

## INNOVATIVE IMPROVEMENT OF SAMPLE ORDER TOOL FOR INTERNAL SYSTEM - CASE OF SCANCOM COMPANY

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**Abstract.** The account executive have spent too much time to transfer orders to Planning Department casing other parts in their work almost were not finished on time. The study presented solution of innovative Improvement of Sample Order Tool for Scancom's Internal system. In order to improve the process and saving of time working on internal sample system. Study has been performed to analyze and also calculate the average length of time for staffs when transferring orders on the internal sample system to Planning Department. The innovative process optimized steps and work time on internal sample system. In particular, was cut down redundant steps and was saved time up to 44% the working time on internal sample system for account executive. At the same time solving the delay in other parts of their routines of work. The optimization of time and work processes on internal sample system is premise in order to improve work processes in many departments such as: BOM, Warehouse, Photo, Test Center, Packing.

**Keywords:** Innovative Improvement; Sample Order Tool; Internal sample system; The optimization; Scancom

### 1. Introduction

Enterprise resource planning (ERP) is a process used by companies to manage and integrate the important parts of their businesses. Many ERP software applications are important to companies because they help them implement resource planning by integrating all of the processes needed to run their companies with a single system. An ERP software system can also integrate planning, purchasing inventory, sales, marketing, finance, human resources, and more [1]. Lean manufacturing is a system that includes tools and methods to eliminate wastes and irrationalities in the production process in order to reduce production costs, thereby improving the competitiveness of products in the market [2]. The application of Lean techniques to the ERP system has created close connections and improved the old ordering system to spur the system's productivity to a higher level - case of Scancom company.

In the current period, facing the great global challenge is the Covid pandemic, Scancom company kind of have to cut staff but at the same time ensuring the same work performance; therefore, a matter of fact has been created a lot of challenge for every employee especially Scancom's top managers and managers in department. A challenge of sale department is the remaining employees didn't have enough time to meet the current job, causing delay order. The consequences is affected the work

performance of sale department, the order has been canceled as the time for completing order can not meet the customer's demand. Scancom is a B2B manufacture so just only one sample orders that can not deliver on time for the customer meeting so that means that order with ten of thousands even hundreds of thousands of pieces have been canceled causing heavy losses for company. Therefore, deal with pressing matters, Author et al. has developed sample order system at Scancom company. Facing the challenge is the number of employees that have been cut cannot be added - limited human resources, the author et al. have focused on work process include related work to order task and sample order system. After analyzing, author found that there are some major issues in the way employees work and the incompleteness of sample order system. In there, employees spent too much time doing things that didn't go through the system such as sending emails between departments to notify about order information they had requested, go through an old system for ordering.

Some research has been published is Enterprise resource planning (Dương Quang Thiện, 2003). Concepts in Enterprise Resource Planning (Joseph A.Brady, Thomson Learning, 2001). Enterprise Resource Planning (Mary Sumner, Prentice Hall, 2005) Lean is a dynamic process of change driven by a systematic set of principles and best practices aimed at continuous improvement. Lean

manufacturing combines the best features of both mass and craft production (Womack et al, 1990).

The research aims to optimize the working steps and working time on the sample order system and dealing with delays in the rest of the employee's day-to-day work. This research is of key importance to sale department and company generally, in providing a more complete working system and solving the company's current pressing problem.

## 2. Literature Review

### 2.1. Enterprise resource planning systems (ERP)

An enterprise resource planning system is designed as a defined data structure (schema) that has a common database. This helps ensure that the information used in the enterprise is standardized and based on common definitions and user experiences. The core structures are interconnected with business processes driven by workflow among business departments (e.g. finance, human resources, engineering, marketing, operations), connecting systems and the people who use them. Basically, enterprise resource planning (ERP) is a means to integrate people, processes, and technology in a modern industrial organization [1].

### 2.2. Basic model of ERP system

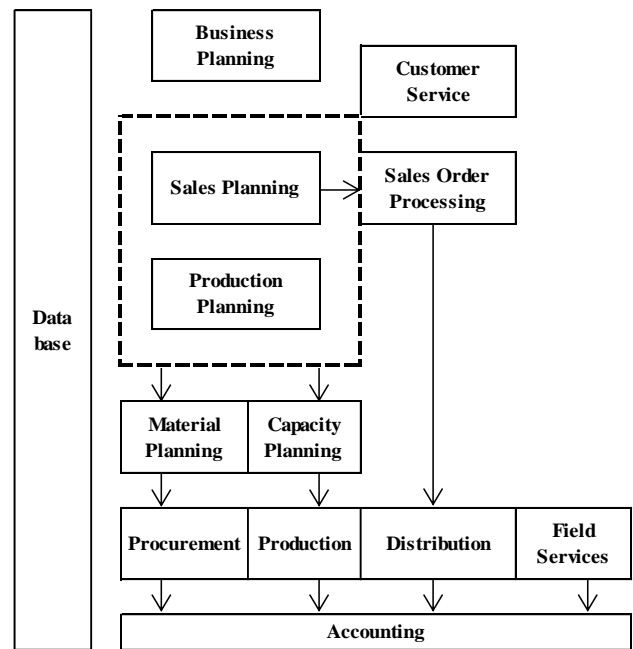
The data model shows how business planning (Sales planning, and Production planning) leads detailed plans to coordinate supply chain activities. The main feature base on the common data base and their function in the system [1]. Figure 1 shows the Basic model of ERP. **Sales Order Processing**

A key part of sales order processing – accepting customer orders – is to collect current demand in kind of order forms to enter the electronic system. There are too many steps include configuring a product according to the customer's ideas, promising delivery and monitoring the status of the order. It may also include quotations - especially for custom products and outsourced through multiple factories. Designation of an order can affect demand for an item and supply chain operations. For instance, an order can be assigned to cancel or hold or to be added to the forecast, it includes an allocation, shipment authorization or an order directly linked to a resupply order. An entered purchase order can trigger communication with the actions required for other functional areas, including distribution (for dispatching), manufacturing (to assemble finished products), stocking), purchasing (ordering supplies), on-site service (to perform after-sales service tasks) and customer service (reviewing order retention) [1]. Other functions of the

basic model are presented in the reference [1], Author et al. only mentions the necessary functions for the work.

### 2.3. Theoretical foundations of process analysis in Lean Manufacturing

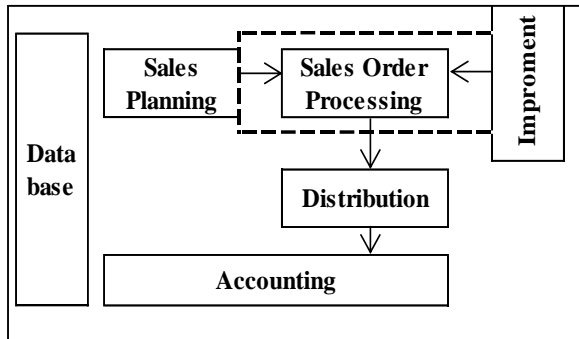
This is one of the basic analysis methods that allows to grasp the actual situation of division of production work activities. Process analysis is one of the effective methods to detect waste and help realize improvement of each process. The purpose of this process is to clearly define the sequence of implementation stages, continue to improve in each stage, clearly define the production method, ensure the basic information for production design, basic information basis for implementing improvements, ensuring information is available for controlling production schedule [2]. In this study, authors combine Lean process analysis theory into the Sales order processing system of enterprise management software (ERP) to create a new integrated and complete system.



**Figure 1.** Basic model of enterprise resource planning system

(Source: Duong Quang Thien, 2003.)

**Research model:**



**Figure 2.** Improvement of model of Sample order system (Source: Duong Quang Thien, 2003)

**Improvement:**

Improvement: The process is implemented in the code form on the software system to improve and perfect the sample order system.

**3. Methods section**

The authors measured the working time on the order sample processing system of the sales department staff and the working time related to the processing of order input. Time measurement was performed on thirty employees of the sales department. These thirty staffs are the number of retained staffs after the company's reduction due to the epidemic, most of these staffs have a relatively long working time of 3 years and above, the highest seniority is 10 year. Therefore, they are very proficient in operations on the sample order processing system, thereby minimizing the excess time caused by the incomplete operation, eliminating factors affecting the consistency of the measurement process and analysis of the study. The number of orders each employee needs to process in a day from 10 to 15 orders. The research method used in this case is empirical method, sampling time directly from employees for a working day. Sampling is carried out continuously within 30 working days of the company. The results have shown the average working time on the system and related order input has presented Table 1 below. Based on the statistics of the average working time of a staff in thirty working days, author et al. collected that an employee takes an average of nearly 4 hours to complete the input data and process information. The remaining working time of each day of each staff was spent on tasks such as meeting with customers, handling issues related to the progress with production, working by mail with customers and other tasks assigned by managers such as database statistics, reports ... were not enough to meet the worked demand in routine day, leading to late orders, some changes of customers were not updated to the production... After

measuring the spending time in the input data and process information, it account for almost half of the work time for whole day.

**Table 1.** The average working time of an employee within 30 working days

No. Date	Average Time of entering data (hours)	Average Time of related order (hours)	Total average time (hours)
1	1.64	1.47	3.11
2	1.63	1.51	3.14
3	1.45	1.68	3.13
4	1.43	1.69	3.12
5	1.36	1.77	3.13
6	1.74	1.41	3.15
7	1.42	1.71	3.13
8	1.39	1.73	3.12
9	1.86	1.23	3.09
10	1.19	1.9	3.09
11	1.51	1.66	3.17
12	1.4	1.75	3.15
13	1.72	1.39	3.11
14	1.56	1.52	3.08
15	1.51	1.64	3.15
16	1.41	1.72	3.13
17	1.13	1.93	3.06
18	1.79	1.31	3.1
19	1.37	1.74	3.11
20	1.26	1.83	3.09
21	1.68	1.46	3.14
22	1.73	1.29	3.02
23	1.46	1.76	3.22
24	1.49	1.63	3.12
25	1.55	1.56	3.11
26	1.24	1.92	3.16
27	1.53	1.65	3.18
28	1.49	1.62	3.11
29	1.58	1.57	3.15
30	1.59	1.59	3.18

**3.1. Issues**

The author analyzed the process of handling all employee input data, the author found that employees spend too much time on the following issues:

**Issue 1:**

Sales staff sent an email to the warehouse department asking to check the inventory status of the products needed for the order as well as the quality of products in stock, the feedback time for a email was not clearly

specified leading the postponement in this steps and sale staff have to push email frequently.

**Issue 2:**

Sale staff checked the available quantity and product quality reported from the warehouse's mail and adjusted the quantity for ordering accordingly.

**Issue 3:**

Sale staff did repetitive operation of entering data into the system for the same products of each order.

**Issue 4:**

Sale staff worked outside the system by emailing Planning about additional requests in special situations of the order.

**Issue 5:**

Sale staff entered order data into another system because the main system hadn't have this function, Planning department must put together information and respond via email then sale staff input the status of the order into the main system.

**Issue 6:**

Sales staff send order emails to the outsourcing department, the feedback time for a email was not clearly specified leading the postponement in this steps and sale staff have to push email frequently.

**Issue 7:**

Sale staff sent email asking for price for each product in each order, in many cases there are special requirements for each product price, the feedback time for a email was not clearly specified leading the postponement in this steps and sale staff have to push email frequently.

**Issue 8:**

Order reports and many reports is relative order information have to collect from many different sources and not fully updated from other individuals, making it difficult and time consuming to report the work.

**3.2. Solutions**

Authors propose the following solutions to solve the current issue has been shown as below:

**Solution 1:**

Author et al. proposes to set up an additional checking section in the order window on the sample order system,

set up a new window for the warehouse department to operate on the sample order system, when the sale staff enters order into the sample order system and clicks on the item to check inventory of products, the warehouse department immediately receives information of orders from the system then they check and update the status of products on the system within 30 minutes after receiving the required information from the order system.

**Solution 2:**

Author et al. proposes to create a formula under code form on sample order system, after receiving the updated product quantity information from the warehouse department, the system automatically calculate the remaining quantity in stock and automatically announce the quantity need to order to the planning department.

**Solution 3:**

Author et al. proposes to set up a new window in the system to integrate the excel standard format to import the excel file into the system without entering each item into the system.

**Solution 4:**

Author et al. proposes to create note on the system in the order interface to note special requirements and add more informations about orders, so that employees work on a same window on the system avoid sending email back and forth among many parts.

**Solution 5:**

Author et al. proposes to move the sample order program on the old system to the main system so sales department and planning department can work together on one system - main system.

**Solution 6:**

Author et al. proposes to set up an additional order section in the order window on the sample order system, set up a new window for the outsourcing department to operate on the sample order system, when the sale staff enters order into the sample order system and clicks on the item to purchases, the outsourcing department immediately receives information of orders from the system then they feedback on the system within 30 minutes after receiving the required information from the order system.

**Solution 7:**

Author et al. proposes to add a price request click and a note of special price requirements on the same window for sales staff operate order, set up a new window for the

pricing department to operate on the sample order system, then they feedback on the system within 30 minutes after receiving the required information from the order system.

**Solution 8:**

The author proposes that after all operations are performed on the same system, the collection of information to report and check the status of the order is complete and highly accurate because all departments are responsible for the work they are in charge of on the system.

**4. Results**

Author et al. collected information then proposing solutions based on the outstanding problems for a period of seven working days. The process of implementing solutions from natural language to programming language with programmers was implemented for a period of one month before launching the test program for sales staff to experience. The completed program is run on the test platform to observe and test the effectiveness of the system after being improved. Testing on the new platform was carried out within 7 days to check the convenience and working time on the improved system. The convenient test results are presented in Table 2 below:

**Table 2.** Statistics the convenience of the test system within 7 days.

Convenience	Percent
A: Absolutely no problem using it	33%
B: No problem using it	25%
C: Normal use	20%
D: Having some problems when using	18%
E: Difficult to use	4%

Statistics show that the factor "Absolutely no problems when using" accounted for 33%, the factor "No problems when using" accounted for 25%, and the factor "Normal use" accounted for 20%. These three factors account for a total of 78%, showing that the comfort of the improved system is highly appreciated. Yếu tố "Gặp một số vấn đề khi sử dụng" chiếm 18%, và yếu tố "Khó sử dụng" chiếm 4%. The factor "Having some problems when using" accounted for 18%, and the factor "Difficult to use" accounted for 4%. This total percentage is 22%, the author and manager have recorded it and taken appropriate adjustment measures after consulting the sales staff - the main operator on the system. The measuring result of the working time on the improved system is presented in Table 3 below:

**Table 3.** Statistics of working time on the test system within 7 days

Date	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
Average time of an employee (hours)	2.15	2.05	2.03				
				2.09	2.07	2.17	2.07

The statistics show that the order processing time on the sample order system of an employee was from 2.03h to 2.17h within 7 days. Compared to the average order processing time on the system for an employee before improving system had from 3.01h to 3.19h. Therefore, the time difference between two parts was from 0.98h and 1.02h. It was equivalent to a 32 % reduction in the total average working time on the system of sale staff.

After making statistics within 7 days, Author et al. proceed to change the outstanding issues in construction of the ordering system (these issues have been presented in the discussion and recommendation of the paper) in order to implement the improved sample order system in real work. After editing and calibration within one week, the new system came into official use. Statistics on convenience and usage time on the new sample order system were made regularly every 7 working days until the end of 2 months after using the new system to ensure updating and efficiency can be adjusted promptly and quickly. Statistics of working time on the sample order system within 8 weeks as below:

**Table 4.** Statistics of working time on the sample order system within 8 weeks

Week	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8
Average time of an employee (hours)	1.76	1.65	1.68	1.69				
					1.6	1.64	1.72	1.71

**Table 5.** Statistics the convenience of the test system within 8 weeks

Convenience	Percent
A: Absolutely no problem using it	67%
B: No problem using it	25%
C: Normal use	8%

Statistical results after 2 months of using the improved sample order system show that it is very feasible, specifically, the working time related to orders in terms of data entry and handling order issues has been reduced by

44%. The convenience of the improved sample order system completely meets the needs of the employees. And some reference images of the improved sample order system are presented in figure 3 below:

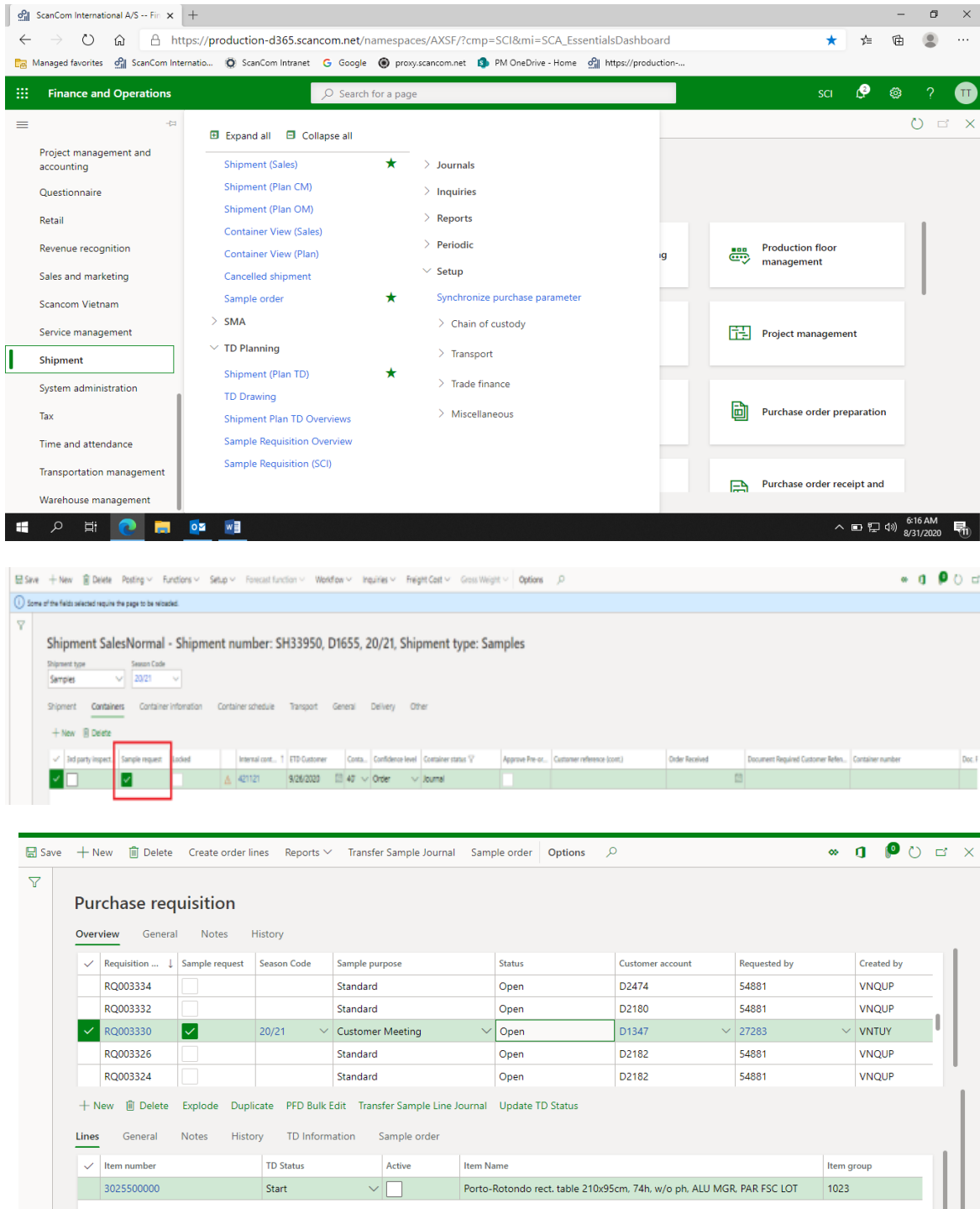


Figure 3. Some Interfaces screen-shot from the software

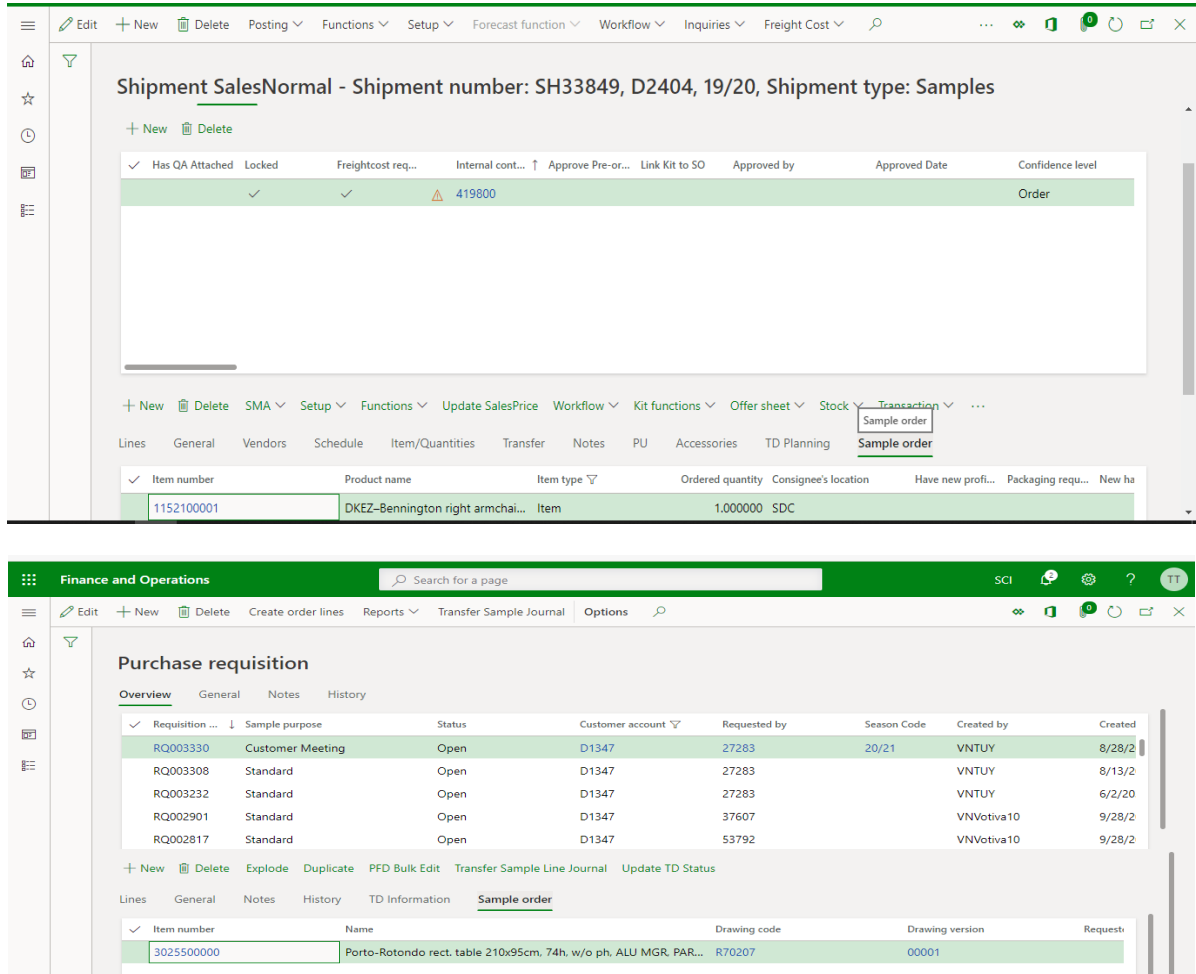


Figure 3 (cont.). Some Interfaces screen-shoted from the software

### 5. Discussion and Recommendation

System improvement based on the theory of enterprise resource planning (ERP) system and lean process analysis (LEAN) has given an integrated and complete ordering system beyond expectations. The study solved the company's pressing problem:

- Using the company's current limited resources effectively, improving human performance.
- Reduce working time on the system up to 44% and cut off redundant stage of the working day.
- Collecting information to report weekly, monthly and quarterly for reporting becomes extremely easy and intuitive for collectors and managers.
- Solving the company's urgent problem is to prevent the consequences of losing orders from customers.

- Complete and integrate the new system effectively to help users achieve good performance.

Using limited resources creates a great challenge for the research process and also creates a root case for research. Through the research results, Author et al realize that the waste of using human resources has existed for a long time and learn management experience in the future. The reduction in working time has been proven by research to help employees in the sales department be more smooth and fluent in the working process, helping these employees to complete their work more efficiently and scientific. The problem of collecting information to report to managers is no longer a dilemma each week, especially at the end of month. The reason that reports put a lot of pressure on employees is top managers and managers based on the information of each report to know revenue, predict output, demand for purchasing raw materials for production, etc. Due to the interconnectedness of the report, it is necessary and time consuming to provide

information that needs to be accurate. Through system improvement, the system is completely improved, all users need to do is to export the excel file according to the pre-programmed report template needed for the purpose of each report for different departments. Solving the problem of losing orders for the company has brought meaning not only to overcome the loss of orders but more importantly, to help the company overcome this pandemic, to help the company in the future. be able to once again re-hire the workers they had to lay off, as well as expand the business in the near future for making a good impression on old and new clients by meeting deadlines well for orders during this pandemic. Solving the problem of losing orders for the company has brought meaning not only to overcome the loss of orders but more importantly, to help the company overcome this pandemic. It helps company be able to once again re-hire the workers they had to lay off in the future. As well as expand the business in the near future for making a good impression on old and new clients by meeting deadlines well for orders during pandemic. Limitations of the study, as well as other studies, except for its application on limited human resources, are the problems of accuracy and comprehensiveness and the implementation time of the new system after being improved and they need to be corrected. The information entered into the system not only needs to be accurate for the employees of the sales department, but also the feedback information on the system of other departmental employees must also be accurate. Therefore, there were meetings to determine the rights and responsibilities of the parties involved when operating on the main system. The author has received feedback from the warehouse department for products that are not good enough to ship but still have components that can be reused because they are still guaranteed in quality. Author et al. recorded the information and proceeded to add a note window on the system so that the planning department can refer the information to adjust the materials accordingly. The response time from the departments according to the system regulation is 30p for the warehouse department and 24h for cost department, which caused controversy when different departments responded that there was still a lot of work to be done and it would be difficult to meet the scheduled time, not to mention the cut off staff has also happened in their departments. Facing this difficulty, Author et al. proposed meetings to find a common solution and reached an agreement for responding on system are 45 minutes for the warehouse department and 36 hours for new price, 15 minute for existing price for the cost department. As well as recommending system improvements for the warehouse department and the cost department in the near future. Producing system improvements for the warehouse department and the Cost department in the near future. In the near future, the author and manager will

continue to research and improve the new system for the warehouse department and the cost department. Besides, they will learn and ask experts who have experience in system improvement and management.

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**PHÁT TRIỂN ĐỔI MỚI HỆ THỐNG ĐẶT HÀNG NỘI BỘ  
NGHIÊN CỨU TẠI CÔNG TY SCANCOM**

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**Tóm tắt:** Nhân viên bộ phận kinh doanh đã dành quá nhiều thời gian trong việc triển khai đơn hàng cho Phòng Kế hoạch làm cho các phần khác của công việc thường xuyên không được hoàn thành đúng thời hạn. Nghiên cứu đã trình bày giải pháp cải tiến sáng tạo hệ thống đặt hàng mẫu nội bộ của công ty Scancom. Nhằm cải tiến quy trình và tiết kiệm thời gian làm việc trên hệ thống mẫu nội bộ. Nghiên cứu đã được thực hiện để phân tích và tính toán khoảng thời gian trung bình của nhân viên khi chuyển đơn hàng trên hệ thống mẫu nội bộ cho Phòng Kế hoạch. Quy trình cải tiến đã tối ưu hóa các bước và thời gian làm việc trên hệ thống mẫu nội bộ. Cụ thể là, đã cắt giảm các bước thừa và tiết kiệm đến 44% thời gian làm việc trên hệ thống mẫu nội bộ cho nhân viên phòng kinh doanh. Đồng thời giải quyết sự chậm trễ trong các phần còn lại của công việc hàng ngày của nhân viên. Việc tối ưu hóa thời gian và quy trình làm việc trên hệ thống mẫu nội bộ là tiền đề để cải tiến quy trình làm việc tại nhiều bộ phận như: BOM, Kho, Photo, Trung tâm Kiểm nghiệm, Đóng gói.

**Từ khóa:** Cải tiến đổi mới; Công cụ đặt hàng; hệ thống đặt hàng nội bộ; Tối ưu hóa; Scancom