Warehouse management and informatization in industrial application under the context of "Internet +"

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Abstract. Manufacturing is the cornerstone of comprehensive national power, and warehousing is an important link of manufacturing production activities and a key node of the logistics process. Under the guidance of the Made in China 2025 strategy, the construction of an efficient and rational information warehouse has become an important way to transform and upgrade the manufacturing industry. To achieve this goal, a scientific and rational management model is required, and accounting is an integral part of it. With the depth of the "Internet+" era, it is of great practical significance to promote the level of accounting informatization. This paper focuses on small and micro manufacturing enterprises, with the goal of enhancing their accounting informatization level, and optimizes the business process design of warehousing, hoping to provide some reference for manufacturing enterprises to build intelligent warehousing systems.

1. Background

Manufacturing is the cornerstone of comprehensive national power, and the strategy of "Made in China 2025" proposes to make China step into the ranks of manufacturing power through 10 years' efforts. With the development of China's logistics industry, the role of warehousing in the logistics system has been increasingly emphasized. Excellent warehousing can help enterprises to improve the efficiency of physical flow, achieve effective management and use of resources, is one of the effective ways to reduce costs to enhance competitiveness. In the context of Industry 4.0 and "Internet+", building an efficient and rational information warehouse has become the pursuit of many manufacturing enterprises, which has put forward higher requirements for the management structure of enterprises, including the increasingly important process of accounting information.

Currently there are still many small and micro enterprises using the traditional manual warehouse management, even if the installation of ERP suite (Enterprise Resource Management Plan), but only in the manual recording of data and then entered into the system, not really information technology. The current manufacturing industry in the common automated warehouse system, because of its huge hardware costs and complex operation, making many small and micro enterprises cannot afford, the urgent need to find a way to achieve the effect of information warehousing, but also for most small and micro manufacturing enterprises can afford the solution.

This paper is a study of specific enterprise cases, to explore the current situation of small and micro manufacturing warehousing management, to put forward the corresponding solution ideas, and combined with the theoretical results to design a new set of warehousing solutions, in an effort to enhance the level of information technology warehousing.
2. Difficulties of accounting informatization in small and micro manufacturing industry

2.1. Poor data and information management skills

Data information is accurate and timely to ensure the full effectiveness of accounting management, but the current information supply capacity of small and micro enterprises is not satisfactory.

In terms of data quality, the information technology of small and micro manufacturing enterprises in China is mainly focused on the administrative level, while the manufacturing process, which is very important to the manufacturing industry, is not fully covered by information technology, and the data collection method is backward and even relies on manual entry, which has a greater negative impact on the decision usefulness of accounting information. In terms of the effectiveness of data and information, the manufacturing industry attaches more importance to production and sales, often ignoring the construction of the enterprise's own management system, so that many enterprises have the problem of unreasonable information process design. Information transfer needs to go through complex roundabout or even repeated intermediate links, which greatly reduces the rate of information transfer, but also increases the risk of error.

Figure 1 is a common warehousing business flow chart, small and micro manufacturing enterprises warehousing management information technology degree is low, there are generally information collection and transmission rely on manual, material identification is not standardised, confusing goods stacking, low precision product management and other issues.

![Flow chart of a conventional warehousing operation.](image)

2.2. Outdated information systems

Small and micro manufacturing enterprises for cost-saving considerations, and are not willing to spend a high amount of money on management accounting information software system. Although some enterprises have purchased special ERP software, it only meets part of the basic accounting functions of bookkeeping, accounting and report preparation, and many small and micro enterprises even remain in the stage of EXCEL records. The low investment makes the enterprise management accounting information system cannot achieve the integrated real-time data processing and analysis functions.

The ideal information storage system for micro and small manufacturing industries is not to invest in huge hardware costs at the same time, you can use software projects and with a certain amount of manual operation, to achieve similar management effects with fully automated three-dimensional warehouse. Need to cover the finished product in and out of the warehouse, goods management, material distribution, warehouse inventory, quality tracing and warehouse returns and other links, to adjust the existing rough management for accurate management mode. To make the warehouse data information and ERP system of real-time correlation, to achieve information scanning, data analysis, report generation of intelligent, as far as possible to free manpower and improve data accuracy and timeliness.
3. The overall strategy of accounting informatization in small and micro manufacturing industry

3.1. Using new technology to improve information production capacity
In the era of big data, enterprises have put forward higher requirements on the accuracy and effectiveness of data information. The modern data processing methods represented by cloud computing and data mining have greatly enhanced the data supply capability of enterprises. These technical methods, which integrate artificial neural networks, Internet mining, management operations research and other new knowledge, enable enterprises to no longer limit their data supply and information production to the past and internal accounting information, but to quickly process the massive amount of data from inside and outside the enterprise in a comprehensive manner, and to dig deeper into the value in order to improve the scientific nature of forecasting and decision-making.

3.2. Leveraging "Internet+" to promote process reorganisation
At present, most manufacturing enterprises do not build a perfect management accounting information system, relying only on a single tool for application, but with the help of Internet cloud computing technology, it can enhance system integration and realise accounting platform operation. The platform is the integration of manufacturing accounting information system with other systems of the enterprise and even remote systems outside the enterprise, such as human resources management system, manufacturing DNS platform, customer relationship management system, etc. It can promote the high integration of management accounting and ERP (enterprise resource planning), and truly achieve advanced accounting objectives such as comprehensive budget management, supply chain cost management and risk control.

3.3. Transform the accounting objectives of manufacturing industry with "core competence" as the centre
Cost advantage is one of the most important winning strategies of China's manufacturing industry in international competition, but with the gradual loss of cost advantage in recent years, the way to improve competitiveness of manufacturing industry is no longer limited to cost reduction. However, most manufacturing enterprises still regard "cost" as their central objective and only use accounting for basic profitability analysis, operational analysis and cost control, without bringing the management function of accounting into play. Only by transforming "cost reduction" into "innovation and efficiency" can economic growth be promoted to realise the "Made in China 2025" strategy, which requires the manufacturing industry to shift from a "cost"-centric orientation to a "core competence"-centric one. The cultivation of core competencies requires accounting in strategic cost management, supply chain cost optimization management, budget control, performance evaluation, enterprise competitiveness analysis, etc. to explore new competitive advantages in the manufacturing industry and enhance the core competitiveness of enterprises.

4. The optimization of small and micro manufacturing warehouse information technology ideas
To achieve accounting information, on the basis of the automated warehouse, but also with the effective collection of preliminary information and late intelligent decision-making, a set of information management system is needed to control all aspects of storage. According to the investigation of the current situation of small and micro manufacturing warehouse management, the following optimization ideas are proposed.

4.1. Establishment of barcode information collection system
RFID technology and barcode identification technology is the current two mainstream information acquisition system. RFID technology can fully automatic identification read information, but due to its multiple hardware and high cost and other defects, let small micro manufacturing industry, so choose relatively low cost barcode identification technology to build warehouse information acquisition system.
Different enterprises can bind the bar code of materials according to their actual situation. After pasting the bar code one by one, the materials can be scanned and recorded. Not only the management accuracy is refined, but also the whole process of material storage can be controlled.

4.2. Warehouse data fully interfaced with ERP
To achieve the "Made in China 2025" strategy proposed by the manufacturing industry from weak to strong change, you need to rely on the Internet platform, to create warehousing information and ERP real-time docking of intelligent storage system. Material information is collected through barcodes and entered into the system, and the process is controlled so that the actual quantity and status of materials in the warehouse is in line with the data recorded in the intelligent storage system. The dynamic update of data allows the general staff and management to grasp in real time, providing the right guidance for production operations and data support for financial inventory.

4.3. Human-assisted automation systems
Small and micro manufacturing enterprises cannot afford a fully automated warehouse system, and the second best way to build a semi-automated system will need to have a manual link to each automated link. For example, although the establishment of a bar code information collection system, but in the material in and out of the warehouse, the transfer of goods also need staff to human handling and scanning, which can be in the conditions of the installation of huge hardware facilities as far as possible, to achieve the same effect with the fully automated three-dimensional warehouse. And people are an unstable factor, in order to achieve the intended goal of intelligent storage, it is necessary to have a high degree of staff execution to implement the strategic intent, which requires the development of appropriate staff assessment and reward and punishment measures to achieve the effect of supervision and incentive, so that human implementation and automation system integration.

4.4. System construction to allow room for growth
Considering that small and micro enterprises have more room for growth, the above system should be built not only for the current state of the enterprise, but also for the future development of the enterprise, leaving enough room for growth. The system needs to be designed and built to be flexible, to keep the business parameters 'flexible' and easy to change and upgrade, not too 'rigid', and to trust the business to move in a more automatic and intelligent direction. Figure 2 shows a diagram of the improved warehousing business process.

Figure 2. Flow chart of an optimised warehousing operation.
5. Future prospects
This paper explains that under the background of "Internet+" and "Made in China 2025" strategy, small and micro manufacturing enterprises urgently need to build a set of information-based warehouse management system suitable for themselves. On the basis of accounting informationization level, it promotes the upgrading of enterprises. The hope is to provide some reference for relevant enterprises to work together to achieve the transformation of the manufacturing industry from "big" to "strong".

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