

A Study of the Application and Effectiveness of Master Data Management in Sinocare

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Abstract. With the rapid development of information technology and the exponential growth of data volume, enterprises are generating and processing increasingly large amounts of data in their daily operations. The quality and availability of these data have a critical impact on their decision-making, business optimization, customer relationship management, and risk control. Under such a background, Master Data Management (MDM) emerges as a key component of enterprise informatization management. This paper focuses on Sinocare's practical application of MDM and its effectiveness. Through an in-depth analysis of the company's implementation of MDM strategy, this paper aims to reveal the impact of data management on enhancing the efficiency of corporate operations, ensuring data quality, and facilitating the optimization of decision-making. It is found that it not only improves corporate operational efficiency, but also leads to more convenient and effective health management services for patients. It demonstrates the key role of MDM in enhancing corporate innovation and market competitiveness.

Keywords: Master Data Management; corporate innovation; market competitiveness.

1. Introduction

In this innovation-driven society, data have become a core driving force for companies' sustainable development. In the 14th Five-Year Plan and the Vision 2035 Outline, great importance is attached to accelerating the development of digitization and building a highly digital society. The plan clearly states that it will accelerate the development of digital economy, digital society, and digital government, and use digital transformation as a vital driving force to promote changes in production, lifestyle, and government management [1]. In this brand new era, the construction of digital China will be promoted and implemented in all aspects. Faced with the challenge of massive data, companies need to enhance their competitiveness through digital transformation. Ensure the high efficiency and accuracy of information circulation, reduce risks in the process of enterprise operation, and protect the safety of enterprise assets, so as to promote the steady growth of the enterprise [2]. Master Data Management (MDM), as a core component of digital transformation, has been put in use by a number of companies. In March 2020, Sinocare reached a cooperation agreement with Yuanian Technology on the MDM project. Sinocare is committed to the innovation of bio-sensing technology and actively promotes the transformation of digital intelligence. Using the MDM system, Sinocare has successfully transformed from a blood glucose monitoring system provider into a provider of instant detection products and services for chronic diseases, which leads to more innovative and systematic intelligent medical solutions for the prevention and treatment of chronic diseases. This transformation process is representative and exemplary of Sinocare's innovation in the application of MDM, which sets up a case for the study of the transformation from the traditional manufacturing industry to the digital service. This paper explores how Sinocare applies MDM for digital transformation and its positive impacts, so as to provide valuable experience and insights for other companies.

2. Concept Introduction

2.1. Master Data Management

Master data represents the core and most authentic data assets generated in the course of an organization's operations, and the effective management of such data constitutes an important part of an information system's responsibility. By increasing the frequency of access to the master data and improving the efficiency of data use, enterprises can effectively improve their operational efficiency and reduce costs. The improvement of the quality of master data is directly related to the improvement of the quality of enterprise products, and the increase in the value of master data means the appreciation of enterprise data capital. Therefore, proper governance of master data is particularly important [3].

MDM is the foundation of a company's data management and is a connective, flexible, and expandable platform that effectively processes master data and provides a single-point fact for critical data in business. As shown in Table 1, it focuses on the systematic management of the most critical data in business operations. These critical data, known as master data, typically cover customer information, product catalogs, supplier profiles, and employee profiles, which constitute the foundation of daily business operations and decision support. The quality of master data directly determines the overall data quality of a company. Since these data are frequently referenced in different business systems and processes, it is critical to ensure their accuracy, consistency, and reliability. As a core data asset, the quality of master data can be improved through MDM [4].

Table 1. Master Data Governance Platform Architecture [5].

Master Data Management(MDM)											
Master Data Modeling				Master Data Integration				Master Data Management			
Object definition	Coding rules	Attribute definitions	Process definition	Data aggregation	Data consolidation	Data cleaning	Data refinement	Data creation	Data audit	Maintenance management	Day-to-day management
Master Data Service				Basic Management				Standards Management			
Data distribution		Subscription service		User management		Log management		Standard maintenance			
Inquiry service		Exception handling		Rights management		System management		Standard search			
Displacement engine		Process engine		Retrieval engine		Distribution engine		Cache			

2.2. Overview of the Development of Sinocare

Sinocare is committed to the application and innovation of bio-sensing technology, actively promotes the digital transformation, and never ceases offering high-quality products and services. Its products have gained the recognition of the market with the three major advantages of "accuracy", "simplicity", and "economy". Recognized as the most potential stock in China's blood glucose industry, Sinocare has more than 20 million users in China. It is committed to the innovation of bio-sensing technology, actively promotes the transformation of digital intelligence, and successfully realizes the transformation from a blood glucose monitoring system provider to a provider of instant detection products and services for chronic diseases.

3. The Construction Path of Master Data Management in Sinocare

3.1. Data Dilemma in the traditional Mode

As shown in Fig. 1, the structure of the traditional model is difficult to accurately grasp the key business indicators of the various business segments, the business data are scattered in the various application systems, scattered in the various application systems, the data structure is messy, a single

from of presentation, and does not form a complete and unified view. The lack of a strict and uniform data verification system, such as human checking and supervision during the coding process, has led to the existence of "multiple codes for one thing" at the master data level. The company's efficiency is low when analyzing the overall financial statements, and there is a lack of intuition when looking at the statements.

The above data dilemma makes it difficult to monitor and evaluate business performance, affects the timeliness and accuracy of decision-making, and makes it difficult to process structured data. Enterprises will be tired of responding to the demand for data analysis and inquiry of personnel at all levels of the enterprise, which is not conducive to unified analysis and management. Therefore, enterprises have introduced master data governance technology to improve this phenomenon.

To effectively address data management challenges, organizations should develop a comprehensive data governance strategy tailored to their own circumstances. This strategy should include the planning, development, implementation, and evaluation of data governance programs to ensure that data governance efforts are conducted in an orderly manner. Specifically, enterprises should pay attention to the following key areas of management: metadata management, master data management, data quality management, data life cycle management, data asset management, and data security management. Build a solid data governance framework on this basis, effectively improve the management and application ability of data, and provide strong support for the sustainable development of enterprises [6].

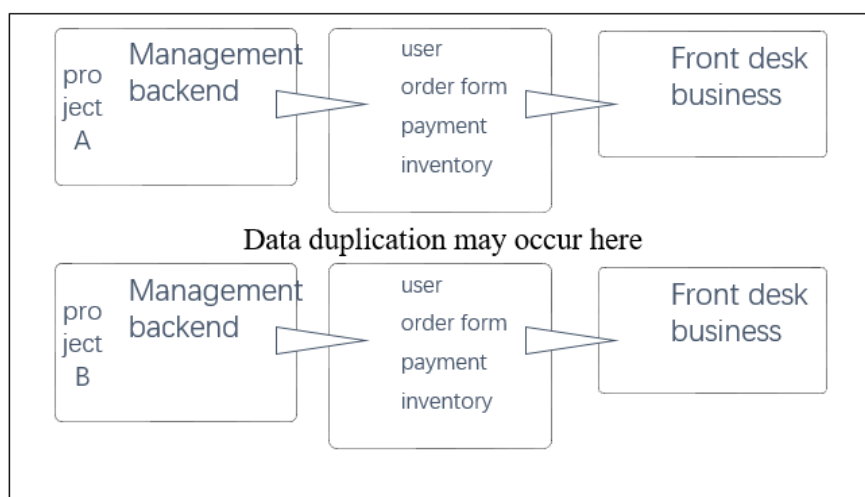


Fig 1. Structure under traditional mode.

3.2. Measures and results of Master Data Management of Sinocare

During the MDM process at Sinocare, several key steps were implemented. First, data classification and standardization were conducted, adopting a three-level material classification system, which includes the main category, sub-category, and product name. This structure not only ensures clear and readable material classification but also effectively prevents the issue of an overly large number of materials under a single classification. Secondly, a comprehensive review of the main data management processes for five categories was carried out, totaling 15 processes. In particular, three key processes have been established for the material master data, including the addition, modification and status change of material data, to ensure the accuracy and timely update of material information. Then, through the data cleaning work, the master data is screened according to the established rules to remove the unqualified data. In the first phase of the project, a total of 12,374 pieces of customer organization data, 7010 pieces of related party data and 17,520 pieces of personal data were cleaned up [7].

Through the improvement of master data by MDM, Sinocare has achieved the following results:

(1) Business online: Sinocare has realized the online business of offline channels, and the difference between the effect before and after use is shown in Table 2.

Table 2. Difference in effect before and after using Master Data Management.

Comparison dimension	Pre-implementation MDM	After implementation of MDM
Management style	Decentralized information systems and manual processes with high levels of data isolation.	Automated data collection, processing and analysis have been realized. This helped to reduce data entry errors and improve data accuracy.
Decision-making efficiency	Decision-making based on limited and incomplete information, slow response to market changes.	Automated financial software and systems make financial reporting, budgeting and auditing more efficient and responsive to market changes and customer needs. Automatically extracts and integrates data from different business systems, such as sales, purchasing, inventory, etc. Ensuring that the data used for all business processes is uniform and up-to-date.
Business process	Cumbersome processes that rely on a lot of manual labor.	Integration of online and offline, utilizing internet e-commerce platforms to sell products directly to end-users, with the online e-commerce channel reaching a market share of 32.4% in 2021.
Market expansion	Limited coverage of offline channels.	Provides a digitally-driven health management service based on the ability to quickly integrate and analyze customer data to more accurately target customer needs.
Customer service	Services limited by offline channels.	

(2) Promote the development of new products: Sinocare provides digital-driven diabetes chronic disease health management services. The company has independently developed Continuous Glucose Monitoring (CGM) to create a "biological sensing" + Internet + medical + service" patient-centered diabetes and related chronic disease management mode. Unlike traditional blood glucose meters (as shown in Table 3), CGM products are more intelligent, and the monitored data will be uploaded in real time, and better solve the pain points that traditional blood glucose meters bring skin trauma to patients. It will generate weekly and monthly reports according to the patient's blood sugar and uric acid test data, support family data sharing, and provide patients with Suggestions.

Table 3. Differences between CGM and ordinary diabetes detectors [8].

Project	Micro blood glucose meter	Non-invasive glucose meter	Continuous Glucose Monitoring(CGM)
Detection object	Bloodstream	interstitial fluid	Blood substitutes, skin
Detection principle	Electrochemical method	Body fluid examination, infrared spectrum, energy metabolism conservation method	biosensor technology
Advantages	Inexpensive; Accurate and reliable	Painless, no blood collection	The detection data can comprehensively reflect the changes in the patient's blood sugar, and analysis software can be used to quantitatively analyze the blood sugar status
Disadvantages	Pain; Does not facilitate static data	More expensive, accuracy and reliability need to be improved; High requirement for data storage capacity	More expensive, test data stability needs to be improved

Since 2021, digital therapy has become popular rapidly. CGM products can provide more rigorous data for digital therapy. Huajing Industrial Research Institute expects that the global CGM market will increase rapidly in the future, reaching 19.5 billion US dollars in 2026. This shows that the company has achieved results in product development and market expansion using MDM [9].

(3) Performance growth: The Company's performance is growing steadily. MDM assists companies in developing effective marketing campaigns to increase sales and improve operating income, as shown in Fig. 2.

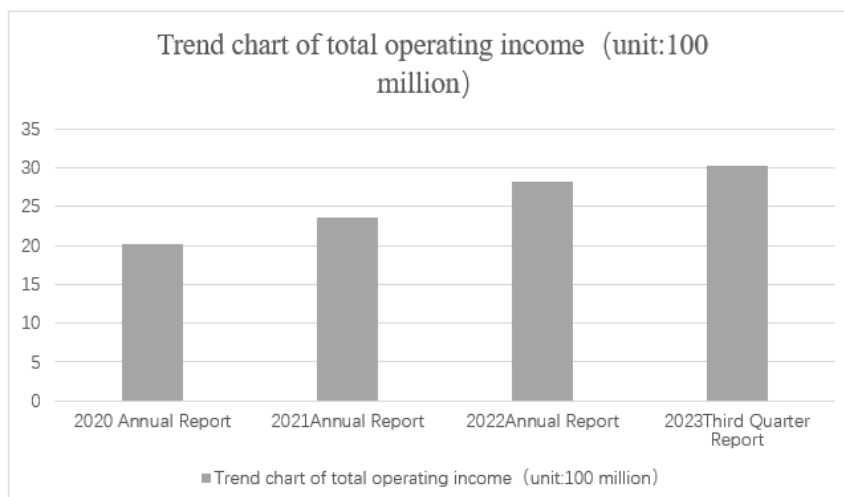


Fig 2. Trend chart of total operation income [10].

By automating the inventory monitoring and replenishment process, MDM has helped Sinocare reduce the risk of inventory backlogs and stock-outs. This not only improves liquidity, but also reduces potential losses due to inventory issues, which improves operating profit, as shown in Fig. 3.

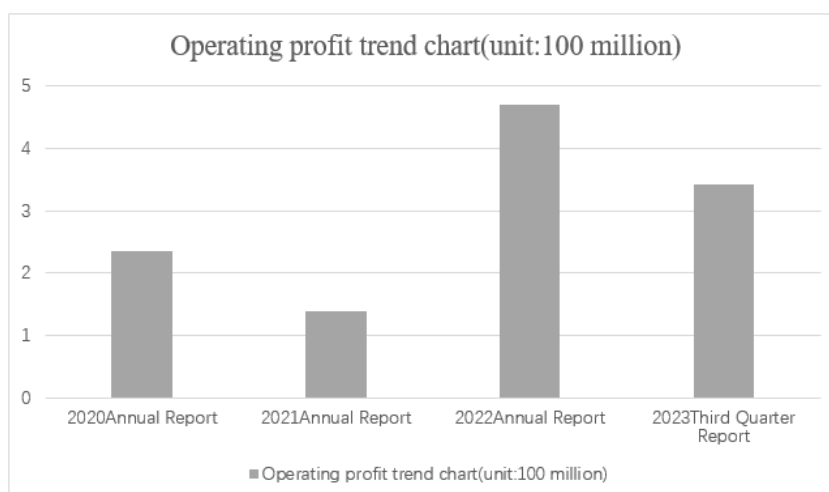


Fig 3. Operating profit trend chart [10].

4. Conclusion

This paper focuses on the role of MDM in the development of Sinocare by exploring its application and effectiveness. Discussion is made from the three aspects of the difference in effectiveness before and after the implementation of MDM, the generation of new products, and performance growth. Through the implementation of MDM, Sinocare has reduced data redundancy, found its position in the market, and put forward constructive brand strategies, which helped the company acquire certain authority in specific fields, successfully develop blood glucose products that are able to monitor blood glucose in real time, and greatly increase the company's profit.

Therefore, MDM plays a crucial role in the development of Sinocare. It's an initiative that has not only improved the company's operational efficiency, but also provided patients with more convenient and efficient health management services. In its future planning, Sinocare will also improve its gross profit margin through price adjustment, production process optimization, and product quality improvement. It strives to achieve stable growth in gross profit margin while reducing costs to maintain a good financial situation. Sinocare will continue to expand in the global market, especially the registration and clinical data collation in key markets such as the United States. It will also rise up to international standards while providing services to local markets, like services for diabetes patients, to improve user experience and satisfaction.

There is something other companies could learn from the success of Sinocare in using MDM. In order to be more competitive in the market, it is important to search for technological innovation and attract customers by implementing effective data management strategies and accurately targeting the market, which can also help meet the market demand and improve user experience. Whether in product development, market expansion, or customer service, MDM can lay a solid data foundation for a company's sustainable growth and is an important tool to enhance enterprise competitiveness.

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