

Design and Implementation of the Built Sokol Building Materials Procurement System

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Abstract: The current building materials purchase process is too cumbersome and the manual purchase process is difficult to communicate. This paper adopts object-oriented analysis method to analyze, design and implement a construction material purchasing system, which simplifies the time and expense of the construction unit purchasing personnel to select goods in the building material purchasing process, saves the building material company's storefront cost and most of the expense of hiring employees. It makes the communication between the two sides more direct, the construction unit has a wider choice and more convenient comparison, and the building material company has a broader user group, realizing a win-win situation for both sides. For building materials procurement and other construction industry work are of reference significance.

1. Introduction

Today's society, along with the rapid development of science and technology, the construction industry work is also increasingly digital. With the rise of BIM technology, from drawing to actual construction work is becoming more and more convenient, the thinking of construction practitioners is gradually changing, and digital construction is already a general trend. However, at the stage of purchasing construction materials, there are still difficulties that need to be solved, such as cumbersome purchasing process and communication difficulties leading to errors.

Most scholars use object-oriented in the current mainstream research methods for conducting system analysis and design. Such as Zheng Lili's engineering cost collaborative platform design and implementation ^[1], these articles are important references for the design process of this system, which uses object-oriented analysis and design methods and UML for system description, visualization and preparation of documents for system construction to do system requirements analysis, functional module design and database design. ^[2] The Web-based building materials procurement system is not only theoretical and practical, but also feasible in terms of technical route.

Through visits and surveys, a direct communication, display and purchasing platform is provided for buyers and sellers. Provide a more rapid sales channel for building materials companies and a more intuitive platform for construction units to buy and sell. Both sides can complete the communication, purchase and payment process on the system. Compared with the traditional purchasing process, construction units can simplify information collection, product comparison and

other work. For the building materials company, it can reduce the time spent on describing products and the cost of hiring related personnel. Most of the work can be done independently using the system. Great savings in time and overhead of errors due to multiple layers of information communication. Convenience for both buyers and sellers. A reference for building materials procurement and other construction work.

2. System Analysis

2.1 Demand Analysis

Before the construction, the construction unit first needs to confirm the construction materials needed for the construction process and make the purchase of construction materials. After visiting and investigating, it is found that there are many problems in the procurement process. For example, the purchaser will not be able to clarify the needs after layers of communication, and make mistakes such as buying the wrong building materials, choosing the wrong building materials company, and making mistakes in order settlement. And because the building materials market is too large, the quality of building materials provided by building materials companies varies, so it is often necessary to compare the purchase cost and quality of building materials, and it is also a heavy work to record the price of building materials and compare them.^[3] If the management system is too strict, it is easy to cause complaints and conflicts, and if the management system is too loose, it will produce quality problems, spending problems and even procurement staff "kickbacks" and other problems.^[4] And building materials companies are often faced with various mistakes due to procurement staff and the return of orders and store rental costs higher cost problems.^[5]

The system is designed for both construction companies and building material companies. Under the premise of ensuring the core purchasing issues, the intention is to analyze and design more convenient purchasing functions. For example, management of building materials, communication between the two parties, and a complete purchase process and return process, etc., as shown in Figure 1.

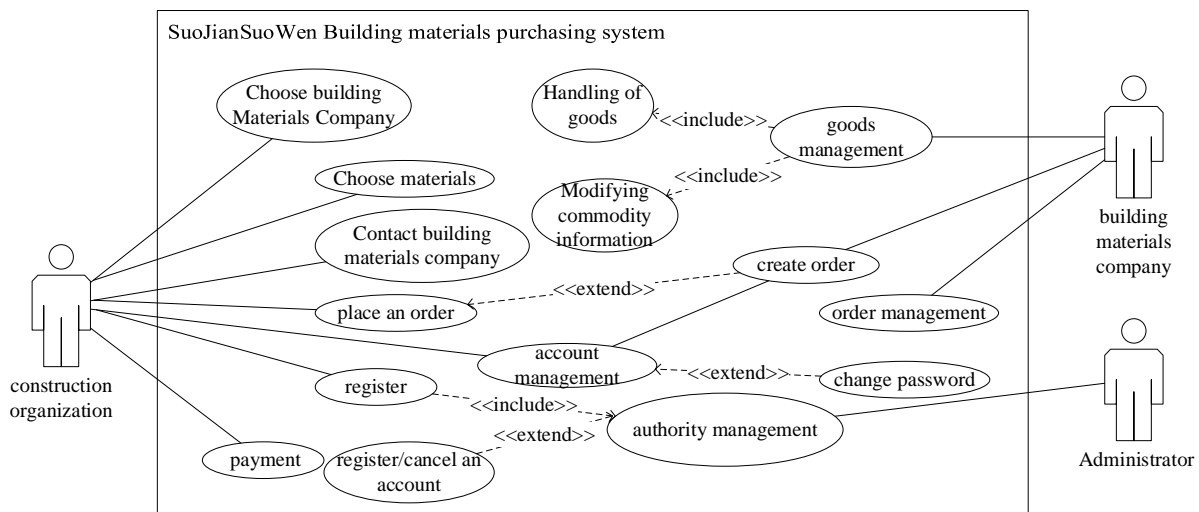


Figure 1: Use Case Diagram

2.2 Activity diagram analysis

According to the use case diagram, the construction unit enters the built SoC system and enters the name of the required construction material in the search box, then selects the building material

company and can directly purchase the building material or contact the building material company for related information. The system displays building materials categories and detailed building materials information prices according to the building materials company settings, the user confirms the information and selects building materials to add to the shopping cart, and finally clicks on the payment option, the system generates an order as shown in Figure 2.

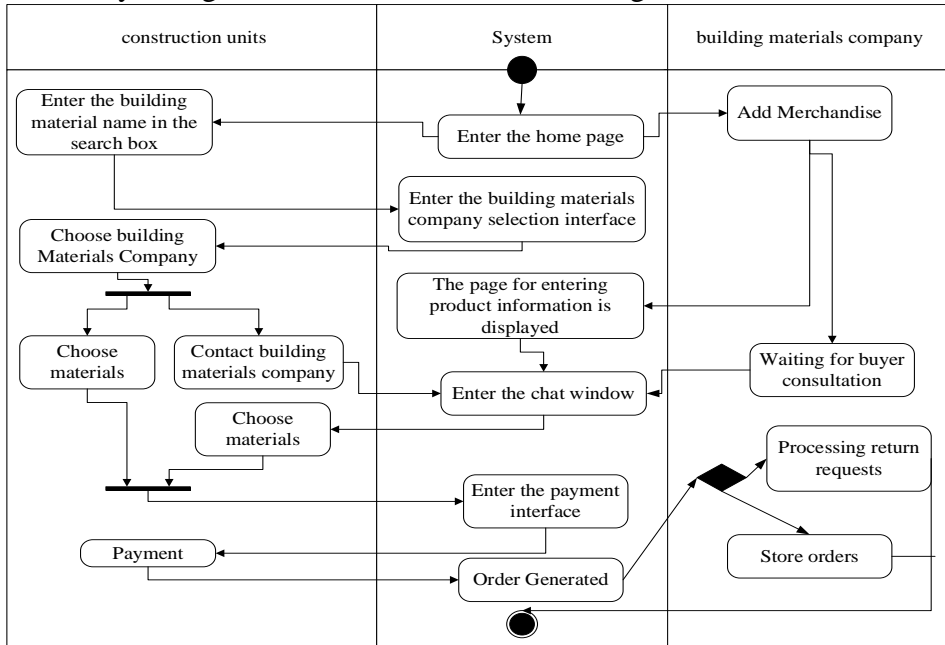


Figure 2: Purchase process activity chart

3. System design

The entities designed for this system are user, building material company, building material, building material order, and return. The E-R diagram of the system is shown in Figure 3.

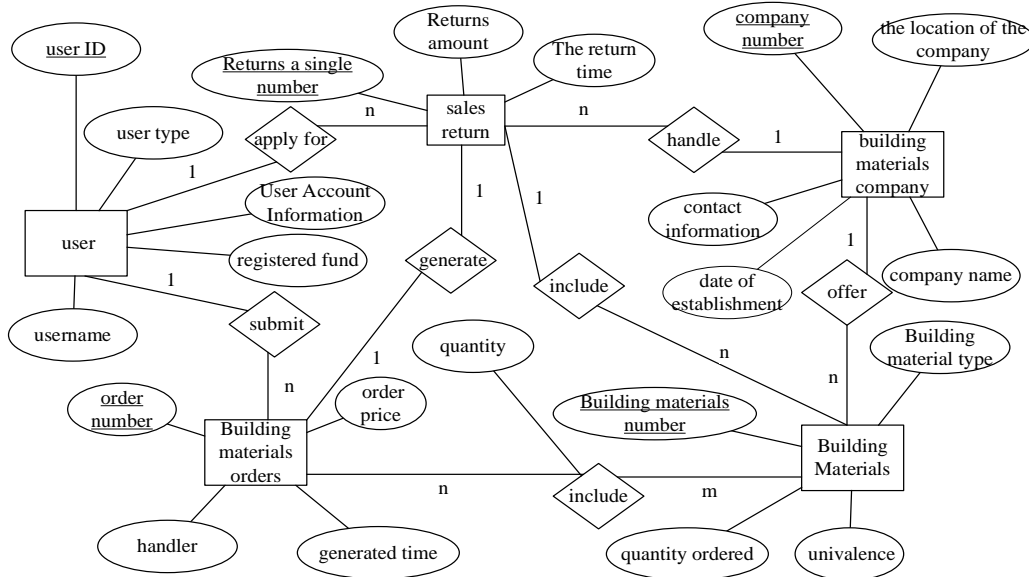


Figure 3: E-R diagram

4. System Implementation

The system can greatly shorten the time spent by buyers in the purchase process to compare the quality of building materials, prices and other factors, and the buying process is also more transparent, as both buyers and sellers in the system can view the order details and the actual price of the order, which is symmetrical and timely, effectively avoiding the problem of "kickbacks" by buyers. Building material companies can also reduce the cost of store leasing and staff hiring. Take the order management interface of the building material company as an example, the building material company can view customer messages, change product information, modify store information, etc. as shown in Figure 4.

Name of building materials	specification	count	unit	price	total price	Remarks
Screw-Thread Steel	#14	2	T	800	1600	xxfirm order
Screw-Thread Steel	#16	2	T	1200	2400	
PVC	122*50	20	peice	30	600	
amount in total: 3600.00					total:	3600
review:		distribution :		touching:	sign-off:	

Figure 4: *SuoJianSuoWenOrder Management Interface*

5. Conclusion

This paper analyzes the problems in the process of purchasing construction materials in the current environment in the practice of developing this system. The object-oriented analysis method is used to analyze, design and implement the system. The user requirements and system characteristics are discussed, and the process of database design and application is highlighted. The traditional building materials procurement process is combined with the information system, and the system is used as a platform for communication between buyers and sellers, saving time and costs for both parties to the greatest extent. The system needs to be improved continuously in the subsequent operation and maintenance process with the progress of technology, so that the building materials procurement process is more direct and convenient.

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