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Model Documentation and Evolvment in Industrial Procurement

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ABSTRACT: Rapid evolvement in digitalization and information technology are making global supply chains and procurement procedures a lot simpler. Along with model documentation in industrial procurement, this paper aims to explore the potential of new technological trends. These rising technologies consist of company resource planning software (ERP), cloud storage system, big data analysis, blockchain and smart contracts. Broadly, the procurement process involves the documentation from both sides, buyer and vendor. This paper aims to explain procurement basics such as people involved, basic procedure, documentation followed by each step, need of documentation and basic formats of few important documents. After knowing the basics of procurement, exploring latest technological trends in procurement, real evolvement of this field will be easier.

KEYWORDS: Procurement, Purchase Documentation, ERP software, Big Data Analysis, Blockchain.

I. INTRODUCTION

Modern procurement process has come into the spotlight as an important strategic and critical business activity. Procurement is basically the process of uniting purchasing and financial systems to achieve greater efficiencies. In this process, firstly the end-user sends a request to the company. Afterward, the company officer searches for vendors. Then a request about the material is sent. Then he receives quoted documents from several vendors and compares them for a better deal. For analysing, he summarizes and tabulates quotations on the basis of quoted prices, time of delivery, quantity discount, other discount, terms of payment, past performance. After analysing, officer selects and finalises the suitable offer. After placing an order, officer follows the material to make it available under the constraint of lead time. Once material gets received, the store authority checks the quantity and quality of material. Then he checks the bills and sends the bill to company's finance officer. This procurement activities follow a particular sequence; the flow is as shown in Fig 1.

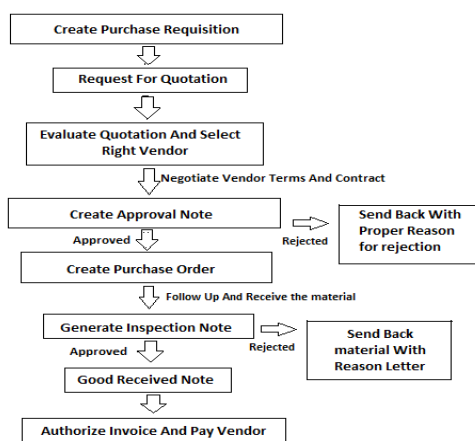


Figure 1: Model Procurement Flowchart

For making these steps simpler and noting certain data involved in each step, we need documents. Document is basically a written or printed data that provides information or evidence or that serves as an official record. Procurement process involves a lot of documents. Purchase requisition (PR), request for quotation (RFQ), purchase order (PO), invoice, good received note (GRN) is few of them. There is a lot to know about documentation. And a lot of simplification and advancements have been done in same.

In the 21st century, it vastly depends on Company Resource Planning software products (ERP) for documentation. ERP refers to software products used to manage daily industrial activities such as procurement, risk and project management, compliance and supply chain operations. Few other emerging technologies like blockchain and big data analysis may reshape the procurement process and support company efficiency, effectiveness and profitability. These technologies are worthy because of the possible effect on procurement function.

II. MAJOR PROCUREMENT DOCUMENT

Purchase Requisition: Purchase requisition is a formal document used when end user needs to register a purchase requirement. End user is basically an employee who is having a genuine need for some material, machinery or any other service.

COMPANY Logo		OUR COMPANY NAME					
PURCHASE REQUISITION							
Department :				PRS NO.			
cost centre :				Date :			
Item code	Material description	Quantity	Unit	Unit price	Total cost	Date of Requirement	Remark
	BOX TYPE 1	5	NOS.			Immediate	
	BOX TYPE 2	2	NOS.				
Total PR Value							
Indentor Sign							
Plant Head Sign				BU head Sign			
Plant Head Remark							
Approximate Value(PR)				BU Head Remark			
P.O. No.				Date.	DD/MM/YYYY		

Figure 2: Purchase Requisition Format

Purchase requisition tells the purchase officer to start respected process as well as this document also send to finance department to coordinate reporting procedure with accounting department to maintain record [1]. If company gives authority to all departmental managers to place orders directly with vendors, it's all too common for fraud to occur. To overcome this, the company appoints purchase department, team for placing order on time on behalf of company, and most important part of purchase requisition is purchase department team follows the workflow. This document helps companies to reduce risk of fraud.

Material requirement is noted by the store department and then the store manager creates this document and sends its copy to the purchase officer. Purchase officer makes purchase based on purchase form requisition. If any issue occurs, the document will act as evidence when it comes to questioning in communication. There is certain format of creating

PR, which creates an ease while conveying the particular request, as shown in Fig 2.

Request for Information (RFI)

RFI is a formal document which asks information about certain product, process, task, etc.

During a purchase when the purchase officer is not familiar or has lesser knowledge regarding any purchase item, he can ask Information about it by releasing the RFI. RFI is a letter type document. Vendors will submit information in response. In modern days emailing RFI has made it simpler to obtain specific information.

Request for Quotation (RFQ)

RFQ is a formal document which is used to specify clear requirements of certain purchases and asking for a quotation. After releasing PR, vendors are identified. Vendors having required production capacity, good past performance are selected and RFQs are sent to them. Usually at least three vendors are considered while asking for quotation. Before including new vendors in the RFQ list, proper vendor pre-assessment is done. Then vendors will submit price quotations and other terms in response to RFQs. Other terms include, material description, lead time, taxes, delivery terms, payment terms and conditions of quotation.

Quotation

A quotation is a formal document that a seller provides to offer goods or services at a quoted price, under specified conditions. Fig 3 represents a general format of Quotation received by the purchasing Officer.

COMPANY 1 (Services Provided By Company) COMPANY 1 Address								
Contact No.				Email Address.				
GSTIN:			PAN No.			State Code:		
Quotation								
M/S: Our Company name (Buying Company) Company Address				Quotation No.				
				Date :				
				Ref. No. :				
				Date :				
GST No. :				State Code :				
Kind Attn : Mr/Mrs. Purchase Officer (Buying Company) We acknowledge with thanks the receipt of your above enquiry and have great pleasure in submitting our lowest quotation, subject to the conditions printed below.								
SR. No.	Description	HSN	Tax%	Quantity	Unit	Rate	Dis%	Amount
1	Type 1 BOX			5	NOS.	20		100
2	Type 2 BOX			2	NOS.	50		100
Total:								₹ 200.00
GST :								
Rounding Off :								
Amounts in Words :								Grand Total :
Terms & Conditions :								
Bank Details :				We Thank you for your enquiry.				
Account name :								
Bank :								
A/C no.								
IFSC Code:				Authorised Signatory				

Figure 3: Quotation Format

When different vendors receive RFQ, they approach the buyer with the quotation. The quotation should meet all the requirements, if not it should be mentioned in the note. Apart from pricing factors, quotations should contain business and contact details, discount offered, expiry date for the quotation and mode of payment.

Approval Letter

A request letter for purchase approval is a formal document prepared to inform the purchase head and other relevant authorities, about the type and cost of material that need to be purchased. This letter can also serve as a comparing document and a formal record. This document is approved by the purchase head to give confirmation for further transaction. The purchase head is the leading person of the purchase team, responsible for ongoing management of Purchasing strategy and activity. Head also ensures optimal supplier performance and price.

Approval Note															
Date: DD.MM.YYYY															
From : Project Purchase															
Subject : Approval for BOX at A1 Plant.															
Sir,															
We Intent buying of BOX at A1. Details are as under.															
SR. NO.	DESCRIPTION	QTY	UNIT	COMPANY 1				COMPANY 2				COMPANY 3			
				Quoted Price	Quoted Value	Revise Price	Revise Value	Quoted Price	Quoted Value	Revise Price	Revise Value	Quoted Price	Quoted Value	Revise Price	Revise Value
1	TYPE 1	5	Nos	22	110	20	100	23	115	22	110	25	125	25	125
2	TYPE 2	2	Nos	55	110	30	100	60	120	60	120	70	140	65	130
	Installation Charges			NA				NA				NA			
	Freight & Insurance			Extra				Extra				Extra			
	P&F			Nil				Nil				Nil			
	Guarantee			1 Years				1 Years				1 Years			
	TOTAL			77.00	220.00	70.00	200.00	83.00	235.00	82.00	230.00	95.00	265.00	90.00	255.00
	GST			Extra 18%				Extra 18%				Extra 18%			
	PAYMENT TERMS			Respective terms				Respective terms				Respective terms			
	Delivery			1 weeks				2 to 3 Weeks				1 Weeks			
Material Required for A1 Plant															
PO to be released on : COMPANY 1															
Kindly accord your approval enabling us going ahead in purchasing															
PREPARED BY				Approved By				APPROVED BY							
PURCHASE OFFICER				PURCHASE HEAD				MANAGING DIRECTOR							
Selection of Vendor : Lowest cost & Past performance. (Usually mentioned when lowest bidder is not selected.)															

Figure 4: Approval Letter format

Approval letter simplifies, implementing a strategy of procurement to mitigate supply chain and deliver cost saving. Approval letter should consist of product description, application date, quoted price, negotiated price and other quoted offers, Fig 4.

Purchase Order

Purchase order is an official document issued by the purchase officer to a vendor which specifies the details regarding quantity and agreed price for product or service.

Purchase order allows both to have same records they can use to verify what was purchased, price for transaction, and date of creation of document. After approval, purchase officer sends a copy of PO to the vendor. After receiving PO vendor arranges the material to be delivered and sent it to the buyer company through some transport service. While this process is taking place from the vendor side, buyer purchase officer has to take follow-up about material arrangement, its dispatch schedule and its arrival schedule.



<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="border: 1px solid black; padding: 2px; text-align: center;">COMPANY Logo</div> <div> OUR COMPANY NAME Company Address Pincode, Telephone no. Company Mail Address </div> </div> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <tr> <td style="width: 50%; padding: 5px; vertical-align: top;"> Bill From : Vendor Code GSTIN/UID : COMPANY 1 Company Address Pincode, Telephone no. State : Country : Contact Person : Mr Rao Phone : PAN No : </td> <td style="width: 50%; padding: 5px; vertical-align: top;"> PO Number : PO Date : Your Ref. : Ref. Date : Payment term : Inco Terms : Our Reference : </td> </tr> <tr> <td style="width: 50%; padding: 5px; vertical-align: top;"> Transaction Type: Nature of Transaction : (Mention if it is a Registered Dealer) Nature of Supply: (Goods, Service, etc.) </td> <td style="width: 50%; padding: 5px; vertical-align: top;"> Deliver To : Vendor Code GSTIN/UID : OUR COMPANY Name Company Address Pincode, Telephone no. Company Mail Address Fax : Contact Person : PAN No : CIN No : </td> </tr> </table> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <thead> <tr> <th style="width: 5%;">Srno</th> <th style="width: 20%;">Material</th> <th style="width: 35%;">Description</th> <th style="width: 10%;">Order qty.</th> <th style="width: 10%;">Unit</th> <th style="width: 10%;">Price/unit</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>MATERIAL CODE</td> <td>TYPE 1</td> <td>5</td> <td>NOS.</td> <td>20</td> </tr> <tr> <td colspan="6"> Gross Price IN: State GST Delivery date : DD.MM.YYYY HSN/SAC Code : </td> </tr> <tr> <td>2</td> <td>MATERIAL CODE</td> <td>TYPE 2</td> <td>2</td> <td>NOS.</td> <td>50</td> </tr> <tr> <td colspan="6"> Gross Price IN: State GST Delivery date : DD.MM.YYYY HSN/SAC Code : </td> </tr> <tr> <td colspan="6"> Total Amount : IN NUMBERS </td> </tr> <tr> <td colspan="6"> (Total Amount INR IN WORDS) </td> </tr> </tbody> </table> <div style="display: flex; justify-content: space-between; margin-top: 10px;"> PO number: Page:1/2 </div>	Bill From : Vendor Code GSTIN/UID : COMPANY 1 Company Address Pincode, Telephone no. State : Country : Contact Person : Mr Rao Phone : PAN No :	PO Number : PO Date : Your Ref. : Ref. Date : Payment term : Inco Terms : Our Reference :	Transaction Type: Nature of Transaction : (Mention if it is a Registered Dealer) Nature of Supply: (Goods, Service, etc.)	Deliver To : Vendor Code GSTIN/UID : OUR COMPANY Name Company Address Pincode, Telephone no. Company Mail Address Fax : Contact Person : PAN No : CIN No :	Srno	Material	Description	Order qty.	Unit	Price/unit	1	MATERIAL CODE	TYPE 1	5	NOS.	20	Gross Price IN: State GST Delivery date : DD.MM.YYYY HSN/SAC Code :						2	MATERIAL CODE	TYPE 2	2	NOS.	50	Gross Price IN: State GST Delivery date : DD.MM.YYYY HSN/SAC Code :						Total Amount : IN NUMBERS						(Total Amount INR IN WORDS)						<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="border: 1px solid black; padding: 2px; text-align: center;">COMPANY Logo</div> <div> OUR COMPANY NAME Company Address Pincode, Telephone no. Company Mail Address </div> </div> <p>REMARKS : PO REQ AS PLANT. MATERIAL REQ FOR PROJECT NAME (MR. INDENTOR).</p> <hr/> <p>IND. DEPT. NO : INDENTOR : NAME (End user) COST CENTRE : SANCTION DATE :</p> <p>PR. NO. : XXXXXXXXXX CONTACT PERSON: PURCHASING OFFICER AT RESPECTIVE PLANT PR. DATE : CONTACT PHONE NO : PURCHASING OFFICER'S PH. NO. CONTACT EMAIL ID :</p> <div style="text-align: center; margin-top: 20px;"> FOR OUR COMPANY NAME GM-PURCHASE </div> <p>Note : Taxes as applicable at the time of despatch</p> <p>TERMS & CONDITIONS:</p> <div style="display: flex; justify-content: space-between; margin-top: 20px;"> PO number: Page:2/2 </div>
Bill From : Vendor Code GSTIN/UID : COMPANY 1 Company Address Pincode, Telephone no. State : Country : Contact Person : Mr Rao Phone : PAN No :	PO Number : PO Date : Your Ref. : Ref. Date : Payment term : Inco Terms : Our Reference :																																														
Transaction Type: Nature of Transaction : (Mention if it is a Registered Dealer) Nature of Supply: (Goods, Service, etc.)	Deliver To : Vendor Code GSTIN/UID : OUR COMPANY Name Company Address Pincode, Telephone no. Company Mail Address Fax : Contact Person : PAN No : CIN No :																																														
Srno	Material	Description	Order qty.	Unit	Price/unit																																										
1	MATERIAL CODE	TYPE 1	5	NOS.	20																																										
Gross Price IN: State GST Delivery date : DD.MM.YYYY HSN/SAC Code :																																															
2	MATERIAL CODE	TYPE 2	2	NOS.	50																																										
Gross Price IN: State GST Delivery date : DD.MM.YYYY HSN/SAC Code :																																															
Total Amount : IN NUMBERS																																															
(Total Amount INR IN WORDS)																																															

Figure 5: Purchase Order Format

Purchase order consists of PO number, which helps to track and communicate about the order. Apart from PO number, other clear terms mentioned in PO are quantity of items, detailed descriptions of the items, the price, date of purchase, and payment terms, Fig 5.

Invoice

An invoice is a formal document or a bill that records a transaction between a buyer company and a vendor. Invoice is helpful to itemize the record. Future processes, making changes and applying guarantee/warranty becomes simpler by using this record document. The invoice usually specifies the terms of the deal and provides information on the available methods of payment, if material was purchased on credit.

TAX INVOICE							
COMPANY 1 Company Address Pincode, Telephone no. Company Mail Address				Invoice No.		Dated	
				Delivery Note		Mode of Payment	
				Ref. No. & Date		Other References	
				Buyer's Order No.		Dated	
BUYER (bill to) OUR COMPANY NAME Company Address Pincode, Telephone no. Company Mail Address GSTIN: State Name:				Dispatched through		Destination	
				Vessel No.		Place Of Receipt by shipper	
				City of Landing		City of Discharge	
				Terms Of Delivery:			
Sr no.	Description of Goods	HSN	GST rate	Quantity	Rate	Unit	Amount
1	TYPE 1 BOX			5	20	NOS.	100
2	TYPE 2 BOX			2	50	NOS.	100
		Total :		7		NOS.	200+ taxes
Total in Words				Company Bank Details:			
Company PAN no. T&C				Bank Name:			
				A/C no.:			
				Branch & IFSC:			
Authorized Signature							

Figure 6: Invoice Format

An official invoice format contains invoice number, date of creation of invoice, name & address of buyer and seller companies, an itemized list and clear terms and conditions. Fig 6 is one such invoice received by store authority.

GRN (Good Received Note)

Goods Received Note acts as confirmation of goods received to process. Received materials from invoice are marked as received and GRN is created, Fig 7. If any issue occurs, the document will act as evidence when it comes to payment. At the end, payment is done by the finance department as per the mentioned payment term, which ends the particular procurement cycle.


		OUR COMPANY NAME Company Address Pincode, Telephone no. Company Mail Address							
Goods Received Note									
Transaction Type:				Printed By :			Date :		
Delivery Number :				Origin :					
Invoice Number :				WayBill :					
VOC Number :				Receive Date :					
Container Number :				Arrival Date :					
CA Number :				Time In :			Time Out :		
Broker:				Unloading Date :			Time out :		
Supplier Name : COMPANY 1									
Item Code	Item	Description	Receive Quantity	U O M	Qty Receive Pack	Weight per Pack	PR no.	PO no.	PO Approval Date
	BOX	TYPE 1			3 NOS.			XXXXXXXXXX	DD/MM/YYYY
	BOX	TYPE 2			2 NOS.				
Location:			SubLocation:		Prod Date :		Expiration :		Batch Code :
SUB TOTAL :					7 NOS.				

Figure 7: Good Received Note Format

Apart from these very basic documents involved in this procurement cycle, there are other documents such as bill of material, packing list, payment note, bill of entry, airway bill and bill of lading. These important documents are added as supporting records for the transaction, transport or entries.

III. EVOLVEMENT IN PROCUREMENT

There is a huge evolving rate of technological advancements disturbing production network and Procurement function. In a short time span, the industry has witnessed a succession of major technological shifts. Many of which were driven by the search for lower computing costs, data storage, better accuracy, delivery of reliable data and analysis of vendor performance, etc. As the needs of enterprises become more complex, new advancements in technologies have entered the procurement function. The industrial purchase processes have changed considerably and evolved during the last decade. With the evolution of information technologies, companies are being forced to innovate in order to avoid procurement risks and ensure efficiency. This implies that new emerging technologies have to be deployed to support and streamline the interactions between companies and their vendors. There are various new technologies in new world such as Big Data Analysis, Machine learning, Blockchain, Smart contracts and Artificial Intelligence having huge scope to restructure procurement function.

ERP Software

An enterprise resource planning software can create a huge ease in creating purchase documents when requests are received. ERP assists planning supply chain management by creating effective job scheduling. ERP ensures that production department is meeting the demand, material is renewed on schedule and inventory is lean.

ERP has made creation and saving of procurement documents significantly easier. Companies are making significant improvements in logistics performance for overall organizational growth. The key to maximize the operational efficiency is

in reducing costs spent on warehouses or distribution centres and by minimizing space wastage on store shelves. Use of ERP software has become an integral part of managing supply chain risk making the whole chain more adaptable to accommodate changes in market demand.

Cloud Storage

In standard procurement model, records of the transactions are done by storing invoices and approval notes. These documents occupy a lot of space in offices. Hence, servers are being used to store the softcopies of thousands of these documents. But in actual practice, every small-scale organization cannot set up servers for this. Also, maintenance cost of these servers is huge. So, rather than depending on the complex standard process that demands long set up time and huge initial investment, companies are shifting towards cloud-based procurement solutions.

Cloud based solutions are in some ways cost-effective, user-friendly and are easy to install. Extending storage is simpler in cloud based solutions. Cloud systems make it possible to access uploaded documents from all around the world. Also, cloud service providers offer better security to the storage place which is been purchased by the corporations. Apart from storing data collection and tabulation of useful data becomes simpler by using cloud services.

Big Data Analytics

Companies create massive amount of data which is often stored in data stores by department or function. This is termed as Big Data. Valuable data can be extracted to help optimize many aspects of a company, such as business processes, people development management, supply network optimization and capacity planning, etc. These powerful tools allow company to turn the unstructured data into an organizational 'gold mine' [3] of insightful information. The numerous advantages include improved operational planning and decision-making, increased accuracy in forecasting capabilities and decreased lead times in certain processes.

Blockchain

A blockchain is a decentralized, and distributed digital record that is used to create a trusted network for exchanging information across many connected computers. Blockchain is very well-known concept for its bitcoin use case. But not just bitcoin, many businesses are also implementing these methods to redirect the tradition way of all kinds of digital transactions [3]. The implementation of blockchain for procurement and supply chain will be highly substantial. Implementation of blockchain in supply chain will help in transparency in bidding process and to record every transaction. Fraud entries will be identified due to the absence of hash and possible fraud can be prevented. Blockchain system verifies when a condition is encountered and auto-executive the term. With the help of this we can track our goods at every stage of supply chain which in terms increases traceability. Multiple verifications build trust in records, which ensures that vendor and customers are on the same page.

Smart Contracts

"Smart Contracts" is one of the applications of Blockchain technology, introduced much before the actual application of this technology [4]. Smart contracts are an important component of a blockchain and the concept was first introduced by Nick Szabo, USA in 1994. Szabo defined smart contracts as "a computerized transaction protocol that executes the terms of a contract". Furthermore, he suggests that contractual terms like collateral, bonding and loan terms should be translated into software code and automated programs within a blockchain would execute a transaction when certain conditions are satisfied.

From the procurement perspective, smart contracts constitute of business logic that is related to any purchasing transactions. They include members' terms for the business that occurs within their network. They automate the transaction processes beyond the corporate technology boundaries of the company in a secure, trusted and decentralized manner.

IV. CONCLUSION

Procurement is basically a representation of steps of activities that constitute purchasing and supply management. Each step makes the procedure clear and easy to understand. For recording estimated prices, final prices, dates of transaction, quality and quantity of material, material description and much more useful data documentation is essential. There are basic model formats of each document, which creates a kind of compulsion for entering required inputs.

Newly emerging technologies, are helping us easily create, store, extract and recheck these documents whenever needed. Technologies like cloud storage and Company resource management software are actually useful in 21st century.



These technologies promise a huge growing pace but still they are in an immature stage. Huge infrastructure and high implementation costs are few other huddles before implementing these emerging technologies in practical use. These technologies will unite and automate the procurement activities allowing a significant level of transaction automation, efficiency, and effectiveness. Then again, the technical and economic feasibility of adopting new procurement-enabling technologies is still very challenging and there is yet some ambiguity on their prospects in the procurement use case. More research is needed to evaluate the cost-benefit analysis, the technical and economic feasibility of each technology in the procurement process as well as in other organizational functions. But still there is a hope to see these technologies building our future.

REFERENCES

- [1] Dani Hao, "What is a Purchase Requisition and Why It Is Important for Your Business?", by procurify, 2021
- [2] Jenny Bäckstrand, Robert Suurmond, Erik van Raaij, Clive Chen, "Purchasing process models: Inspiration for teaching purchasing and supplymanagement", Journal of Purchasing and Supply Management, vol. 25, No. 4-7, 2019.
- [3] Abderahman Rejeb, John G. Keogh and Edit Süle, "Exploring New Technologies in Procurement", in the International Journal, pp. 78-83, 2018.
- [4] Hackius, N., and M. Petersen, 2017, "Blockchain in Logistics and Supply Chain: Trick or Treat?", Digit. Supply Chain Manag. Logist. Proc. Hambg. Int. Conf. Logist., pp. 3-18, 2017.



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