DX Promotion: Digitization of purchasing quotation process

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Summary

The Services & Support Purchasing Department inherited previous work procedures involving manual tasks and paper output for carrying out purchasing operations from the issuing of quotation requests to the selection of suppliers. In recent years, JATCO has been proceeding with company-wide efforts to promote digital transformation (DX). This article describes activities for digitizing the purchasing quotation process using cloud computing and apps, which have produced substantial results.

1. Introduction

JATCO has been pushing ahead with efforts to reduce manhours and go paperless by promoting digital transformation (DX) against a backdrop of encouraging working from home under the impact of the Covid-19 pandemic and undertaking activities toward sustainable development goals (SDGs).

The Services & Support Purchasing Department, which arranges for materials, construction and other necessities, has also been moving ahead with various DX promotion activities. Improvement of a dedicated purchasing system and utilization of general-purpose software and applications, among other efforts, have produced various results in this regard.

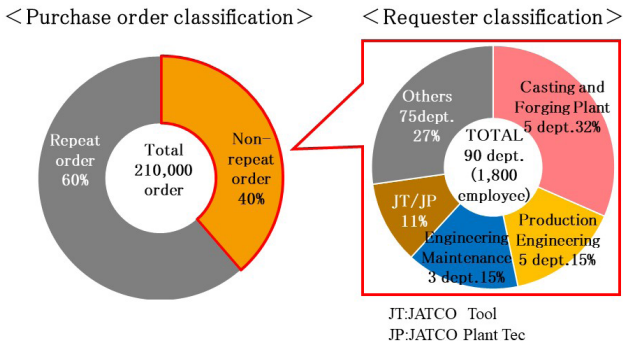

Fig. 1 Purchase order classification

Among these activities, this article focuses in particular on examples of company-wide efforts that have produced enormous benefits and also facilitated low-cost improvements through the use of general-purpose software.

2. Activities of the Services & Support Purchasing Department

2.1 Situation before improvement

The Services & Support Purchasing Department uses JATCO's dedicated purchasing system to determine prices and suppliers for procurement of the company's production facilities, tools, logistics, services, prototype parts, and so on.

Costs are allocated using a purchasing cost system to place orders for the materials used at the plants and for construction projects. Typical items ordered include cutting tools, spare parts for equipment and construction work.

The left-hand pie graph in Fig. 1 shows the total volume of cost quotations. The purchase order volume totals approximately 210,000 purchase orders annually, of which 60% are repeat orders and 40% are non-repeat orders.

Repeat orders refer to things purchased repeatedly on a continual basis. Prices are determined with suppliers in advance and items are ordered each time whenever

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necessary. For non-repeat orders, a quotation is obtained every time according to the timing for ordering. After the department making a purchase request confirms the details, the final price and supplier are determined and an order is issued.

Non-repeat orders necessarily require manual tasks and paperwork outside of the existing purchasing cost system. The right-hand pie graph in Fig. 1 breaks down the departments making requests for the issuance of limited purchase orders. Approximately 1,800 employees in 90 departments are using the purchasing system.

2.2 Issues

The following is the flow of the process for issuing non-repeat orders. First, the requesting department prepares a quotation request and specification document and sends them to a supplier via the Purchasing Division. The supplier creates a quotation according to the specification document and submits it to the Purchasing Division. Purchasing sends the quotation to the requestor for confirmation of the specifications. After the details are confirmed, the final price and the supplier are approved by Purchasing. The requestor reports that information to a superior and then issues a purchase order via the Purchasing Division (Table 1).

Tasks denoted by the letters a to d in the table constituted issues because they still required manual work and paperwork. Accordingly, it was necessary to reduce the printing of documents and man-hours.

a: printing documents

b: mailing documents

c: creating e-mails

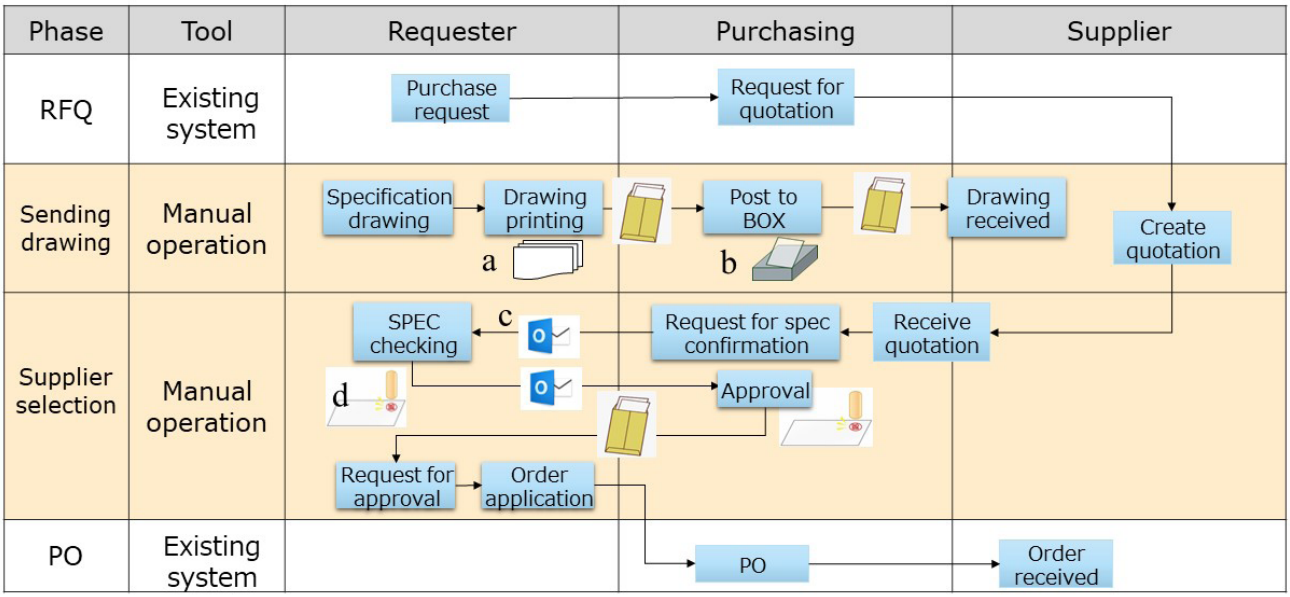
d: stamping on documents

3. Details of improvements

3.1 Data exchange box

The issues of “a: printing documents” and “b: mailing documents” were eliminated by adopting a tool for sharing data with external suppliers. Before the improvement, there were two ways to send specifications. The first method is to put the printed specifications in a box set up at JATCO and ask the supplier to come pick it up, and the other method is to send the documents by mail. Following the improvements made, a dedicated folder is created for each supplier on a cloud server as a data exchange box. Storing documents in folders achieves digitization. A function has also been added that automatically sends an e-mail message to notify a supplier when documents are stored in a folder (Fig. 2).

Table 1 Process flow for issuing non-repeat orders



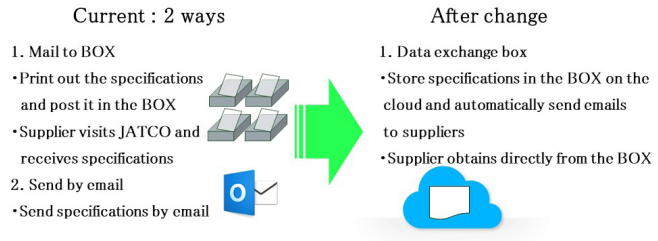


Fig. 2 Methods of sending specification documents

The following benefits have been obtained by using these functions.

(1) Reduction of paper usage

(2) Shortening of lead time for sending documents to suppliers

(3) Suppliers are automatically notified that documents have been sent to them.

In consideration of security, a separate password is established for each supplier to eliminate mistaken transmission of information.

3.2 Work improvement app

A work improvement app was created to eliminate the remaining issues of "creating e-mails," "requesting approval" and "stamping on documents."

3.2.1 Process flow visualization

Based on the organized flow of the existing process, an operational flow was created for the work improvement app to visualize approval routes (Fig. 3). The left-hand diagram shows the flow of the entire process, which is branched into approval routes at four points: "specification approval", "superior approval", "price approval" and "final approval."

The right-hand diagram shows the details of the branch flows in the specification approval phase for a requestor. The specification approval phase is branched into four routes labeled (1)-(4).

Similarly, there are two routes depending on whether a report is made to a superior, price approval is branched into three routes and final approval into three routes. Combining the branches in each phase results in a total of 72 routes.

Visualization of these complex flows established a concept for creating an accurate program without any omissions.

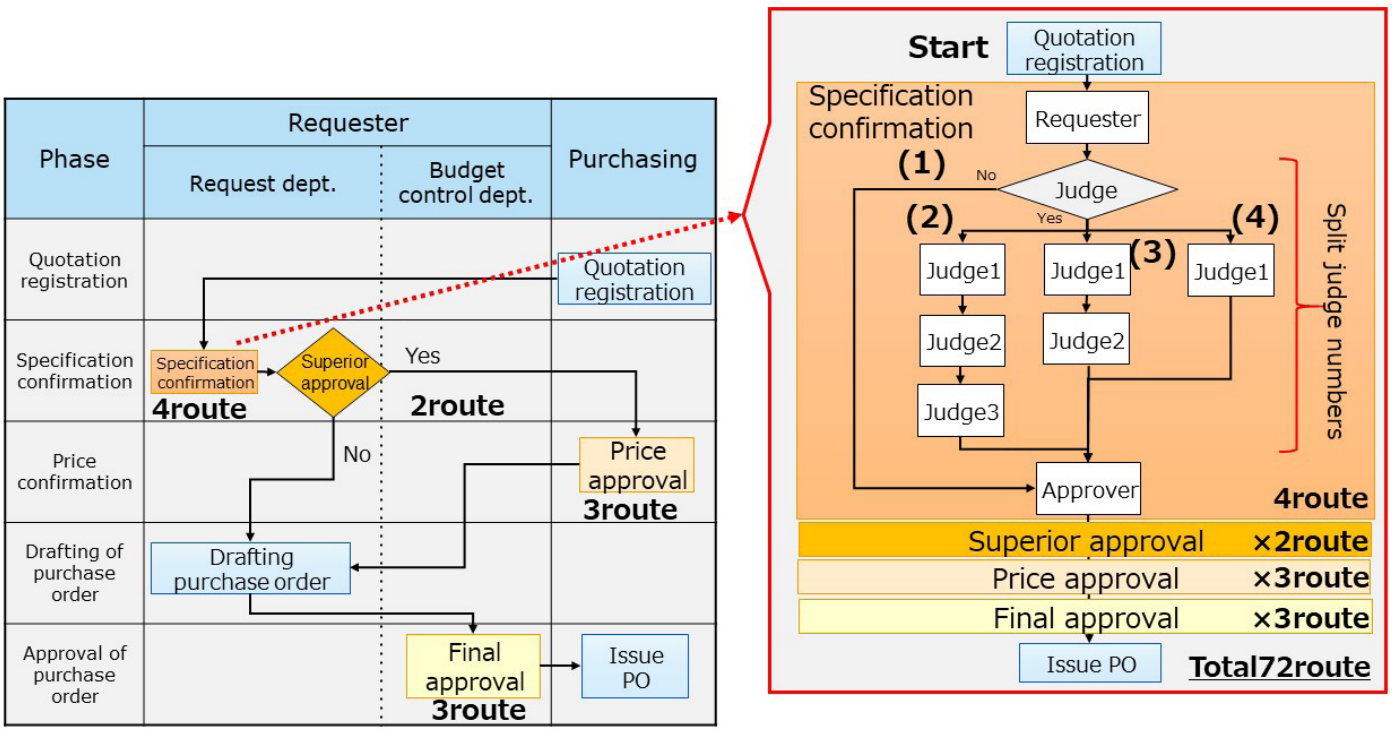


Fig. 3 Visualized approval routes

3.2.2 Process changed to the app

The following is the process that could be changed to the app (Table 2).

A: Registration of quotation information

- The Purchasing Division enters quotation data and quotations into the app.
- An e-mail requesting confirmation is automatically sent to the requestor.

B: Specification confirmation

- The requestor opens the app, confirms the contents, enters any necessary items and registers the information.
- When the approver completes the approval process, an e-mail is automatically sent to the Purchasing Division.

C: Price approval request & approval

- The buyer selects a supplier and requests final approval of the price to approver.
- The approver of the purchase confirms the details and then registers the approval.
- An e-mail indicating the price approval result is automatically sent to the requestor.

D: Approval request to superiors & purchase order issuance request

- The requester requests approval from the superior and registers the approval result in the app.
- An email requesting issuance of a purchase order is automatically sent to the Purchasing Division.

Previously, each department had various approval methods and processes for handling quotations. A system was successfully established by creating request routes satisfying the demands of each department.

3.2.3 Features devised in creating the app

The following features were carefully devised when creating the app.

(1) Screen for registering quotation data

The items to be input via the entry screen for registering quotation data were narrowed down to the minimum necessary in order to avoid increasing data input man-hours.

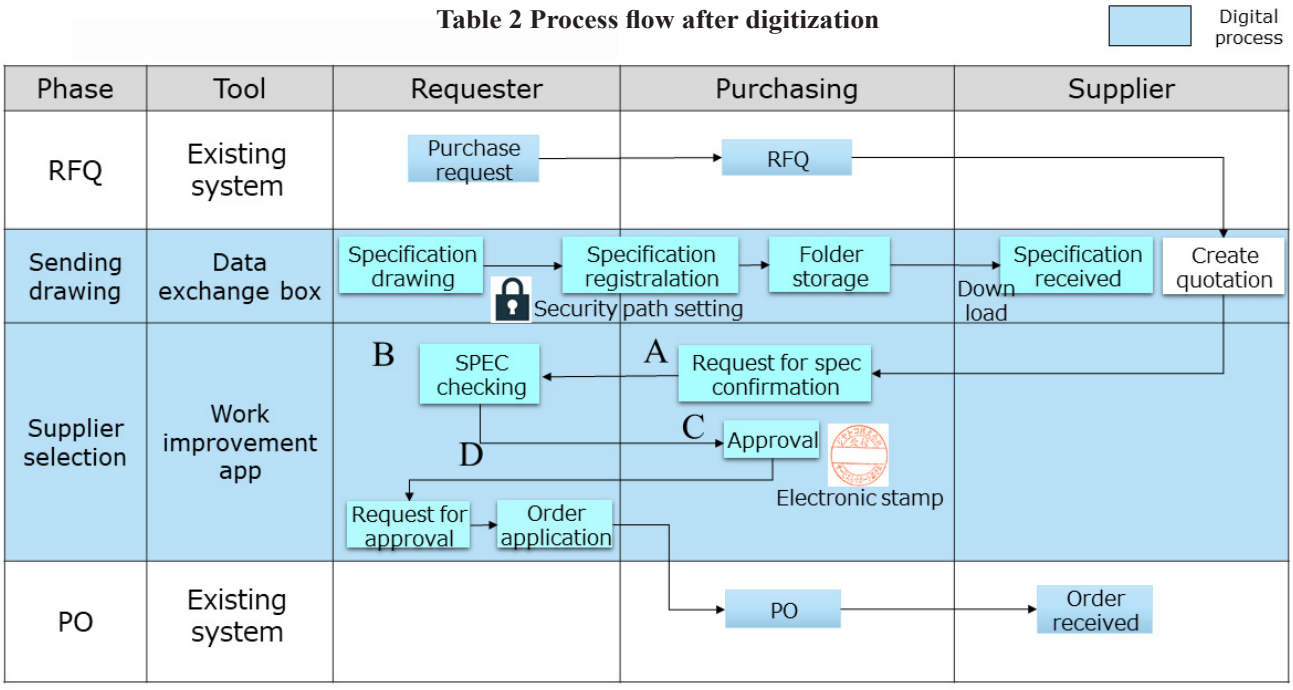
(2) Function for attaching quotations

A function for attaching quotations was adopted so that quotation contents can be easily confirmed whenever someone wants to know the details.

(3) Authorization

By using the approver table, only those who have approval authority can approve.

Table 2 Process flow after digitization



3.2.4 App functions

The following four improvements have been achieved by using the functions of the work improvement app, thus contributing to a reduction of man-hours and elimination of the printing of documents.

(1) Improvement of approval security

Approval security has been strengthened by granting the right to access data (Fig. 4).

Fig. 4 Improvement of approval security

(2) One-click approval without stamp

It is now possible to indicate “approval” or “send back” with one click. This function has eliminated the need to print documents and stamp to them for indicating approval (Fig. 5).

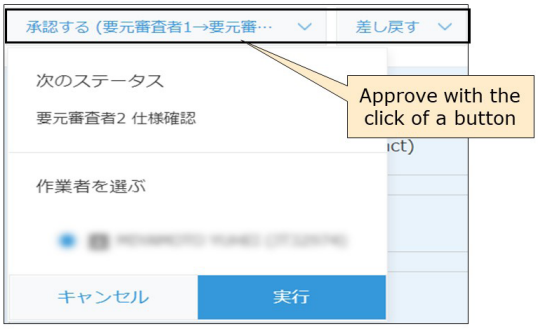


Fig. 5 One-click approval

(3) Status confirmation via a list

Items can be displayed in a list, enabling the status of each one to be visualized. Knowing the status has the effect of preventing work operations from being overlooked (Fig. 6).

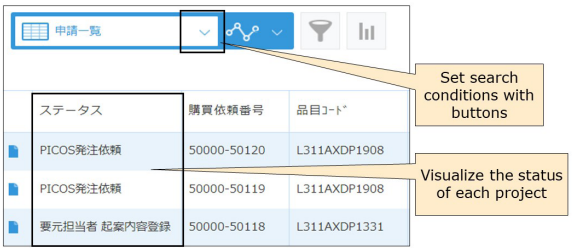


Fig. 6 Status confirmation

(4) Automatic e-mail creation for making an approval request

Notification e-mails are created and sent automatically, making it unnecessary to create them manually (Fig. 7).

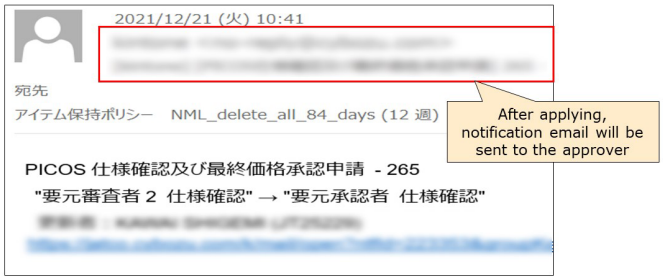


Fig. 7 Automatic creation of e-mail

3.2.5 Batch approval function

In proceeding with trials with related departments using the work improvement app, it was necessary to open the file of each item in order to approve it. This presented a problem that more man-hours were required than before.

Therefore, a challenge was undertaken to create a batch approval function that would enable multiple items to be displayed for confirming the contents and approving them all at one time. Although programming was complex because of the many branches in the approval process, a total of 40 programs were created to complete a batch approval program.

This batch approval function enables the contents of a displayed list of items to be confirmed, thereby establishing a highly efficient approval process (Fig. 8).

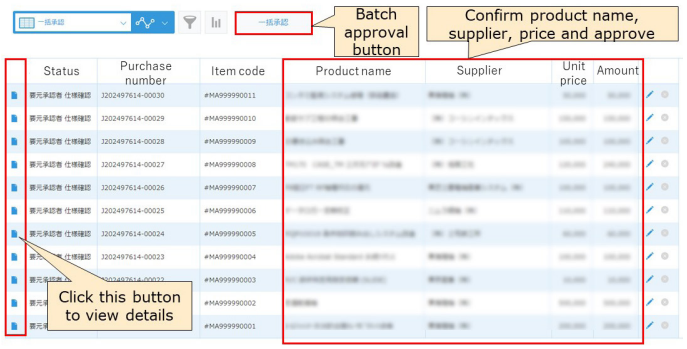


Fig. 8 Screen of batch approval

4. Conclusion

Various improvements were made to the details of the issues mentioned at the beginning, which produced the following substantial results.

1. Sharing the data exchange box with suppliers has eliminated the need to print and mail quotation requests and specification documents.
2. The creation of the work improvement app enabled the entire quotation process to be digitized.

These improvements have produced the following benefits.

a. Reduction of documents printed: 110,000 pages/year
b. Reduction of stamping to documents: 50,000 times/year
c. Reduction of work man-hours: 4,000 hours/year

As a final result, an effective cost reduction of 20 million yen per year was obtained. In addition, the following qualitative benefits were also achieved.

- Visualization of the work status simplifies progress management.
- The creation of a digitized system prevents work errors due to the loss of paper documents or for other reasons.
- The granting of data access rights has strengthened approval security.
- Lead time for approval and interdivisional communication has been shortened.

5. Future activities

Although overall man-hours have been reduced by the efforts described here, man-hours are still needed for data registration because the quotation information received from suppliers is input into the app manually.

Going forward, we want to utilize the upload function of the work improvement app to register quotation data more efficiently. We also aim to reduce man-hours further by applying robotic process automation to automate the work of attaching quotations, among other improvements.

The Services & Support Purchasing Department intends to promote further DX in pursuing higher efficiency and expansion of robot-based tasks by using various apps, general-purpose software and programs.

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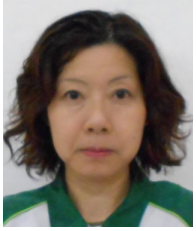
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