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Deployment and Implementation of IFS System Procurement Management Module of Road Network Company

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ABSTRACT

Enterprise Resource Plan is the coordination of management and technology, making full use of information and supporting operational decision is the resource of ERP. Huge enterprise need to adapt the management requirement of information age and implement ERP. Beijing Rail Transit Luwang Group implement project management and operate resource is the coordination of ERP concept and software, and put it into practice and operation. Purchasing management module take an important role in the ERP implementation. Material purchase, equipment purchase finance control, all these need to realize in the purchasing management system. So we make research and analyze to the purchasing management, then design and develop for IFS purchasing function module, and achieve the purpose of adjusting the organization structure and implementing function. This article analyzed the factors which affect the ERP implementation in every stage and evaluated the result of implement ERP. And this article also present the all processes from demand analysis to system test. According to the current situation of Luwang Group, we proposed adjustment for the management system which all departments participant, then build the relationship between material requirement with purchase application and contract, in order to promote the efficiency and turnover ratio of spare parts. Improving the material management and ensure the consistence between cash on hand and accounting ledger. Then evaluating the ERP efficiency and summarizing the advantages and problems of internal enterprise, and providing experience for ERP implementation widely.

1. Introduction

Enterprise informatization is a crucial and significant tool for contemporary enterprise management. Considering the internal requirements for production planning and fund management inside firms, a supply chain management system has been introduced that operates on an intranet platform. This system integrates both supply and demand aspects and has subsequently evolved into a competitive arena for specific purposes. The study examines the market and dynamic selection of

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partners, as well as the overall resource management of dynamic alliances with the assistance of an Extranet [1]. The Railway Network Company assumes the responsibility of coordinating the operation of Beijing's rail transit network. This includes tasks such as emergency response, issuance and management of all-in-one tickets, ticket settlement and reconciliation, operational information summarization and statistical analysis. Additionally, the company organises the development of technical standards, management specifications, and business processes for the ticket sales and inspection system [2]. This study aims to examine and provide an analysis of ticketing systems, fare changes, and other significant duties. It will explore the rules governing these processes, conduct research to gather relevant information, and provide informed views on these matters. To attain the objective of secure and consistent operations, as well as to guarantee the sound and enduring growth of the firm, Road Network Company has established the managerial concept of "constructing an internal control system with asset management as the guiding principle," taking into account the prevailing circumstances. The integration of asset management as the central component enables the incorporation of various related business functions such as financial management, equipment management, material management, contract management, document management, project management, operation and maintenance, and human resources management within the enterprise's asset management and financial control system. Establish a collaborative and interconnected corporate integration platform. This study aims to enhance corporate management concepts and systems, streamline and reinforce company procedures, and enhance levels of efficiency and control. This measure will facilitate the enhancement and refinement of the internal control system inside road network firms, therefore enhancing the efficiency and efficacy of their operations and facilitating the realisation of the company's development plan.

When examining the importance of large-scale ERP software in the selection of enterprise systems, specifically in relation to the deployment of functional modules and operational processes, it is evident that the equipment management module of the IFS system has considerable value [3]. Equipment management plays a crucial role in rail transit projects, as it pertains to the effective management of key equipment inside each module. During the selection process of an Enterprise Resource Planning (ERP) system, Rail Transit opted for the IFS system due to its superior benefits in the equipment management function module compared to the SAP system. I was involved in the development and deployment of the Materials Management (MM) module inside the IFS system for the Beijing Rail Transit Enterprise Resource Planning (ERP) project. During the implementation of the Enterprise Resource Planning (ERP) system, an analysis and evaluation were conducted on the influence of key elements on the efficacy of the system implementation. Additionally, research and analysis were performed on the difficulties that arose at each step of the project implementation, as well as the domestic context in which these issues occurred. Through the process of organising and condensing the comprehensive list of issues encountered during the implementation of enterprise resource planning (ERP) systems, it becomes evident that the institutional and management challenges inherent in information integration and resource planning are interconnected and relevant at each stage of implementation. This analysis serves as a valuable resource for enterprises seeking to implement ERP systems in the future, enabling them to enhance implementation outcomes and achieve the desired objectives of optimising enterprise information resources, enhancing system module functionality, and facilitating the modelling of enterprise process reengineering.

This paper employs the IFS system, implemented by the road network company, to effectively merge enterprise resources, strengthen business processes within the information system, establish standardised basic data management, facilitate information integration and sharing, offer decision-making support to the company, enhance the overall level of informatization, and establish a

platform for information integration. The objective is to successfully integrate key functional systems, including financial management systems, equipment management systems, and material management systems.

Based on the configuration and implementation of the IFS system in the rail transit ERP project, the initial phase of the rail transit project encompasses various stages, including system selection, secondary development, and design tailored to customer requirements. This process culminates in the final system test and subsequent integration into the operational terminal, signifying the completion of the entire implementation. The study aimed to analyse the correlation between process issues and the key elements influencing the efficiency of ERP system implementation. Additionally, the research examined the methodological relevance of each step of the implementation process in the project. Simultaneously, this project utilises the procurement management process of the material module (MM) as a case study. It examines the entire procurement process, starting from the purchase application to the arrival and acceptance of purchased materials. The analysis focuses on the configuration and implementation of the procurement management module within the IFS system, considering aspects such as business blueprint design, business process operation, and function design and implementation.

2. Literature review

The use of Enterprise Resource Planning (ERP) systems in China has seen significant growth and has reached a level of development that can be considered mature, resulting in the establishment of a discernible market presence [4]. The deployment of the ERP system by the firm leverages the benefits and implementation expertise of the British ERP system, while also offering technical assistance in research and development as well as design [5]. The examination and investigation of China's Enterprise Resource Planning (ERP) system during the deployment phase centres on the analysis and study of extensive ERP initiatives. Significant advancements have been achieved in the identification and assessment of process-related issues. Furthermore, a systematic refinement of the process has been undertaken, accompanied by the development of targeted implementation strategies for particular business scenarios. These approaches have been successfully used in practical settings, yielding tangible outcomes. The ERP software created in China places emphasis on the robust functionalities of a specific module, such as the finance module of UFIDA software. Nevertheless, the successful integration and implementation of each module's tasks inside the system necessitates the use of extensive software solutions such as SAP and IFS [6]. Considering the significance of China's software research and development in terms of its scope and covered functions, it is evident that the current Chinese research on the application of British software for managing Chinese enterprises and system implementation lacks a comprehensive analysis of the influencing factors at each stage of implementation. Therefore, further investigation and exploration of the underlying mechanisms and processes are necessary. Furthermore, a comprehensive evaluation and comparative study of the efficacy of China's implementation of Enterprise Resource Planning (ERP) software in big state-owned firms has yet to be conducted, specifically focusing on different phases of implementation and the particular elements that influence its success. The design and development of ERP software in China are rooted in the company's specific business requirements and its strategic vision for future growth [7]. This study examines the British ERP software and its applicability to Chinese corporate applications, with the aim of deriving valuable insights and independently developing software tailored to the Chinese context. British ERP software, such as SAP systems, is mostly used by state-owned firms of significant scale and energy-focused entities, particularly those operating in the nuclear power and electric power sectors. The primary

focus of the implementation of China's IFS system is mostly inside the underground sector. Various metro systems in China, such as the Shanghai Metro, Nanjing Metro, Wuhan Metro, and Chengdu Metro, have effectively adopted Integrated Fare Systems (IFS).

The prevailing research landscape in the United Kingdom centres on the field of procurement management, with particular emphasis on supply chain and manufacturing operations [8]. The present study landscape in China is mostly centred on the examination and investigation of procurement management as it pertains to the implementation of small-scale ERP software. The study centres on the investigation and implementation of domestically generated ERP software in China, together with the use of ERP software within the ERP software domain. The comprehensive examination and investigation of the SAP system's use and study within various industries does not include the exploration and analysis of the IFS system as an enterprise resource planning (ERP) software solution. Currently, the existing research landscape in China and other countries has not fully established a connection between the list of concerns during the implementation phase and the factors that impact the success of implementation [9-11]. This article aims to use an analytical approach to examine the many aspects that influence the outcome of implementing an Enterprise Resource Planning (ERP) system at different phases. The findings of this research will serve as a valuable reference for future applications of ERP systems, as well as provide potential solutions to mitigate implementation challenges. Through a comprehensive examination of the problem list, it is possible to discern recurring issues encountered by Chinese enterprises, particularly state-owned enterprises, during the implementation of enterprise resource planning (ERP). Subsequently, it becomes feasible to suggest viable solutions to address these prevailing challenges. Furthermore, by furnishing illustrative cases and references, valuable insights can be offered to assist future enterprises in their ERP implementation endeavours.

2.1 The Current Business Status of the Road Network Company

The prevailing state of management software employed: Prior to the integration of the IFS procurement management system, Road Network Company used the domestic UFIDA software as their enterprise resource planning (ERP) solution [12]. The programme effectively oversees the processes of receiving, dispatching, and storing resources in a centralised manner. The primary function of this programme is to facilitate the financial administration of the Road Network Company [13]. The management team recognises the pressing need for comprehensive resource planning and management within the current road network company. However, it is observed that the UFIDA software lacks the ability to unify and integrate the three major modules of materials, finance, and equipment within the company. Consequently, it fails to meet the enterprise's overall resource integration requirements.

The existing state of the procurement organisation structure: Prior to the implementation of the IFS system, the procurement management within the Road Network Company operated in a manner where each significant functional department autonomously fulfilled their own procurement requirements and engaged in procurement activities. Following the conclusion of the procurement process, the department proceeded with the separate financial settlement. The four functional departments included under the organisation are the Technical Engineering Department, the Building Engineering Department, the Administrative Department, and the Comprehensive Maintenance Department. Each of the aforementioned four departments has an autonomously controlled warehousing facility. The whole of the procurement process takes place and concludes under the autonomous guidance and oversight of the department. The present management paradigm exhibits several challenges pertaining to resource planning and financial control.

The present condition of the purchase management process: The initial procurement model employed by each department of the Road Network Company entails the submission of a purchase application by the department's procurement department [14]. Subsequently, the department's leaders review and approve the application, leading to the execution of the purchase. Upon completion, the procured goods undergo inspection and are subsequently stored in a warehouse that falls under the supervision of the respective department. The aforementioned model of departmental functional division of labour reveals a lack of interconnectivity across the four functional departments of the Road Network Company with regards to procurement control. The proposed strategy entails the autonomous use of materials by individual procurement departments. The categorization of procurement departments is predicated upon the segmentation of administrative activities. The study reveals that the existing management issues of Road Network Company include the following aspects, as derived from the original procurement organisational structure and procurement management method.

The financial reconciliations of departmental independent procurement at the conclusion of each month and the conclusion of the fiscal year will indicate that the expenses associated with procurement surpass the initial budget allocated at the commencement of the year

(1) All departments have same requirements for material purchase. The autonomous nature of their purchases results in the duplication of acquired items and the inefficient utilisation of resources.

(2) Matters pertaining to the company's overarching management and control: The decentralised buying practises within each department provide challenges for the organisation in terms of effectively understanding and overseeing the collective purchasing requirements and budgetary considerations.

(3) Concerns pertaining to departmental functions: The separate purchasing practises of each department and the lack of communication across the four key functional departments during the proposal of procurement plans and needs have led to inefficient resource allocation.

(4) Resource planning issues: The procurement management methodology used by this large corporation not only fails to align with resource planning criteria, but also exhibits deficiencies in backward management as a prominent state-owned organisation.

(5) Issues pertaining to organisational structure: The existing procurement operations are governed by an extensive management framework, characterised by a rather decentralised procurement organisation whereby procurement authority is distributed among several functional divisions. The organisational structure of the road network corporation was determined by analysing the procurement organisational structure and procurement management procedure.

The diagnostic of the procurement organisational structure reveals that the original design of the Road Network Company's organisational structure exhibits a high degree of flexibility [15]. Each functional department has the ability to autonomously manage and regulate the allocation of resources within its own department. Simultaneously, the use of this decentralised organisational framework may the implementation of department-specific buying authority may effectively save the managerial energy of high-level departments, therefore enhancing the overall performance of each department. However, when considering resource planning and management efficiency, it becomes apparent that this particular organisational structure does not facilitate the effective exchange of procurement and resource information across different departments [16]. This phenomenon not only results in escalated expenses related to procurement, but also contributes to an abundance of inventories and elevated expenditures associated with management. The diagnostic of the procurement management process. The first procurement management process used by the Road Network Company may be characterised as a conventional approach to procurement. While procurement management exhibits a degree of flexibility, it presents particular challenges in terms

of cost control at the organisational level. The sharing of procurement data is limited. Inconsistencies in the names and codes of materials from the same supplier across multiple departments lead to the duplication of data. Simultaneously, the current procurement method lacks the ability to adequately regulate the purchasing price. It is possible for a single supplier to provide varying quotes for the same commodity while dealing with various departments. The formation of a ladder pricing for comparing supplier quotes is not permitted within each department, and the comparison of quotations from various suppliers is also prohibited. Choose the most optimal provider as the primary source.

The concept of necessity is of utmost importance in various academic disciplines. Procurement management serves as the first stage of the supply chain and has significant significance in the overall management of an organisation [17]. Reducing inventory and procurement costs, as well as enhancing capital utilisation efficiency and turnover efficiency, has significant importance for organisations. A decentralised procurement organisation is not favourable to the effective integration of resources and assessment of suppliers. The functioning of the supply chain is constrained by issues such as elevated procurement costs and substantial inventory levels [18]. Furthermore, given the constraints imposed by software functionalities, it becomes essential to use the IFS system as a substitute for the UFIDA system in order to provide interconnectivity across different modules inside the system.

The feasibility of a project or initiative refers to its practicality and likelihood of success. It The implementation of a unified procurement management model can effectively control the entire procurement process of a company, encompassing the formulation of procurement plans, planning of procurement needs, and the execution of the company's procurement process. This can be achieved by utilising the functions provided by the IFS procurement management module. The IFS system procurement organisational structure necessitated adjustments to the organisational structure of the road network corporation [19]. The procurement organisation underwent a reorganisation process, resulting in modifications being made to the four primary functional departments. The reorganisation of departments is no longer predicated on administrative affiliations, but rather on the adoption and execution of the IFS system procurement procedure. The methodology is categorised into distinct departments. The divisions that are split within the organisation consist of the material utilisation department, the material purchase department, the warehouse management department, and the finance department.

The newly established procurement organisation consolidates the previously fragmented functional components and establishes a standardised procurement model and procedure. The procurement requirements of the road network firm are addressed by the implementation of the IFS system for procurement management. The procurement organisation underwent a reorganisation, resulting in two significant modifications to the initial procurement management activities. Initially, the disparate procurement divisions were consolidated into a unified and centralised procurement department. Furthermore, in order to enhance efficiency, the dispersed warehouses of each department were relocated to facilitate the reorganisation of supplies. The process of coding and categorization facilitates the effective administration of resources by organising and categorising them systematically.

2.2 Overall Demand Analysis

The road network corporation incorporates the integration of equipment, materials, and other modules into its management system. An efficient enterprise resource planning (ERP) system is required to integrate crucial equipment, materials, and financial components, hence enabling effective

resource management within a single framework. Considering the overall functionality and seamless integration of the Integrated Financial System (IFS) Hence, the selection of the IFS system enables the rational allocation and effective management of resources.

Drawing from the existing research on the material module of the road network company, as well as the collection and organisation of fundamental receipts and the design of the procurement business process, this study integrates the functional module attributes of the IFS system to identify the primary functional requirements for procurement management within the road network company. These requirements encompass the establishment of purchase applications, purchase orders, and the tracking of material arrivals. The modular management of each function and integrated management of functional modules in the IFS system facilitate the realisation of goods acceptance, the management of connected suppliers of acquired components, supplier maintenance, and invoice matching.

2.3 Functional Requirements Analysis

2.3.1 Purchase requisition function

The primary objective of material planning within an organisation is to effectively coordinate the acquisition of materials, ensuring that the appropriate amount is procured in a timely manner to satisfy the operational requirements for production and maintenance. Simultaneously, the implementation of well-designed production plans may effectively mitigate the accumulation of surplus inventory materials that surpass typical material needs and safety stocks, thus reducing the extent of capital tied up in inventory.

Based on the procurement management requirements of the road network company, it is necessary for the IFS procurement management module to facilitate comprehensive procurement management throughout the entire process, while also incorporating inventory management within the material module. Additionally, it should offer interface design capabilities to accommodate the future implementation of the financial system and enable seamless integration with equipment management and equipment retail purchasing. The business operations of the road network corporation are integrated and managed via the IFS system, which enables the seamless functioning of each functional module inside the ERP system [20].

The purchase requisition is an application developed by the business department inside the system to address procurement requirements. The purchase requisition function encompasses the generation of a purchase order inside the buyer system, wherein the header data is completed. This header data comprises information such as the supplier details, receipt date, currency, buyer identity number, and delivery address. The contract number and coordinator will record and save this data. They will input the component number and quantity into the parts application number and save it in order to produce a purchase order. The purchase order will be placed by the department head after it has been approved.

2.3.2 Purchase order function

A buy order refers to a formal request for the acquisition of goods or services, often initiated by the material requisition department. This request through an approval process led by the department head before being transformed into an official purchase order. Alternatively, the procurement department autonomously develops a purchase order inside the system, which is then generated upon receiving permission from the departmental supervisor.

2.3.3 Arrival acceptance function of purchased materials

The process of arrival acceptance of purchased materials involves the buyer recording the arrival of the purchase order in the system based on the order number, providing information on the received quantity and location number, and acknowledging receipt of the order. Subsequently, upon receipt of the purchase order, the buyer is responsible for indicating the quantity inspected and registering the results of the inspection. Finally, the buyer is required to print the arrival acceptance form.

2.3.4 Purchasing parts supplier maintenance function

The primary purpose of the bought parts supplier maintenance function is to establish a connection between purchased components and their respective suppliers. This involves inputting the purchased parts into the buying system, which then automatically retrieves the relevant supplier information for those parts. The process involves the master data maintainer establishing the purchased parts supplier within the system. This entails inputting the header data, which includes the part number, supplier, and field information [21]. Subsequently, the maintainer proceeds to input the table body data, encompassing the inventory conversion factor, price conversion factor, standard packaging size, price, tax code, and verification of the main supplier status. Finally, the data is saved.

2.3.5 Supplier management function

Suppliers may be categorized as either direct or indirect sources of procured materials or services. The administration of the IFS system supply includes fundamental supplier information, supplier assessment, and the choice of supply sources or suppliers, which is determined by past procurement records or criteria provided by the user. The proactive management of supplier information in the supplier ledger may be effectively implemented across several procurement processes, including buy inquiries, purchase orders, purchase material receipts, purchase returns, and supplier invoice management. Supplier management primarily involves the maintenance of supplier master data. The function encompasses the management of fundamental supplier data, the management of supplier buying address data, the management of general invoice data, the management of invoice tax data, the management of invoice payment methods, and the management of buyer data.

2.3.6 Invoice matching function

Invoice matching refers to the process that establishes a link between the acquisition of materials and the financial aspect of a transaction upon its completion. The primary objective is to reconcile the invoice balance to zero inside the IFS system, hence streamlining the accounting analysis conducted by the finance department. The primary functions within the system include the inputting of supplier invoices, the correlation of invoices, and the execution of posts.

2.4. Analysis of Main Factors in Implementing ERP

This study aims to conduct an analysis of the factors that influence the effectiveness of Enterprise Resource Planning (ERP) implementation in a road network company. The objective is to establish a correlation between the main influencing factors during the implementation process and the problems that arise at various stages of implementation. The research will employ an analysis and

research method to propose solutions. The findings will be presented in a chart format, highlighting the main factors and their related factors. Additionally, the study will analyse the list of problems generated in each implementation stage and explore the logical connection between the causes and the main factors. The analysis of the relationship between online processes and offline operations is facilitated through the operation and implementation of the MM module procurement management process in the IFS system. Key management processes serve as case studies to examine real-world business adjustments and the application of system functionalities in order to achieve desired system functions. A comparative analysis was conducted on the procurement organisational structure and procurement model of Road Network Company prior to the implementation of the IFS system, as well as the organisational structure and procurement model subsequent to the implementation of the IFS system. The findings of this analysis allowed for the identification of the benefits and advancements brought about by the enterprise resource planning (ERP) project management within the company. The comparative technique is a comprehensive approach to procurement that systematically highlights the advantageous characteristics of the road network company's implementation of the IFS system procurement management system.

The thorough examination and analysis of the elements influencing system deployment are crucial for the effective execution of ERP. The impact analysis of many variables on system implementation is elucidated by categorising the topics of implementation, owing to the multifaceted nature of these elements. The implementation entities may be classified into three distinct categories: the implementation organisation, the user side, and the performance of the ERP software.

The implementation organisation is responsible for overseeing the whole of the ERP system installation process, including the configuration and integration of various systems and technologies [22]. The subject matter primarily encompasses two key dimensions, namely human issues and technological considerations. The personnel employed by the implementation organisation have a crucial role in the initial phase of system implementation. They are responsible for introducing the system functions and promoting the system's performance. This is done prior to the actual implementation of the system. The purpose of this is to assist the client in comprehending the Enterprise Resource Planning (ERP) system and evaluating whether it can adequately fulfil the enterprise's requirements, based on the specific operational demands of the enterprise. The management of demand and resource planning is a critical aspect of organisational operations. The impact of the work team on the implementation of organisational people has a significant influence on the whole process of system installation. The impact of individual performance has a direct influence on the effectiveness of the work team, which in turn has an impact on the overall effectiveness of the institution. The effectiveness of problem-solving methods and the ability to understand and fulfil client demands are contingent upon the collaborative coordination and communication abilities shown by team members. The technical aspects of the implementing organisation, including competence in enterprise resource planning (ERP) and information technology (IT), the project manager's experience in managing projects, and the organization's ability to provide professional training to customers [23]. The presence of advanced degrees of Enterprise Resource Planning (ERP) abilities and Information Technology (IT) experience has a significant impact on the overall quality of ERP systems and the quality of information they provide. The efficacy of a project manager's ability to suggest solutions and navigate challenges during system deployment is heavily influenced by their management philosophy and prior project experience. The inclusion of professional training on client operating systems is an essential component of the project implementation process. Furthermore, it has an impact on the system's ability to efficiently achieve its intended tasks and provide advantages to the organisation post-implementation. The initial step

in training key users on the client side involves ensuring that personnel from the client organisation, who will be responsible for conducting the training, possess a comprehensive understanding of the system's functionalities. Additionally, they should be able to effectively utilise their own IT skills to deliver proficient training sessions. It is important to note that this training process also has an impact on the workload and execution of any subsequent system development activities. The subject under consideration is the concept of cost. If training professionals are able to discern the distinct requirements of customers through the system, it will result in a decrease in the burden associated with secondary development and a reduction in the cost of system installation. The customer assumes the role of the system receiver and actively collaborates in both the implementation process and the achievement of the ultimate business objectives. The customer assumes a pivotal role. The research revealed that there are two key components that significantly influence customers: the decision-making layer and the implementation layer. The decision-making layer is responsible for overseeing the decision-making process inside a company, which encompasses the organisational management system, the efficiency of enterprise execution, and the degree of leadership decision-making [24].

3. Methodology

3.1 Designing the Business Process for Purchasing Applications

3.1.1. Exploring potential business design ideas for application acquisition

The primary function of the material buy application inside the system is to facilitate scheduled purchase requests. The business process inside the IFS system facilitates the establishment of a business connection between the material usage department and the material procurement department via system functions. It enables the transmission of orders or transfers for later purchase applications. The transfer of the inquiry process is a notable aspect of the operational activities of the IFS system, with particular emphasis on the multi-selective operation facilitated by the right-click function menu.

3.1.2. Business process and description

Material procurement applications mostly pertain to the deliberate and organised processes involved in acquiring materials. The procurement department receives reports from each material demand department, which are based on the real business demands. These reports include requests for the purchase of certain materials, their quantities, and other relevant information for a specified future time.

The following is an academic definition of the IFS procurement management material procurement application process: The IFS procurement management material procurement application process refers to the business process description that outlines the procedures and steps involved in the acquisition of materials inside the IFS procurement management system. This application process is designed to facilitate the efficient and effective procurement of materials required for various business operations. It encompasses the activities related to identifying material needs, sourcing suppliers, requesting quotations, evaluating proposals, negotiating contracts, and ultimately procuring:

(1)The "Material Procurement Application Form" is to be completed by the material planners in each department, in accordance with the specific operational needs of the company. Planned purchases adhere to the established procedure, but unexpected purchases include completing the buy application change form and then initiating the material purchase application change process.

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(2)The "Material Procurement Application Form" will be reviewed by the department head. In the event that the application does not meet the necessary criteria, it will be returned to the applicant for further adjustment. Alternatively, the applicant may be required to complete an unscheduled procurement application. Once approved, the material purchase application will be sent.

The completion of the material purchase application requires the use of a purchase application change form. Subsequently, the buying department will assess its contents in collaboration with the department head to determine its approval status. In the event that the submission does not meet the required standards, it will be sent back to the applicant for the purpose of making necessary revisions. If approved, the purchase application will undergo a conversion process to become a buy enquiry.

(4)Once the inquiry for purchase has been made, proceed with the execution of the purchasing contract.

3.2 Modification of the Procurement Application's Business Process Design.

3.2.1 Material procurement application change design ideas

Purchase order modification is a procedural activity aimed at altering the purchase amount of an existing buy order inside the system, in accordance with the real business requirements. To initiate the change order process in the purchase order interface, locate the header and use the right-click feature. To modify the contents of the buy order, use the right-click functionality to subsequently re-issue the purchase order. This operation exemplifies the efficacy of the right-click feature in the IFS software and the seamless execution of the operational procedures in real-world business scenarios.

3.2.2 Business process and description

In the event of a modification to the procurement plan, whereby the requested materials deviate from the originally intended models and possess additional requirements, it becomes necessary for the department planner to complete a buy requisition change form.

(1) In instances when the initial material purchase application fails to align with the practical requirements of the company, the material planners from each department complete the "Purchase Application Change Form".

(2)The department head conducts a thorough examination of the purchase application, carefully assessing the provided rationale for the proposed modification.

(3)In cases when material procurement applications surpass the initial plan and the proposed alterations go outside the predetermined requirements, it is necessary for each department to compile approval papers. Subsequently, the decision to proceed with the purchase will be made during a meeting convened by the general manager's office.

(4) Change orders for material purchases that surpass the specifications outlined in the plan, although remain within the established criteria, shall be procured upon receiving permission from the head of the buying department.

(5) In the event that buy application modification forms are not authorised during the general manager's office meeting, they need to be resubmitted. On the other hand, purchase application forms that have been approved must be sent to the procurement execution department for further processing.

(6) Proceed with the execution of the acquisition contract.

3.2.3 Conceptualising approaches for material procurement inquiry enterprises

The purpose of the buy inquiry is to transform the authorised purchase application into a purchase inquiry form inside the system, with the intention of seeking information from the supplier. The process includes the selection of suppliers who possess the necessary qualifications, followed by a thorough comparison of the prices provided by these suppliers. Finally, the approval of the selected suppliers is sought from supervisors in order to ascertain their qualification. The procurement department enters into purchase agreements with vendors.

The process of material procurement inquiry of the establishment and approval of a procurement application, followed by the solicitation of competent suppliers for the acquisition of necessary materials. Following the receipt of supplier quotations, it is essential to engage in a comprehensive evaluation and comparison of the provided quotations. This evaluation process aims to assess the suitability and viability of each supplier's quotation. Upon completion of this evaluation, it is necessary to approve the chosen supplier's quotation, therefore identifying them as a qualified supplier. Subsequently, it is imperative to form a procurement contract with the approved supplier. The concept of business process refers to the systematic and structured approach used by organisations to achieve their objectives and provide value to stakeholders.

The term "business process" refers to a series of activities or tasks that are performed inside an organisation to achieve a certain goal or The following is a description of the procurement management material procurement enquiry procedure inside the IFS system.

Once the buying department has developed a purchasing application in accordance with the organization's procurement requirements, it proceeds to transform the application into an inquiry and then creates a purchasing inquiry form.

The procurement department systematically inputs the data of eligible suppliers into the system, according to the prescribed contract and bids management protocols.

In accordance with the bidding management protocols, the individual in charge of the procurement department engages in a process of evaluating and comparing the quotes provided by various suppliers. Subsequently, this individual grants approval and selects the supplier based on their assessment.

3.2.4 Business process design pertaining to the examination of incoming materials and the management of warehouse operations

The purpose of the arrival acceptance process for purchased materials is to input the inspection quantity on the purchase order receiving interface and record the inspection results using the right-click function. This process is considered complete once the arrival acceptance is registered. Additionally, the arrival report can be printed by right-clicking again. The business operation aims to display the system interface content throughout the whole procurement process, starting with the material procurement application and concluding with the conclusion of the procurement process. This will effectively demonstrate the overall coherence and completeness of the system interface.

The procedure of material arrival inspection and warehousing entails a collaborative effort between the buying department, purchasing department, and material management department. This involves conducting a thorough examination of the procured items in adherence to the contractual specifications, followed by the individual signing of the acceptance form.

The following is an academic explanation of the IFS procurement management material arrival and acceptance process: The IFS procurement management material arrival and acceptance process is a crucial component of the overall business process within the organisation. This process involves

the receipt and verification of materials procured by the company, ensuring their compliance with specified requirements and standards. Upon the arrival of the procured materials, they are carefully inspected and compared against the corresponding purchase order and delivery documentation. This step aims to verify the accuracy of the delivered items, including their quantity, quality

(1) The purchaser is provided with the "Purchasing Arrival Note" and "Purchasing List" and proceeds to compare them with the received items. Subsequently, the purchaser informs the inspector to start the quality inspection process.

(2) In accordance with the contractual conditions, quality inspectors from each department are tasked with conducting product quality inspections. The head of the respective department has the responsibility of checking the inspection results, adhering to the prescribed inspection standards, and then presenting the findings to the warehouse.

(3) The inventory manager conducts a comprehensive examination of several factors like the amount, specifications, models of materials, and manufacturer identity, among others.

(4) The inventory manager verifies the conformity of the invoice with the contractual specifications and ascertains the whereabouts of the shipment.

(5) Engage in the process of warehousing processes, whereby the items are systematically placed on designated shelves, followed by the act of signing to validate and affirm the completion of this task.

3.2.5 Procurement management process of road network companies

Prior to the implementation of Enterprise Resource Planning (ERP), the procurement management process of the Road Network Company involved separate completion of procurement tasks by various departments, namely the administrative department, building engineering department, technical engineering department, and comprehensive maintenance department. This practise can be characterised as departmentalized and independent procurement. The integration of the IFS Procurement Management module yielded a cohesive management procedure. By means of departmental adjustment and integration, many functional departments have established a consolidated procurement department to oversee procurement management throughout the whole organisation.

4. Results

4.1 Guidelines for System Configuration and Instructions

4.1.1 Rules for system configuration

The process of implementing and configuring the IFS system procurement management module involves translating the business plan into a tangible form, guided by the system and project architecture. The primary objective of the system configuration stage is to integrate the fundamental data acquired from road network firms into the system. This stage involves the application process of data and system inside the IFS system implementation framework. The present discourse concerns the operationalization of the transition from an abstract to a tangible ERP deployment approach. One crucial phase in the deployment of an Enterprise Resource Planning (ERP) system. The setup of the system should adhere to the following set of guidelines:

(1) During the setup process, the IFS system ensures that the fields and functions that align with user requirements are preserved.

(2) In instances when the fields and functionalities within the IFS system fail to fulfil user requirements, the implementation consultant undertakes the task of gathering user demands and

preparing customised development papers. These documents are then sent to developers for the purpose of carrying out secondary development.

(3) In order to maintain a clean and streamlined client interface, the IFS system employs user permissions to conceal any fields and functionalities that are not necessary for the customer's specific business requirements.

4.1.2 Rules for Coding Materials

The present coding system has a hierarchical structure, comprising of four distinct levels. The code length is represented by a 9-digit Arabic numeral code, with each digit having equal length. The code is composed of four components: big categories, medium categories, tiny categories, and sequence numbers. The code section representing the material layer is as follows:

(1) The first level pertains to the categorization of material properties, including the inherent features of materials and mirroring their professional qualities. The system uses a two-digit sequential identifier and increments from the value "10".

(2) The subsequent layer pertains to the categorization of materials, which is based on the operational principles of the system and employs a two-digit sequential code, starting with "01" and progressing incrementally.

(3) The third layer is the categorization of material subcategories, whereby materials are classified based on certain properties and assigned a two-digit serial number, starting from "01" and progressing sequentially.

(4) The fourth layer pertains to the material sequence number, which represents the only individual product inside the system. The system employs a sequential three-digit serial code that increments starting from "001". Based on the material management requirements of the road network firm, the categorization of material categories is delineated into 26 distinct groups based on their designated purposes and procurement classifications. The categorization of objects involves the division into big categories, medium categories, and tiny categories. The materials undergo a coding process during classification, ensuring that each A material is assigned a unique code.

4.2 The Configuration of Organisational Structure inside the System

4.2.1 Configuration of basic data in enterprises

(1) Organisation: An organisation denotes an autonomous legal body that maintains distinct accounting records and occupies the topmost tier within the hierarchical framework. The initial configuration of the company's data is a crucial step in implementing any functional module of the IFS system. The primary aspect of data configuration in the procurement management module of the IFS system's corporate setup pertains to the "General" tab. The necessary configurations in the IFS system include the following fields: The firm's identification is denoted by the acronym "BJLW". The default name of the company is "Beijing Rail Transit Network Management Co., Ltd.". The default language used by the company is referred to as the "Default language". The language set as the default is "Chinese".

(2) Domain refers to the fundamental organisational structure inside the IFS system that facilitates the computation of internal costs and profits for a corporation. The domain is considered subordinate to the corporation and has a distinctive identification. It is possible for a corporation to own numerous domains. Domains are situated inside the second tier of the organisational system. The primary aspect of data configuration in the IFS system procurement management module's domain setup pertains to the "General" tab. The essential components that need configuration inside

the IFS system include the domain, domain description, business, and name. The domain under consideration is the road network, specifically focusing on the Beijing Rail Transit Network Management Co., Ltd. (BJLW).

(3) The ISO code definition for a country refers to the identification system used to classify and categorise countries. During the installation phase, it is necessary to designate the nations used by the system as accessible in the "For Application" column. The essential fields to be defined inside the IFS system for the application are the country code, description, and country name. The country code CN corresponds to the nation of China, officially known as the People's Republic of China.

(4) The ISO code definition for language is a standardised system that assigns a unique code to each language, facilitating communication and data exchange across different linguistic contexts. The system's language is predetermined, and the language used for system implementation must be specified in the "Used for Applications" category. The essential language components that need configuration inside the IFS system include the language code, description, and application use. The language code under consideration is "zh" which corresponds to the Chinese language.

(5) The ISO code definition for currency is a standardised three-letter code used to represent a specific currency in international financial transactions. The concept of currency is determined by the system, and the appropriate currency for system implementation must be chosen in the "For Application" column. The essential currency attributes that need configuration inside the IFS system include the currency code, description, and utilisation for applications. The currency code options available are CNY and USD, which correspond to the respective descriptions of RMB and USD.

4.2.2 Configuration of the subsystem's basic data

(1) The coordinator function inside the IFS system is used for the purpose of designating the department or individual accountable for overseeing customer or supplier management. The coordinator may be identified by either a department code or a personnel code. The essential fields that need configuration in the IFS system include the coordinator identification number, coordinator name, phone number, and coordinator group.

(2) The coordinator group is used for the purpose of maintaining the organisation and arrangement of coordinators. The essential fields that need configuration inside the IFS system include the coordinator group identification number, coordinator group description, order number, and quotation number.

(3) Delivery terms should be maintained separately based on the language used. This paper primarily focuses on elucidating the financial implications and associated obligations pertaining to the processes of procurement and delivery. The delivery terms fields that need to be specified in the IFS system are: delivery terms identification number, language, and delivery terms description.

(4)There are several factors that contribute to the decision to discard materials. Reason codes for scrap are used to categorise the various causes for scrap occurrences. The scrap reason fields that need configuration in the IFS system are the scrap reason identification number, scrap reason description, and comments.

(5) Freight Method: It is important to uphold the code value of the freight method in one's everyday job. Various languages may be used for inputting freight procedures, and diverse languages can be chosen for the purpose of outputting papers throughout the printing process. The necessary configurations for the freight mode fields in the IFS system are the freight mode code, language, and freight mode description.

(6) Characteristic code: The database allows for the definition and retrieval of any characteristic that may be attributed to materials via the use of characteristic codes. Examples of characteristics

that may be considered include attributes such as colour, size, temperature, and so on. The necessary configuration fields in the IFS system are feature code, feature description, arrangement (either alphabetical or numeric), and unit.

(7) The feature template is used as a means to systematically gather feature codes in a logical manner. Provide a comprehensive analysis of the characteristics, specifications, and other pertinent details pertaining to the materials in question. The necessary configuration parameters in the IFS system include the feature code, feature code description, and unit.

4.3 Overview of the Test

The material module procurement management system project initiated by the road network corporation has through many stages, including fundamental data collecting, business blueprint design, demand analysis, and system design. To enhance the comprehensibility of the business scope pertaining to system operation, as well as the procedural guidelines and specifications governing trial operation, and the execution of such trial operation. To enhance the efficacy of overseeing the trial operation of the system, it is imperative for every department within the road network company to conduct tests on the functionalities of the IFS system. These tests should be conducted in accordance with the actual business operations of the company, with the aim of assessing the feasibility and functionality of the IFS system in successfully executing the road network company's real-world business operations. The objective of this study is to critically evaluate the nature of the system and provide constructive comments and modification plans in order to effectively prepare for its official launch. This will facilitate the completion of the system's configuration and implementation process. During the testing phase, users are required to autonomously carry out authentic business operations within the system, while receiving technical assistance from the implementation consultant. Users must continuously acquaint themselves with the system's functionalities, enhance their operational abilities, and thoroughly assess the system's efficacy in supporting their business activities. System management criteria during testing:

(1) The adherence of road network firm end users to correct maintenance of their personal user identities and passwords inside the material management system. Additionally, it is expected that these users use their individual system accounts to access the system.

(2) All purchase and inventory-related activities must be conducted inside the material management system on the same day. Simultaneously, the operations in the UFIDA system must also be completed.

(3) In the event of emergency circumstances, it is necessary to ensure that the additional entry of business papers in the system and the supplemental entry of operations in the UFIDA system are promptly completed within a maximum of two working days after the occurrence of the real business.

(4) The assignment of a dedicated individual within the Asset Management Department is necessary in order to assume responsibility for the upkeep of fundamental codes, such as those pertaining to suppliers, materials, and measurement units, inside the material management system. Furthermore, adherence to the process parameters for the creation of new material codes in the blueprint design must be rigorously followed.

(5) It is necessary to document the different issues that occur throughout the examination and maintain a problem list. The management of the problem list should be reviewed at the weekly project meeting. The primary objective of system testing is to provide users with an authentic operational environment in order to execute the necessary activities as per their requirements. The anticipated outcomes of the testing are attained within the designated testing timeframe. All

business procedures pertaining to material management are executed accurately inside the system. Any issues that develop during the testing phase are addressed and resolved via weekly meetings. An evaluation was conducted to analyse all potential issues that may be examined throughout the trial period.

4.4 Purpose and Methodology of Testing

The objective of the test is to assess the application of the IFS system procurement management in meeting the specific operational requirements of the road network company. Additionally, it aims to evaluate the user's proficiency in utilising the system for business processes and identify potential enhancements for the system, including proposed functionalities and improvements in user-friendliness. The completion of the IFS system design enables the road network firm to meet its business needs via the integration and transfer of online and offline business operations. During the testing phase, a comparison is made between the specified criteria and the actual business operations. The specific questions and requirements pertaining to the test are documented in the form of a questionnaire.

The primary approach used in system testing is scenario-based process testing. During the scenario test, real business operators from the user side collaborate with implementation personnel to generate simulation data within the ERP software. This data is then utilised to simulate various business scenarios, incorporating the business processes outlined in the blueprint design. The objective of this process is to accurately replicate the identified business scenarios through functional testing.

The testing of the IFS procurement management system developed by the Road Network Company may be categorised into two primary stages: system individual testing and end-user testing.

The term "system single test" pertains to the evaluation of individual functionalities inside the IFS procurement management module. Functional testing is conducted to assess the reasonableness of the functions specified in the business requirements of the road network corporation, as well as to evaluate the extent to which the customised development aligns with the demands of the users.

End-user testing, also known as user acceptance testing, involves the end-user of the system doing system function testing as outlined in the system operating manual. At this juncture, the user presents novel needs derived from current business operations and system operations in order to accomplish the objective of system up and functioning.

4.5 Test Content

The primary objective of testing the IFS procurement management system is to evaluate the functionality and effectiveness of the procurement management business processes. This involves creating test scenarios that accurately reflect real-world procurement operations and conducting comprehensive testing of the whole procurement process inside these scenarios. The primary operational procedures included under procurement management encompass the generation of buy requisitions, the evaluation and issuance of purchase orders, the coordination of material arrival and inspection, and the finalisation of acquired material storage.

The procedure of material acquisition and arrival acceptance in the given situation is as follows:

The primary method for testing the material purchase and arrival acceptance procedure of the road network firm is conducted inside the IFS system. The purchase application is filed by the department responsible for material utilisation. The department head has the task of reviewing and approving the purchase application, then transforming it into a purchase order. During the period prior to the

arrival and subsequent acceptance of the acquired items. The evaluation of the complete system's operational performance includes the development and examination of the comprehensive procurement scenario. The method entails the strategic coordination of many departments engaged in material management to execute real-world business scenario testing. The resulting documentation created during the testing phase is duly included into the test. Within the given context,

The purpose of testing the material procurement and arrival acceptance process is to establish a comprehensive understanding of the process flow between online and offline operations inside the system.

4.7 Analysis of Test Results

Following three rounds of testing conducted by the user, an analysis and discussion were undertaken to address the system's inability to fulfil certain functions and requirements. This analysis was prompted by the issues encountered throughout the testing process. Through the process of typing and categorising the questions within the given list, it becomes evident that the sorts of questions that often emerge throughout the examination mostly include the following four categories:

(1) Obstructive issues: In the event that the problem remains unaddressed, the proper execution of system operations and the successful completion of business processes may be impeded, necessitating timely correction.

(2) Issues impacting usability: This particular challenge necessitates the user's ability to prevent errors in operation, hence influencing their overall experience. However, it is not a significantly inhibiting issue.

(3) Usability concerns include several aspects, including the aesthetic appeal of the system interface, the adequacy of field translations, the arrangement of function buttons, the consistency of initialization data, and user operating habits. These problems pertain to enhancing user efficiency by appropriate modifications.

The IFS procurement management system underwent three rounds of testing done by Road Network Company. The first testing phase yielded three instances of obstructive difficulties, six instances of usability issues, five additional instances of usability issues, and three newly identified needs. The subsequent round of testing yielded two instances of impact use concerns, twenty-one instances of usability issues, and two newly identified needs. The results of the third round of testing revealed the presence of 4 obstructive problems and a total of 13 usability difficulties, consisting of 2 obstructive issues and 11 usability issues.

Following three rounds of testing of the procurement management system, the implementation consultant and development consultant engaged in a comprehensive discussion pertaining to the concerns made by customers and the difficulties that surfaced during the testing phase. Subsequently, they successfully resolved the aforementioned problems prior to the system's deployment. Prior to the official introduction of the system, all tests have undergone thorough examination and have successfully met the required criteria. From a customer experience standpoint, it can be seen that clients typically express satisfaction with the system's performance, as it effectively fulfils their demands.

Conclusion

This article provides a comprehensive overview of the deployment and implementation process of the material module within the IFS system of the Road Network Company ERP project. It covers various stages, including training sessions for the material module, financial module, equipment module, and system development prior to project initiation. Additionally, it discusses the activities involved in business research, data collection, and post-project business operations. The process involves the formulation of a blueprint plan, the execution of system testing and development, and the completion of all necessary project tasks leading up to the launch of the system. Throughout the project's execution, we acquired knowledge pertaining to the inherent challenges associated with deploying Enterprise Resource Planning (ERP) systems inside major state-owned firms. Additionally, we recognised the significance of making organisational reforms in order to address these challenges effectively. Additionally, this study provides a concise overview of the primary drivers and risk factors that influence the successful installation of Enterprise Resource Planning (ERP) systems, drawing upon empirical evidence obtained via project practise. These principles may be effectively used in forthcoming project endeavours, offering a valuable synthesis and training opportunity for engaging in analogous initiatives in subsequent instances. The individual demonstrates a high level of proficiency in operating the ERP software IFS system, exhibiting a deep understanding of its operational processes and performance. Furthermore, they possess the ability to adeptly navigate and manage the whole of the business process. In addition to acquiring knowledge in project management, we also gained insights into the essential work ethics, life ideals, and collaborative spirit that are integral to the role of a business consultant. Simultaneously, within the context of my professional endeavours, we have cultivated a profound disposition characterised by earnestness and conscientiousness. Additionally, I have nurtured a disposition for acquiring knowledge by self-directed study and seeking guidance with humility.

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Conflicts of Interest
The authors declare no conflicts of interest.

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