Unlocking Efficiency: Strategic Solutions for Mass Purchase Order Repricing

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Abstract: The COVID-19 pandemic profoundly impacted the global economy, specifically regarding supply chain disruptions. Governments implemented widespread lockdown measures, resulting in the closure of businesses and manufacturing facilities, severely affecting the flow of goods and materials. Consequently, the supply chain faced numerous challenges, including increased fuel and freight costs and heightened vendor uncertainty.

These disruptions had significant implications for buyers, particularly those dealing with items sourced from overseas and requiring long lead times. Buyers were compelled to adjust prices frequently due to fluctuating fuel, freight, and other costs to maintain profitability. This dynamic environment made it difficult for buyers to keep up with rapid and frequent price changes, necessitating the need for strategies to address these challenges effectively.

This article aims to provide buyers with practical guidance and solutions to navigate the complex landscape of supply chain disruptions and frequent price changes caused by the pandemic. It offers valuable advice on staying informed about market trends, establishing effective collaboration with vendors, harnessing technology and data analysis tools, and optimizing the 3-way match process - a crucial step in ensuring accurate landed costs.

By following the solutions outlined in the article, buyers can enhance their ability to adapt to the fast-paced changes induced by the pandemic, mitigate risks associated with supply chain disruptions, and make well-informed decisions that positively impact their procurement processes. Ultimately, these strategies empower buyers to overcome the challenges posed by the COVID-19 pandemic and ensure the accuracy of landed costs for their products.

Index Terms – **Supply Chain Transformation, Purchase Order Repricing, Productivity, Efficiency, SAP S/4 HANA, Procurement**

I. INTRODUCTION

The COVID-19 pandemic significantly impacted various aspects of the global economy, including supply chains. To prevent the spread of the virus, governments implemented widespread lockdown measures, which resulted in the closure of businesses and manufacturing facilities worldwide. This sudden and massive shutdown cascaded the supply chains, disrupting the flow of goods and materials.

The disruptions in the supply chain [1] had several consequences, including increased fuel and freight costs. With restrictions in place and reduced capacity for transportation, the costs associated with shipping and logistics rose significantly. These increased costs, coupled with the disruptions in the supply chain, created an environment of uncertainty for vendors.

As a result, vendors, particularly those dealing with items that required long lead times and were sourced from overseas, often had to adjust their prices frequently. The fluctuating fuel, freight, and other costs forced vendors to make frequent price changes to ensure their products remained profitable. This dynamic situation made it challenging for buyers to keep up with these rapid and frequent changes.

For buyers, it became crucial to stay informed and updated on these price fluctuations to ensure that the landed cost of the product remained accurate. Landed cost refers to the total cost incurred to acquire and deliver a product to its destination. To achieve this accuracy, buyers needed to closely monitor the changing costs and ensure that the 3-way match process was carried out as accurately as possible.

The 3-way match is commonly used in procurement and accounting to validate that the purchase order, the received goods, and the supplier invoice all match and align. By ensuring an accurate 3-way match, buyers can confirm that they are being charged correctly for the products they receive.

Considering these challenges, the article aims to guide buyers to navigate the complex landscape of frequent price changes and supply chain disruptions. It likely offers advice on how to stay updated on market trends, collaborate effectively with vendors, leverage technology and data analysis tools, and optimize the 3-way match process to minimize errors and ensure accurate landed costs.

II. ARCHITECT
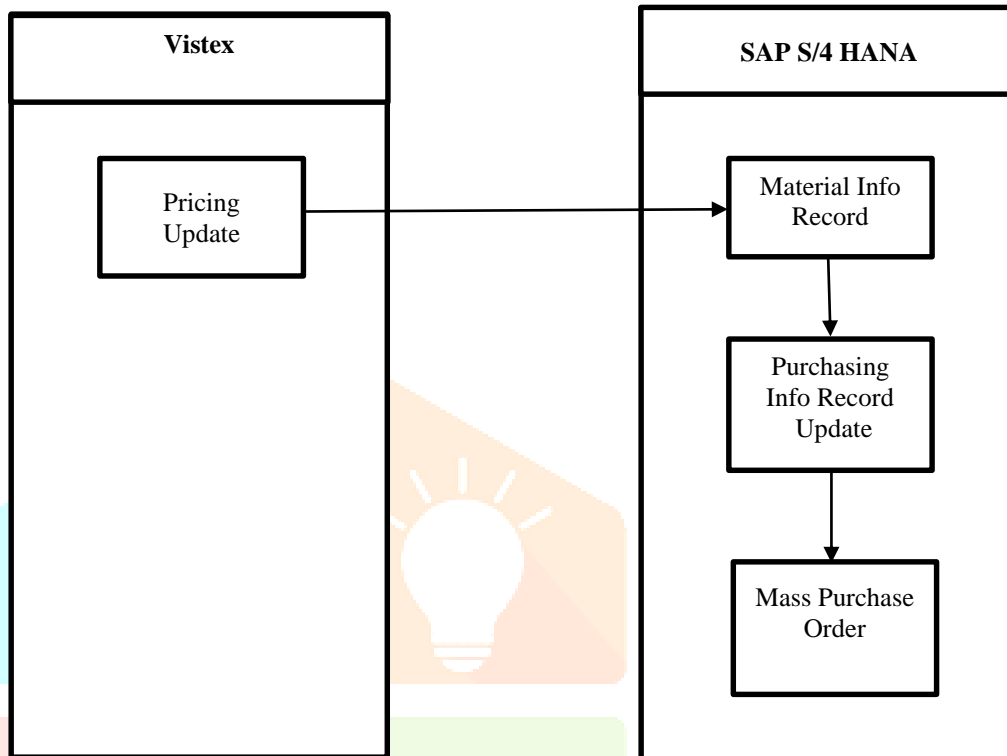
The process described below involves updating pricing information and related records in various systems. Here's a step-by-step breakdown of the process:

- Pricing update at Vistex systems: The process begins with updating pricing information in the Vistex systems. Vistex is a software solution that helps organizations manage their pricing, contracts, and incentive programs.
- Update at Vistex flows to S/4 HANA Material Info Record: Once the pricing update is made in the Vistex systems, the updated information flows to the Material Info Record in the S/4 HANA system. S/4 HANA is an enterprise resource planning (ERP) system developed by SAP.
- Program updates Purchasing Info Record: A program, likely an automated script or a scheduled job, is responsible for updating the Purchasing Info Record. The Purchasing Info Record contains essential information about vendors, such as pricing conditions, delivery times, and other relevant data.
- Update in Purchasing Info Record Consumed by Mass Purchase Order Fiori Tile: The updated information in the Purchasing Info Record is then consumed by the Mass Purchase Order Fiori Tile. Fiori is a user-friendly technology developed by SAP that provides a simplified and intuitive user experience. The Mass Purchase Order Fiori Tile is a specific Fiori application that creates or modifies mass purchase orders based on updated information.

The process begins with a pricing update at Vistex systems, which then flows to the S/4 HANA Material Info Record. A program updates the Purchasing Info Record, and the Mass Purchase Order Fiori Tile consumes the updated information for generating or modifying mass purchase orders.

III. PRODUCT DESIGN

- Create a Fiori tile as per the below layout.

← SAP	Mass PO Reprice		🔍 🔔 R
No of Day in the Past*	Purchasing Group*	Purchasing Document Type	Supplier
Supplier Subrange	Plant	Material Group	Material
Next Period Price/Currency	Price Over-Ride	Future Cost Match	Go Adapt Filters

Selection Layout

- ○ No of Day in the Past*: Mandatory; This is for performance. From the day of execution, how many days back do we want to go for the document date; by default, 180 days.
- ○ Purchasing Group*: Mandatory; Multiple selection drop-down; Validation: T024- T024; E: Purchasing Group Required or E: Invalid Purchasing Group.
- ○ Purchasing Document Type: Optional; Multiple selection drop-down; Validation: T161- BSART; E: Invalid Document type.
- ○ Supplier: Optional; Multiple selection drop-down; Validation: LFA1- LIFNR; E: Invalid Supplier.
- ○ Supplier Subrange: Optional; Multiple selection drop-down; Validation: WYT1- LTSNR; E: Invalid Supplier Subrange.
- ○ Plant#: Optional; Multiple selection drop-down; Validation: T001W-WERKS; E: Invalid Plant.
- ○ Material Group#: Optional; Multiple selection drop-down; Validation: T023-MATKL; E: Invalid material group.
- ○ Material#: Optional; Multiple selection drop-down; Validation: MARC-MATNR; E: Invalid material.
- ○ Next Period Price/Currency: Optional.
- ○ Price Over-Ride: Optional
- ○ Future Cost Match: Optional; drop-down; values are Yes Or No

- Fiori tile validates the data keyed in by the user and captures the appropriate error message in case of errors.
- After validating input screen data, once the user clicks on the go, the program does the following:

- ○ Based on the input, fetch the only open PO(s) undelete Free of Charge. Open PO(s) can be found where EKPO-ELIKZ is not equal to X, and undeleted PO(s) can be found where EKPO-LOEKZ is not equal to L and EKPO-REPOS = X (Excluding Free PO(s) as well).
- ○ Only fetches the PO(s) where item category EKPO-PSTYP is not equal to 2 – Consignment and 7 – Stock Transfer (Basically, we don't want consignment and stock transfer PO(s) as it doesn't have net price).

- Below are the fields and logic:

| Field(s)	Logic
Purchase Order	From EKPO-EBELN
Vendor	From EKKO-LIFNR
Vendor Name	Pass Vendor from EKKO to LFA1 and get LFA1-NAME1
Supplier Subrange	From EKPO-LTSNR
Supplier Subrange Description	Pass Vendor and Subrange to WYT1 and get WYT1-LTSBZ
Purchasing Group	From EKKO-EKGRP
Purchasing Group Name	Pass the purchasing group code to T024 and get T024 – EKNAM.
Document Type	From EKKO-BSART
Item No	EKPO-EBELP
Item Category	EKPO-PSTYP
Material	EKPO-MATNR
Material Group	EKPO-MATKL
Material Group Description	Pass material group to T023 and get T023- WGBEZ
Plant	EKPO-WERKS

Material Description	MARA-MAKTX
PO Creation Date	EKKO-AEDAT
PO Quantity	EKPO-MENGE
Ordering Unit	EKPO-MEINS
Conf. Control	EKPO-BSTAE
Inbound Delivery	Pass the PO number and item number. Confirm. Cat.: LA to EKES and get the inbound delivery number. If multiple is found, sort in descending order and get the latest one.
PO History	Pass PO and item to EKBE and see entries found. If the entry is there, then show the graph.
PO Item Delivery Date	Pass the PO and item number to EKET and get EKET-EINDT.
Price Overwrite	Pass PO to Table: EKKO and get the Doc. Condition No. (EKKO- KNUMV). Pass Condition No. To table: PRCD_ELEMENTS with PO item number and Inactive condition (KINAK) as blank and see if we have PBXX. If yes, then show PBXX. Else, blank.
PO Net Price/Currency	EKPO-NETPR/EKKO-WAERS (for example $2800/USD).
PO Price Unit/Ordering Price Unit	EKPO-PEINH/EKPO-BPRME (for example, 100/EA).
Current Period Validity Date (From – to)	Note: Within PB00 pricing team is loading prices in tables: A017 and A018. If the A017 record gets triggered else, it will go to A018. *** Logic: (Developer can explore functional module. I have tried using ME_GET_INFORECORD_CONDITIONS, which works fine for PB00 and PB01) Pass Application – KAPPL = M, Condition Type – KSCHL = PB00, Vendor – LIFNR, Material – MATNR, Purchasing Org – EKORG, Plant – WERKS, Info Type – from PO line to Table: A017 and get the condition record number where Valid From < = System Date and Valid To > = System Date. Pass all the records to KONP, sort by ascending, order, and select 1st non-delete record. If no record is found, then go to next. Pass Application – KAPPL = M, Condition Type – KSCHL = PB00, Vendor – LIFNR, Material – MATNR, Purchasing Org – EKORG, Plant – WERKS, Info Type – from PO line to Table: A018 and get the condition record number where Valid From < = System Date and Valid To > = System Date. Pass all the records to KONP, sort by ascending order, and select 1st non-delete record. If no record is found, then go to next. Also get A017-DATAB to A017-DATBI or A018-DATAB to A018-DATBI for valid record
Current Period Price/Currency	For the valid condition record, get the KONP-KBETR/KONP-KONWA (For example, $284/USD).
Current Period Price Unit/UoM	Also, get the KONP-KPEIN/KONP-KMEIN (For example, 100/LB).
Scale Exist? (Flag Yes or No)	If KONP- KZBZG has value, then Scale Exist = Yes else, No.
Apply Updated Cost	Checkbox
Yes or No value for PO Price Vs. Next Period Price	Compare PO Net Price/Current, PO Price Unit/Ordering Price Unit with Next Period Price/Currency and Next Period Price Unit/UoM. If it's matching, then show Yes else, No.
Previous Period Validity Date (From – to)	Pass Application – KAPPL = M, Condition Type – KSCHL = PB00, Vendor – LIFNR, Material – MATNR, Purchasing Org – EKORG, Plant – WERKS, Info Type – from PO line to Table: A017 and get the condition record number where Valid From < System Date. Pass all the records to KONP, sort by descending order, and select 1st non-delete record. If no record is found, then go to next. Pass Application – KAPPL = M, Condition Type – KSCHL = PB00, Vendor – LIFNR, Material – MATNR, Purchasing Org – EKORG, Plant – WERKS, Info Type -from PO line to Table: A018 and get the condition record number where Valid From < System Date. Pass all the records to KONP, sort by descending order, and select 1st non-delete record. If no record is found, then go to next. Also, get A017-DATAB to A017-DATBI or A018-DATAB to A018-DATBI for valid record

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Previous Period Price Unit/UoM	Also, get the KONP-KPEIN/KONP-KMEIN (For example, 100/LB)
Yes or No value for PO Price Vs. Previous Period Price	Compare PO Net Price/Current, PO Price Unit/Ordering Price Unit with Previous Period Price/Currency and Previous Period Price Unit/UoM. If it's matching, then Yes else, No.
Purchasing Info Record	Pass the PO number and line item to EKPO and get the EKPO- INFNR. Show that as Hyperlink, and when the user clicks on it, it should call T-c ode: ME13 (Fiori tile: Display Purchasing Info Record). Pass the PIR Number, Purchase Organization, and Plant to display the record.
Status Log	Successful/Failed message

- After displaying output and sorting output user will select the checkbox for "apply updated cost." The program should do the following:

  - For selected PO & line items, it should say "Ready to update the price"? If the user clicks YES, then go to next. If the user clicks NO, then cancel the update.
  - Upon yes, update the price on PO for that item.
  - Developers can use the functional module: BAPI_PO_CHANGE to update the price on PO.
  - For PO change, enter the condition type: PBXX to suggest a price change.

IV. SOLUTION

Fiori title "Mass PO Reprice" was created.
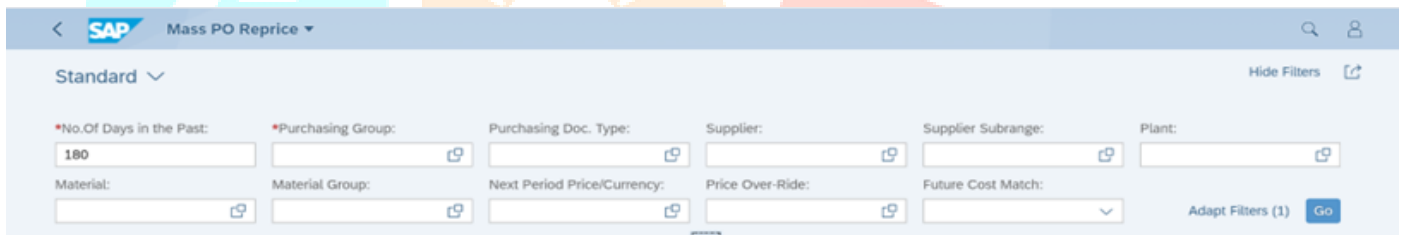
Selection Screen

Buyers click on the go after entering single or multiple purchasing groups.

Output

Total Lines (92)   Apply PO Cost ⚙ 📋

	Material	Material Description (1 and 2)	PO Quantity	Net Order Price	Price Over-Ride	PO Price ...	PO Item Delivery Date	Next Period Validity Date	Next Period Price/Curre...
☐	817660		1.000 DR	206.93 USD		100 LB	06/25/2020	09/30/2020-09/15/2022	209.93 USD
☐	820975		1.000 DR	201.72 USD	PBXX	100 LB	06/25/2020	09/30/2020-09/15/2022	203.72 USD
☐	824615		3.000 DR	174.13 USD	PBXX	100 LB	06/25/2020	09/30/2020-09/15/2022	179.00 USD
☐	820496		9.000 DR	182.55 USD		100 LB	06/25/2020	09/30/2020-09/15/2022	241.55 USD
☐	822389		0.000 PI	224.40 USD	PBXX	100 LB	06/30/2020	09/30/2020-09/15/2022	369.40 USD
☐	1180		1.000 DR	279.00 USD		100 LB	06/30/2020	09/30/2020-09/15/2022	284.00 USD
☐	822066		3.000 PI	229.40 USD		100 LB	06/30/2020	09/30/2020-09/15/2022	369.40 USD
☐	822318		0.000 PI	226.26 USD		100 LB	06/30/2020	09/30/2020-09/15/2022	366.26 USD
☐	574481		0.000 DR	317.18 USD		100 LB	06/30/2020	09/30/2020-09/15/2022	376.18 USD
☐	820452		1.000 PI	445.69 USD		100 LB	06/30/2020	09/30/2020-09/15/2022	450.69 USD
☐	821916		3.000 PI	283.83 USD		100 LB	06/30/2020	09/30/2020-09/15/2022	363.83 USD
☐	820658		2.000 DR	295.94 USD	PBXX	100 LB	06/26/2020	09/30/2020-09/15/2022	298.95 USD
☐	820899		5.000 PI	357.81 USD	PBXX	100 LB	06/26/2020	09/30/2020-09/15/2022	316.27 USD

More fields in the Output

Total Lines (92)   Apply PO Cost ⚙ 📋

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☐	820975		1.000 DR	201.72 USD	PBXX	100 LB	06/25/2020	09/30/2020-09/15/2022	203.72 USD
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☐	820496		9.000 DR	182.55 USD		100 LB	06/25/2020	09/30/2020-09/15/2022	241.55 USD
☐	822389		0.000 PI	224.40 USD	PBXX	100 LB	06/30/2020	09/30/2020-09/15/2022	369.40 USD
☐	1180		1.000 DR	279.00 USD		100 LB	06/30/2020	09/30/2020-09/15/2022	284.00 USD
☐	822066		3.000 PI	229.40 USD		100 LB	06/30/2020	09/30/2020-09/15/2022	369.40 USD
☐	822318		0.000 PI	226.26 USD		100 LB	06/30/2020	09/30/2020-09/15/2022	366.26 USD
☐	574481		0.000 DR	317.18 USD		100 LB	06/30/2020	09/30/2020-09/15/2022	376.18 USD
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☐	820658		2.000 DR	295.94 USD	PBXX	100 LB	06/26/2020	09/30/2020-09/15/2022	298.95 USD
☐	820899		5.000 PI	357.81 USD	PBXX	100 LB	06/26/2020	09/30/2020-09/15/2022	316.27 USD

More Fields In the Output

As shown below, the buyer can select one or multiple purchase orders and click "Apply PO Cost."

Total Lines (7)   Apply PO Cost ⚙ 📋 ⌄

	Purchase Order	Supplier	Supplier Su...	Purc...	Purcha...	PO Item	Ite...	Item Catego...	Material	Material Group	Mat.Group Description	Plant	Material Description (1 a...
☐	7001086				NB	10	O	Standard	817419				
☐	7001147				NB	10	O	Standard	823247				
☐	7001155				NB	20	O	Standard	809164				
☐	7001201				NB	10	O	Standard	824816				
☐	7001202				NB	10	O	Standard	819390				
☐	7001202				NB	20	O	Standard	824776				
☑	7001232				NB	10	O	Standard	824769				

Apply PO Cost

? Confirmation

Confirm change price

                            OK   Cancel

7001201

Confirmation for Update

Update Message

V. RESULTS AND DISCUSSION

Company's Revenue	Efficiency/ Productivity Gain in hours	Number of Working days Per year	Total Hours saved per buyer	Approximate buyers per organization	Total time (in Hrs) savings for the entire organization	Hourly Salary	Total Saving
$800M – $1B	1	260	260	50	13000	$36.06	**$468,780**
$1B to $1.5B	1	260	260	75	19500	$36.06	**$703,170**
$1.5B to $2B	1	260	260	100	26000	$36.06	**$937,560**

Assuming 260 working days in a year would result in a total time savings of 260 hours per year (1 hour per day * 260 working days).

If we multiply this by the number of buyers in the organization (for example, 50), we can estimate the total time savings for the entire organization. For example, if are 50 buyers in the organization, the total time savings would be 13,000 hours per year (260 hours per year * 50 buyers).

This time savings could increase productivity, reduce costs, or allow buyers to focus on more strategic tasks requiring expertise. However, it is essential to note that the actual time savings may vary depending on the specific tools and processes implemented, as well as the individual capabilities of each buyer. If we translate those time saving into $ (assuming $36.06/hrs), then it will be $468,780 saving for the organization (small organization client with revenue just below $1B)

VI. CONCLUSION

Introducing this new feature is a game-changer for buyers within the organization. Allowing them to update prices on purchase orders in mass simplifies keeping up with frequent price changes from vendors. Previously, buyers had to manually adjust prices individually, which was time-consuming and prone to errors. With this new capability, buyers can update prices across multiple purchase orders simultaneously, saving them valuable time and effort.

This enhancement brings many advantages and efficiencies to the buying process. Firstly, it significantly increases productivity by eliminating buyers needing to review and modify each purchase order individually. They can now make bulk price updates in one go, improving their ability to keep pace with vendors' changing pricing structures. This agility allows buyers to respond promptly to market fluctuations, negotiate better deals, and secure more favorable pricing terms.

Additionally, this feature contributes to the accuracy of landed cost calculations. Landed cost refers to the total cost of acquiring a product, including the purchase price and additional expenses such as transportation, customs duties, and handling fees. Ensuring current purchase order prices makes the landed cost calculations more precise and reliable. This is crucial for accurate financial reporting, budgeting, and cost analysis within the organization.

Furthermore, implementing this feature positively impacts the accounts payable (AP) department. Traditionally, discrepancies between purchase order prices and vendor invoices could lead to time-consuming back-and-forth communication to resolve the differences. With the ability to update prices in mass, the accuracy of the three-way invoice matching process (matching purchase orders, goods receipts, and vendor invoices) is enhanced. This streamlines the AP department's workflow, reducing the need for extensive reconciliation efforts and minimizing delays in payment processing.

Overall, the new feature empowers buyers by giving them greater control and efficiency in managing purchase orders. It enables them to adapt quickly to pricing changes, enhances the accuracy of landed cost calculations, and streamlines the invoice reconciliation process. These benefits save time and effort and contribute to improved financial accuracy and smoother collaboration across departments within the organization.

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