

Conference Paper

Analysis Price List Update Process of Price List Management on Direct Material Procurement Department at PT. X

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Abstract

PT. X is one of the largest consumer goods manufacturing companies in Indonesia. As manufacturing companies PT. X has Direct Material (DIM) Procurement Department to control all direct material, which also controls the price list. The process of controlling price list update is still handled via email. The use of email as communication between internal PT. X and also with the vendor, cause email pilling up in the DIM Procurement staff's inbox. This causes the process of updating material price list to become long and hard to control. There are approximately 4 500 direct materials and approximately 130 active vendors are handled by the DIM Procurement department annually. A large number of material and vendor handled by DIM Procurement is one of the reasons why the process of controlling price list is important. Digitalization is one way to help the process of controlling and simplifying the price list update process. Improvements to the process of price list update will be done by designing the concept of a platform that helps improve the performance of DIM Procurement Department. The platform called price list catalog can be used to store and record all vendor price list changes. The suggestions for price list update process is to facilitate DIM Procurement department so they can easily control material price list, provide trusted price list, and always available on time.

Keywords: Price list catalog; price list control; price list data; pricing management;

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1. Introduction

Procurement Department is responsible for purchasing and procurement activities for the company. One of the units in the procurement department at PT.X is DIM Procurement, which handles direct material purchases, pricing with related vendors, and helps contact vendor-related issues with supplied materials. DIM Procurement is divided into three types based on vendor handling level that is global, regional and local. The local DIM job is determining the direct material vendors used for production throughout the PT. X in Indonesia.

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Pricing management is a process that deals with cost and pricing. Pricing management in DIM Procurement relates to price list updates. DIM Procurement handles approximately 4 500 materials and 130 active vendors, which makes controlling the price list very important. Material price list must be available on time and reliable in accordance with the contract made. A delay on price list update may cause delays in material delivery and disruption in some related departments. The handling of material price list can also sometimes be a problem that ultimately takes a lot of work time. Good and efficient price list handling will make it easier for workers to work more effectively. Good price list handling can also make it easier for workers to analyze direct material price trends that can be used for subsequent purchases.

The price list update process starts from DIM Procurement requesting for new price list data to the vendor, or the vendor can directly send the price list data of the material they have prepared. The price list data will be checked first by DIM Procurement staff. The correct price list data confirmed by DIM Procurement staff will be provided to the PIR admin. PIR admin will input price list data to the SAP system. The admin who has input data price list will confirm to DIM Procurement staff that the price list data has been inputted, so the price list data can be used by department planning to make an order.

There are three main problems in the price list update process that is a long processing time of price list update, problems on controlling price list material, and problem on checking the price list data. From this problem, it is then proposed to create a digital price list update system. This can help simplify checking process of price list updates by DIM Procurement, PIR admins, and vendors.

1.1. Problem statement

DIM Procurement department handled around 4 500 materials and 130 vendors annually. Every price list update made by vendor need to be control and check, so the material price list is reliable and available on time. DIM Procurement have a problem in the price list update process that is controlling and checking all price list data. This research will analyze price list update problem by using an Affinity Diagram.

1.2. Research question

This research has three questions to be answered. The first one is what the reason of long processing time of price list update is. The second question is why it is hard to

control price list material. And the last one is what the solution for the problem in price list update process is.

1.3. Purpose of the study

Purpose of this research is to analyze the problem of long processing time in price list update process, analyze the problem of controlling price list and give solution for the problem in the price list update process.

2. Conceptual models

Controlling price list update is one of the important taskings that DIM Procurement need to do. All materials price list need to be available and reliable. Change in an increasingly sophisticated world drives people to improve every important process to new technology to make it easier to handle, use, and understand. That is when digitalization is one of the answers for that transformation. This research is to give a conceptual design of digital transformation in price list update process. Figure 1 show that transformation needed for price list update process.

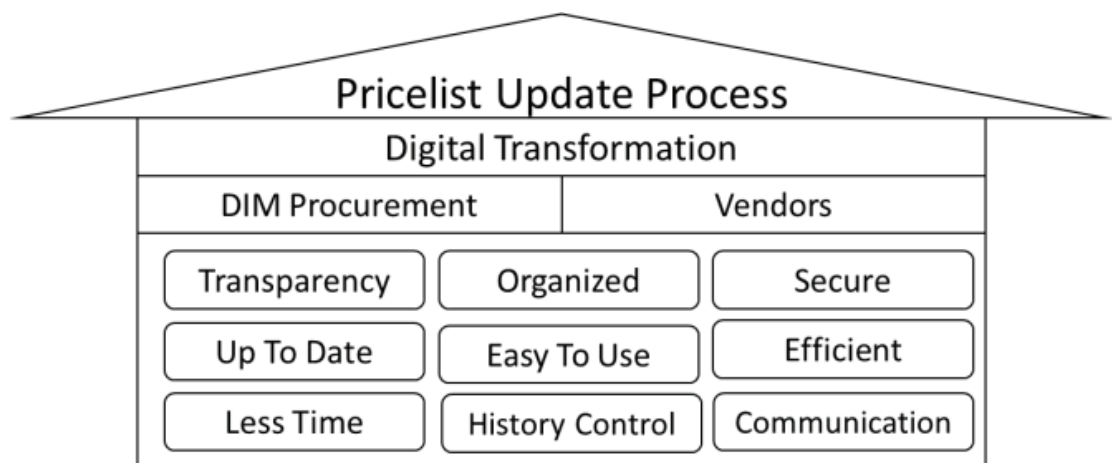


Figure 1: Conceptual models

This digitalization is based on industrial transformation to industry 4.0, which also related to procurement 4.0. industry 4.0 is often referred to as the 4th industrial revolution, which is used to improve operational efficiency and accelerate productivity development [1]. Procurement 4.0 will help the department to become more transparent and integrated with company's internal and external. Procurement 4.0 will rely more on technology for the whole process [2]. With digital transformation, all user as DIM Procurement and vendor will have transparency, trust, and security in price list update

process. This transformation also organized all price list history and data, to make it easier to find whenever needed. This also helped DIM Procurement to analyze changes of price list data that is really important for production needs.

3. Research methodology

3.1. Procurement

This research is conducted in the procurement department that deals with the procurement of materials as well as the company needs. Procurement/Purchasing is a function of business management that guarantees the identification, procurement, access and management of external resources that are the needs of the organization or may be used to meet strategic needs [3]. Procurement is usually seen only for supportive and additional operational activities with little significance to the company's performance [4]. These days Procurement became more and more integrated and covered the involvement of purchasing in product, process, and supplier selection and contracting [5]. According to Turner [6] common tasks performed by procurement are:

1. supplier identification and selection
2. market research
3. bidding and purchasing
4. negotiate and contract detail
5. research on supplier performance

3.2. Pricing management

Department of DIM Procurement at PT. X has a relation with pricing management, where they have to control all purchases of the direct materials that the company needs. Pricing management is a strategic competency involving people, processes, technologies, and information [7]. This will eventually involve all parts of the company like Marketing, Sales, IT, Operation, Finance, Accounting, and Execution leadership. Pricing management is very important for the company because it has a big influence as one of the aspects that supporting the company's survival. As business environments are characterized by their dynamic nature, company will be further challenged to adapt to these constant changes and to cope with them in an efficient way [8]. Companies that have good

financial arrangements are able to manage companies to be more profitable in terms of financial optimization. Effective pricing management can change the way a company sees and operates a company's entire business, it can also help ensure the overall profitability of a company [7].

Pricing management in manufacturing companies is also related to price list data collection of direct materials and the handling of price list, it will be useful to facilitate the ordering of materials that are needed. The handling of material price list can sometimes be a problem that eventually takes a lot of worker time. Good and efficient price list handling will make it easier for workers to work more effectively.

3.3. Affinity diagrams

Problem analysis in this research is done by collecting supporting data and define the problem in price list update process. The data obtained through interviews with related staff, data collection, and sampling process time. The data in the price list update process will be analyzed using the Affinity Diagram. The main purpose of using affinity diagrams is to be a problem solvers to sift through large volumes of subjective information efficiently and identify natural patterns or groupings the information [9]. The Affinity Diagram can be made individually or in teams, but it is best if done by team, because affinity are tools used to bring up creative thinking, which can be used to gather information about situation and problems [10]. The data will be collected and grouped based on similarity of the content. After grouping all data then the next process is to define the title or source of the problem. The last step is analyzing the Affinity Diagram to define the best solution for the problem.

4. Findings

4.1. Affinity diagram of problem in price list update process

The first stage of making Affinity Diagrams is to define the problem in the price list update process. The data was obtained after observing the price list update process, conducting interviews with related staff, and collecting supporting data (the cause of the problem). The data will then be classified based on the similarity of the problem type. Figure 2 and Table 1 are the results of the classification of problems in the price list update process.

LONG PROCESSING TIME	A LOT OF VENDOR BEING HANDLED	STAKED EMAIL MAKE IT HARD TO CHECK PRICELIST	
A LOT OF MATERIAL BEING HANDLED	NO PRICE LIST TREND ANALYSIS	SLOW RESPONSES FROM THE VENDOR	HARD TO CHECK PRICELIST HISTORY
HARD TO CONTROL MATERIAL PRICE LIST	HUMAN ERROR	PRICE LIST TABLE NOT STANDARD	HARD TO CHECK PRICE LIST HISTORY
	FORGET TO FOLLOW UP VENDOR	NO PRICELIST STORAGE	PRICE LIST UPDATE NOT IN ORDER

Figure 2: Problem classification stage.

TABLE 1: Affinity diagram of the problem in price list updates process

Long Processing Time of Price list Update	Problem on Controlling Price list Material	Problem on Checking Price list Data
Long processing time cause by full mailbox	A lot of material being handled	No price list trend analysis
Slow responses from vendor	A lot of vendor being handled	Hard to check price list history
Human error	Price list update become a lot because of FX rate agreement	Staked email make it hard to check the price list
Price list update not in order	Forget to follow up vendor	No price list storage
	Hard to control material price list	Price list table not standard

4.1.1. Long processing time of price list update

Mostly price list update process happens due to changes in material prices by the vendor, which is as much as 87.74 %. Communication used for internal PT. X and also with outsiders from PT. X is using email. This causes the number of emails received by DIM procurement staff to reach hundreds per day. Stacking emails will make the work process slower. Table 2 shows the price list update time data as a whole.

In Table 2, the time data is divided into three main processes based on the description of the stored data. The first process is the process when the DIM Procurement department requests the price list data until the vendor sends the required price list data. The average length of the first process is 28 h or equal to 3 working days to 4 working days (working hours = 8 h d⁻¹). The second process is when the DIM Procurement department checks the price list and provides confirmation of the price. The average of this process

TABLE 2: Price list update process time

No	Process request price list by DIM until vendor give price list (h)	Checking price list by DIM until admin receives price list (h)	Price list update to the system (h)
1	44	3	2
2	10	12	1
3	32	2	8
4	8	1	3
5	24	5	7
6	56	0.5	8
7	72	2	0.5
8	0.67	0.5	16
9	4	3	8.5
10	32	1	9
11	27	2	9
Average	28.15	2.91	6.55

takes 2.91 h or about 3 h (rounding). The last process is when DIM Procurement gives the material price list to the admin to update it into the SAP system. This process takes an average of 6.55 working hours or 6 working hours to 7 working hours on average. The average total length of price list update process time is approximately 37.61 h or 4 business days to 5 business days. The update price list process according to the data can usually be completed within 1 wk to 2 wk or the fastest is 1 d to 2 d only. The duration of the update price list process is caused by the problem described in the previous Affinity Diagram.

4.1.2. Problem on controlling price list material

Direct material handled by DIM procurement is approximately 4 500 materials. Based on data in 2017 as many as 6 811 material been updated their price list. This indicates that there are some materials that have to update the price more than 1 time in a period of one year. The amount of material handled also causes a lot of price lists to need to be input into the SAP system. Each vendor supplies materials with varying amounts and variance. PT. X has approximately 130 vendors supplying direct materials, and as many as 742 vendors are updating price list materials in 2017. Price list update can happen due to price changes and material validity, currency descriptions, unit order descriptions, changes in purchasing info and other information changes. The more frequent price list

updates will make it difficult for the DIM Procurement department to control the price list of the material. This control is done to ensure that all direct material handled by DIM Procurement department is available and reliable. Control is also done so that when there is an internal audit, price list data changes can be justified with complete price list data history.

4.1.3. Problem on checking price list data

The cause of the third update price list problem is the difficulty of checking (confirmation of price list) and finds the required updated price list. Sometimes the confirmation of the material price list takes a long time due to the various price list templates. DIM procurement department staffs need to understand the price list carefully before confirming the price list data. PIR admin must also be careful when inputting price list material data provided by vendors that have a different type of templates. Based on the data in Table 2, the price list checking process until the average material price list input was done for 9.46 h (Process 2 of 2.91 h + Process 3 of 6.55 h) or based on interview result is for 1 d up to maximum 3 working days.

DIM Procurement departments sometimes also find it difficult to find the price list data they need (e.g. when there is an internal audit required by another department). This entire time DIM Procurement department uses email to communicate about price list to vendor. One staff can get 100 to 200 emails per day. The more emails received the more likely other important emails are stacked and tucked. This will eventually slow down the work process of the DIM Procurement department including the price list update process.

4.2. Solution

The price list update process problem is caused by the difficulty of controlling the material price list and the difficulty of checking the material price list. The problem with the price list update process requires a tool that can be used to manage the communication with the vendor. Digitalization is one option to answer the needs of the DIM Procurement department.

4.2.1. Price list templates

One of the solutions to facilitate the input process of material price list in SAP system is the use of template price list material. The material price list template is used to uniform all the price list supplied by the vendor. The vendor usually has different price list templates. The use of a uniform price list material template will make it easier for PIR admins to move price list data into the SAP system. The price list template contains material descriptions along with their pricing and validity. This template also can help DIM Procurement staff to easily check and confirm price list data.

4.2.2. Price list catalogue

Price list catalog is a platform that will be accessed by three main users, that is Vendor, DIM Procurement, and PIR Admin. This platform will be used to control the entire price list of the material provided by the vendor. The platform is also useful for recording the entire history of material price list changes and confirming the price list changes. The price list catalog can be used to store all inputted or updated price list data. This platform can also be used to confirm price list pricing that will be updated. Confirmation will be made two times, first by the vendor's supervisor and second by DIM Procurement staff. This will make the updated price list data more reliable and transparent for both sides. Figure 3 shows the process flow of the use of the price list catalog platform.

DIM Procurement acts as a validator price list that gives approval to new price list material in price list catalog. This user has access to see all price list input by the vendor. DIM Procurement can input, delete, and edit material data. The PIR admin has almost the same access rights as DIM Procurement, but the admin cannot confirm the price of the material submitted by the vendor. User vendors can only access price list data of material they supply to PT. X. This is enforced so that each vendor cannot see price data from other vendors. The vendor's supervisor will have authorities to confirm the price of the material entered by the PIC vendor. PIC vendors can only do input material data and check the history of data price list material.

The price list catalog has several features that are expected to be implemented into this platform. Here are the features that will be implemented on the price list catalog platform.

1. Features to input and upload price list data

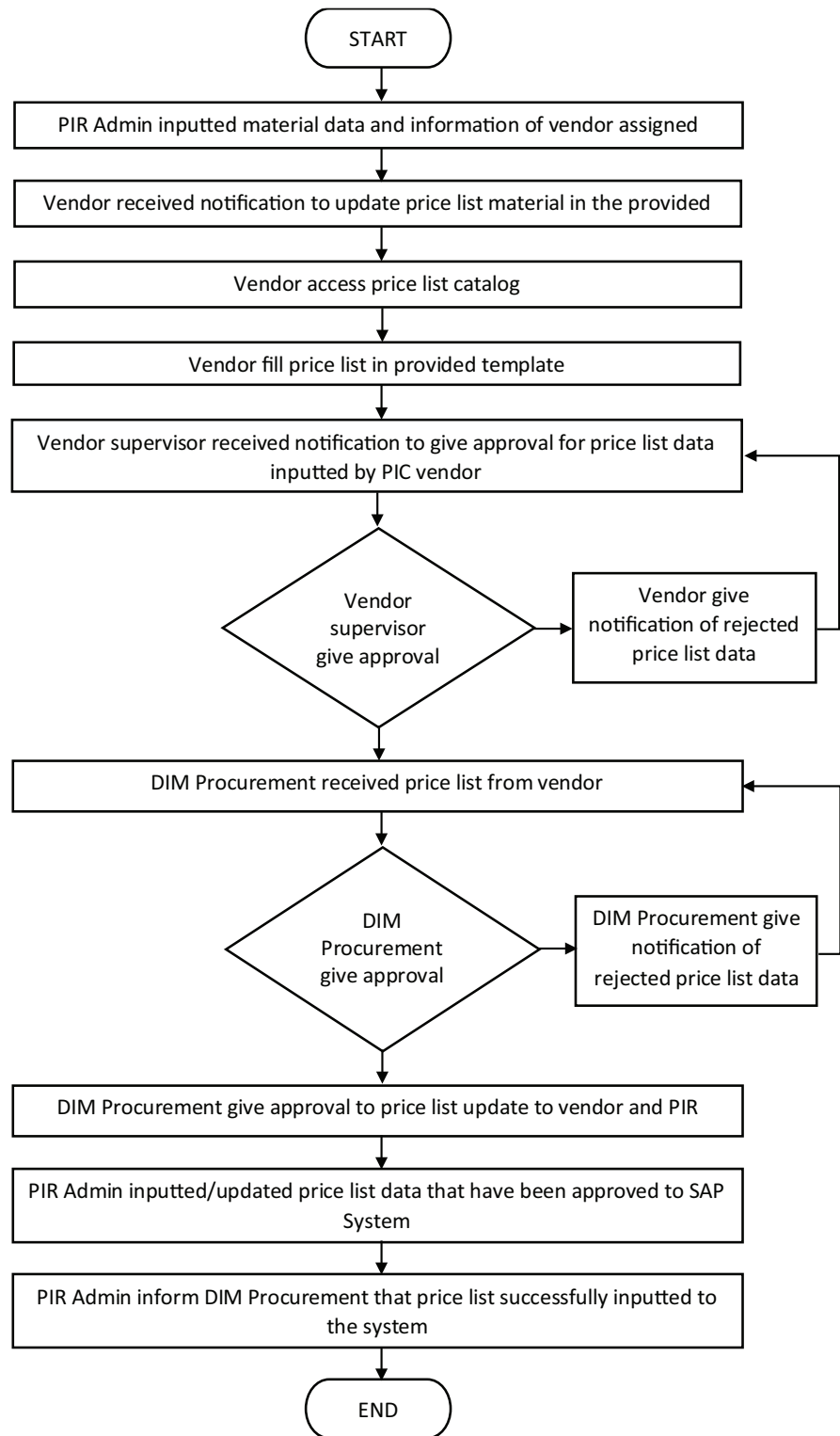


Figure 3: Process flow of the use of price list catalog platform

2. Vendors can input price list per material one by one directly through price list catalog platform. Vendors can also use the price list upload feature where they only need to download the price list template and then upload the price list data

they have updated. Price list updates are made directly to the downloaded excel file, and then the results are uploaded on the price list catalog platform. This upload feature is to help vendors who handle hundreds of materials so that the process of price list update becomes faster.

3. Sort, search, and export features

4. This feature is a supporting feature for price list catalog platform. This feature makes it easy to search and store vendor renewed price list data. All users on this platform can use the sort, search, and export features for the data they access.

5. Features to analyze material trend prices

6. This feature is expected to help DIM Procurement to analyze material price changes. This is useful as information for the next vendor selection tender. This feature can also generate graphs to facilitate the analysis process.

7. Features to analyze the deviation of the price changes

8. This feature can be used to analyze the deviation of price changes. This feature is similar to the previous feature of the material price trend, but this feature can provide an explanation or analysis of the material price changes.

9. Features to provide important notices to vendors

10. The concept of this feature is shaped like a news feed or the latest news from DIM Procurement. This feature can simplify the news notification process to all DIM Procurement vendors. The concept of this feature is similar to the ads on the web only the content contains news or notices addressed to the vendor.

11. Help center features

12. The concept of the help center features contains ways to use the material platform and some answers to frequently asked questions from vendors. This feature can be used by vendors as new users who still need a platform usage guide. The form of this feature is similar to the help center owned by other applications (e.g., Gojek, Tokopedia, Grab)

13. Contact us features

14. This feature is a continuation of the previous feature of the help center. In this feature, the user can ask a question that does not exist in the help center feature. This form of the feature is also similar to other applications such as Gojek, Tokopedia and Grab.

15. Change notification features

16. This change notification feature is required to provide user notifications of changes made. Example vendors make price changes then DIM Procurement will immediately get a warning notification that there is a new price list. This also applies when DIM Procurement changes or confirms the price list data.

4.3. Solution analysis

DIM Procurement department requires speed and ease in accessing data price list material. DIM procurement should also up to date on changes made to price list material. Digitalization is one option to answer the needs of the DIM Procurement department. Implementation of digitalization will be done on a process that is often done by the department of DIM Procurement. That process is price list update of pricing management. The following are some of the benefits that can be gained by implementing the solution:

1. Time-saving

The price list update process is expected to be completed more quickly by using the price list catalog platform. The length of time the price list update process previously is about 1 d to 14 d. The price list update process with the price list catalog is expected to be completed in less the 5 workers days.

TABLE 3: Calculation of time saving.

Process	Processing time manually	Processing time using price list catalog
Process request price list by DIM until vendor give price list (h)	72	24
Checking price list by DIM until admin receives price list (h)	12	8
Price list update to the system (h)	9	8
Total	93	40

Table 3 shows time-saving data using the price list catalog platform. The data usage is the longest time from the price list update process data in Table 2 and the expected time data after the use of the price list catalog platform. The process of requesting price list by DIM Procurement until the price list is input into the platform is expected to be completed in less than 24 working hours. Checking process and confirmation of price list by vendor supervisor and DIM Procurement

staff can be completed in 1 d or 8 working hours. The final process of inputting material price list is expected to be completed within 1 d or 8 h. The total length of the price list update process by using the update price list platform is expected to be completed in less than 5 working days. The savings achieved from the use of this price list catalog is about 53 h or 6 d to 7 d. Time savings can also be obtained when DIM Procurement performs a price list search of the required data and checks the vendor's price list update history. This is because the price list data is neatly arranged on the price list catalog platform. This advantage answers DIM Procurement needs, where they often have trouble finding the price list needed for the internal audit.

2. Ease to update and control price list

The main function of the price list catalog is to make it easier to control price list updates from vendors. It also affects the process of updating the price list entered in this platform trusted and reliable

3. Trusted

The system on the price list catalog platform requires the confirmation of price list by the vendor and DIM Procurement. This causes the entire price list entered in this platform trusted and reliable.

4. Easy to understand

Price list catalog has many advantages which one of them is easy to understand. The menu in the price list catalog is designed so that all users can easily understand and use it.

5. As a communication tool with the vendor (reduce amount of email especially for price list update process)

This platform can at least reduce the number of emails in the DIM Procurement staff inbox. This is because emails associated with price list updates will be replaced with the price list catalog platform.

6. Tidy or organize

The display of price list on the platform would be more tidy than usual when using email. This is because access to the menu is only used to control the price list. A neat look is also supported by a price list template. This template makes the price list more standardized, which also makes it easy for DIM Procurement to check the vendor's price list. Admin will also be easier to input data into the SAP system.

5. Conclusion

Pricing management has a great influence on the company's survival. Pricing management in manufacturing companies is also associated with price list control. The problem of price list update on PT. X is the length of the process of inputting the material price list and the lack of control over all direct material price list data. This lack of control led to the DIM Procurement Department having difficulty finding the required material price list. It also ends up making the update price list process become longer. DIM Procurement Department always uses email as a communication tool with vendors and also internal parties in PT. X. The average staff of DIM Procurement Department can receive 100 emails to 200 emails per day. On any given day the amount can reach 300 emails per day per DIM Procurement staff. This sometimes causes emails about price list to be tucked or stacked with other emails. The number of inputs price list material also becomes one of the causes of the process to be long, because DIM Procurement must check all changes price list. The DIM Procurement department also has difficulty checking the vendor's price list update history.

Digitalization is one way to solve problems in the price list update process, in this case, is the design of price list catalog platform. This platform can be used to record all price list changes from vendors. The price list catalog can also be used to confirm the vendor's price list data so that the data is more reliable. Price list catalog is expected to provide easy, speed, accurate data, reliable and available data on time.

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