

The Impact of Synchronizing Procurement and Supply Chain Management Through Block Chain Technology

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Abstract

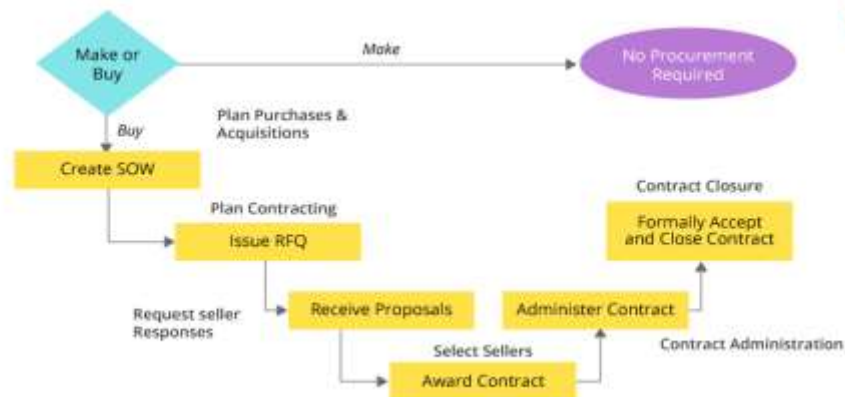
A blockchain in the supply chain can help participant's record price, date, location, quality, certification, and other relevant information to more effectively manage the supply chain. The availability of this information within blockchain can increase traceability of material supply chain, lower losses from counterfeit and gray market, improve visibility and compliance over outsourced contract manufacturing, and potentially enhance an organization's position as a leader in responsible manufacturing.

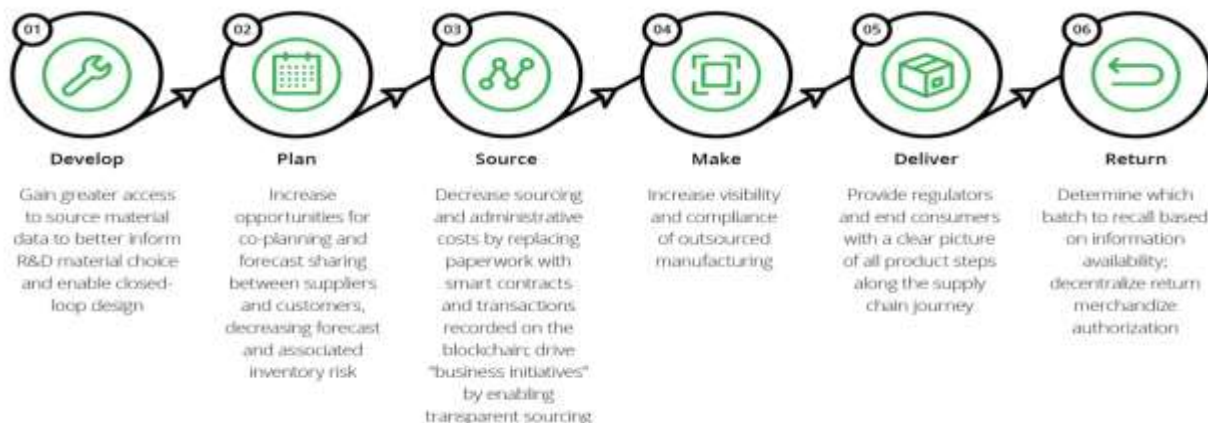
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1.0 INTRODUCTION

Procurement management is an extremely important function in an organization, be it for project purchasing needs or for their regular on-going purchasing needs. Procurement management involves purchasing goods, materials and services from an outside organization. Procurement management involves two entities, a purchaser and a seller. The purchaser or the buyer examines the needs for purchasing various items for the project or other work in the organization. Purchaser then looks for the right sellers or suppliers who are capable to fulfill the purchasing needs. Hence procurement management turns into a buyer-seller relationship. Since they are two different legal entities, they do not have direct control over each other. During procurement both the buyer and the seller have expectations from each other; they both will have responsibilities and obligations to fulfill. Hence in order to protect the rights of both the buyer as well as the seller, generally a legal contract or agreement is used. The legal agreement will lay down a framework defining the requirements of the buyer, responsibilities of both buyer and seller and the various terms and conditions.

Since two different legal entities come together in case of procurement, and there is a legal contract binding both sides, there is a legal side to this whole process. Hence procurement management needs to be carried out diligently. Generally, a very well-defined set of processes are used for procurement management. Below is a life cycle explaining the flow of activities that happens during procurement. It is all explained from the viewpoint of the purchaser or buyer.





1.1 Driving value in the supply chain

All the above activities are carried out through three processes of procurement management as below:

Plan procurement management – The procurement function starts with an activity called “make or buy analysis”, where in the buyer deliberates with their team whether there will be a need to buy certain things for the project or the entire work can be done by them. If the need to buy or procure is established, then the team starts planning for procurement. Planning for procurement is the most important step. Here the team will prepare a detailed statement of work, source selection criteria, important terms and conditions etc. so that all these information can be shared with prospective suppliers for the suppliers to be able to prepare and submit a proposal or quotation. During this process, all the requirements and expectations are documented in a formal bid document. The bid documents are generally referred as “Request for Proposal RFP”, “Request for Quotation RFQ”, “Request for Information RFI” depending upon the scenario.

Conduct procurement – Once the project team is ready with the above-mentioned bid documents (RFP or RFQ or RFI), the interested bidders or sellers are invited either through personal invitation or through some kind of advertisement. The interested bidders then prepare a proposal-cum-quotation and submit. Generally during this process and open conference known as “bidder’s conference” may be organized by the purchaser to clarify any queries the bidders might have raised. Once the proposals are received, they are duly evaluated using well-laid out source selection criteria. Then finally the shortlisted bidders are invited for final negotiation. The selected seller is then awarded a contract. At this stage, the most capable seller is selected and agreement is signed, so that the selected seller can now start working on behalf of the service requestor.

Control procurement – Once the selected seller(s) start working as per the contract, the buyer has to monitor the work of the seller as per contractual terms. Both buyer and seller to ensure that the other party is fulfilling the obligations and responsibilities as per the contract. While the buyer monitors the work of the seller regularly, the seller also ensures that payment is released as per agreed terms. This process also involves inspection of seller’s work. During this process, if any claims or disputes arise, they are settled quickly as per the already laid out “Claim Administration Process” in the contract.

When the seller completes all the work as per the contract, the buyer evaluates, gives acceptance and also completes all payments to close the contact. Finally, an audit may be conducted to understand the lessons learnt during this particular procurement relationship. Procurement management will involve a lot of administrative work such as looking for capable sellers, floating the bid documents, soliciting responses and proposals, evaluating the proposals etc. Generally, a procurement department exists in most of the organization which can assist in carrying out all these activities saving the project managers and other managers effort so that they can focus on their core project work. The procurement department will also take care of drafting and signing of contracts taking necessary legal help.

2.0 CHALLENGES IN THE SUPPLY CHAIN AND LOGISTICS INDUSTRY

If we go a hundred years back, the supply chain did not seem complicated because the commerce used to take place at a small scale and was therefore simple. Now, businesses have widened globally,

making the supply chain management complex. It is not possible for the consumers to know the actual worth of the product due to the lack of transparency in the ecosystem. Have you ever imagined where did the food you eat originate from? Let's consider the case of the food supply chain. The supply chain in the food industry is defined by connecting: Crop Origination, Food Processing at Refineries, Distribution of processed food to retailers, and Selling of Food Items to Consumers. Because the food supply chain comprises of millions of people worldwide along with tons of food crops and raw materials, it becomes difficult for both food manufacturers and consumers to know where the different components of the food item belong to. The issues persist in the supply chain because of the following reasons:

Lack of Traceability: Traceability represents an exact picture of where the products are within the circulating supply chain at a specific time. Currently, every member within the supply chain network manages their own system and databases, making it complicated to do predictive monitoring and analyze where the product was at a particular time.

Documentation and Regulatory Compliance: The supply chain's contracts can be quite complex due to the involvement of paper-based trails for the change of ownership, letters of credit, bills of lading, pro-for-mas and complicated payment terms. Maintaining the records on the paper are cumbersome as it becomes challenging to find the old records.

Counterfeits: Due to the lack of transparency, various counterfeit cases in the supply chain process are reported every year. According to the organization for Economic Cooperation and Development, pirated and counterfeit imports cost around half trillion dollars per year in the global economy. The counterfeited products not only affect the economy, but it could affect lives as well. Due to the lack of available information about the origination and all stages of the project, products hardly meet the quality standards.

High Costs: Presently, supply chain management involves multiple intermediaries such as lawyers and regulators; it adds extra high costs to the ecosystem. Supply chain process requires middlemen to bring trust to the system.

2.2 How does Blockchain affect Supply Chain?

Before we make you understand how block chain is used in logistics, let's first discuss what blockchain is. Remember that the block chain's use is not restricted to a crypto currency like Bit coin. In reality, the blockchain is a distributed digital ledger that keeps the log of all transactions occurring on the network in a transparent, yet secure way. It can be used for many applications that include the exchange of information, tracking, contracts/agreements, and payment. Each transaction on the block and multiple copies of the ledger are distributed over nodes in the network, maintaining transparency. Since each block is linked to a block before and after it, the blockchain offers high security. Changing one block would lead to the change in all blocks on the network, making it difficult for hackers to corrupt the blockchain ledger.

Therefore, blockchain can enhance the efficiency and transparency of supply chains and impact everything from the warehouse to delivery and payment. Every time a product changes hands within the supply chain, the transaction corresponding to it can be documented with timestamps, thereby maintaining a complete history of the product from manufacturing to sale. As a result, time delays, human errors and added costs could be reduced that affect the supply chains today. Here's how blockchain can have an impact on the supply chain process:

- Recording the quantity and transfer of products as they change hands between supply chain nodes.
- Tracking change orders, buy orders, shipment notifications, trade documents and receipts from the blockchain ledger.
- Linking physical products to bar codes, RFID or serial numbers and storing them on the blockchain.
- Sharing information about processing or manufacturing process, delivery, assembly and maintenance of products with vendors and suppliers transparently on the blockchain.

By implementing blockchain in the supply chain, you will be able to know who you are dealing with, where the product has been sourced from, who processed or manufactured it and if the payment is fair or not.

2.3 Benefits offered by the implementation of Blockchain in Supply Chain

Provenance Tracking: Many multinational companies and big organizations do not even have back stories of their products in the supply chain because of no traceability. It may result in high costs and customer relation issues, affecting the brand's reputation. Using a blockchain supply chain solution, data sharing, provenance tracking and record keeping become more effective and simpler. Since the transactions saved on the blockchain ledger can neither be removed nor altered, both consumers and stakeholders can trace the history of any product from its origination through the last mile.

Cost Reduction: As blockchain allows real-time tracking of a product within the supply chain without the involvement of intermediaries, the cost of moving items can be reduced. Removing middlemen from the process prevent extra costs, counterfeits or frauds and reduce the chances of product delicacy. Instead of depending on financial intermediaries like banks, payments can be processed directly between the parties of the supply chain with crypto payments.

Increased transparency: Block chain's immutable ledger prevents information tampering and allows suppliers and retailers to view the point of origin for each order. Enhanced visibility also implies that manufacturers can verify the inventory to combat counterfeit trade.

Trust Building: Parties involved in the supply chain need to trust each other to maintain the credibility and authenticity of a product. Blockchain-based supply chain solution brings trust in the system with time stamped records saved at all times, enabling each stakeholder to access any previous or current record.

2.4 How Does Procurement Management Works?

Following are the four main working areas of concerns when it comes to procurement management. The following points should be considered whenever procurement process is involved: Not all goods and services that a business requires need to be purchased from outside. It is for this reason that it is very essential to weigh the pros and cons of purchasing or renting these goods and services from outside.

You would need to ask yourself whether it would in the long run be cost-effective and whether it is absolutely necessary. You would need to have a good idea of what you exactly require and then go on to consider various options and alternatives. Although there may be several suppliers, who provide the same goods and services, careful research would show you whom of these suppliers will give you the best deal for your organization. You can definitely call for some kind of bidding for your requirement by these vendors and use a selection criterion to select the best provider.

The next step typically would be to call for bids. During this stage, the different suppliers will provide you with quotes. This stage is similar to that of choosing projects, as you would need to consider different criteria, apart from just the cost, to finally decide on which supplier you would want to go with. After the evaluation process, you would be able to select the best supplier. You would then need to move on to the step of discussing what should go into the contract. Remember to mention all financing terms how you wish to make the payments, and so on, so as to prevent any confusion arising later on, as this contract will be binding.

Always remember that it is of utmost importance to maintain a good relationship with the supplier. This includes coming up with an agreement that both would find satisfactory. This helps the sustainability of your business as well as the supplier's business. These four simple steps would help you acquire your goods easily and quickly without much hassle, but always requires careful consideration at each stage.

2.5 Making the Process Work Efficiently

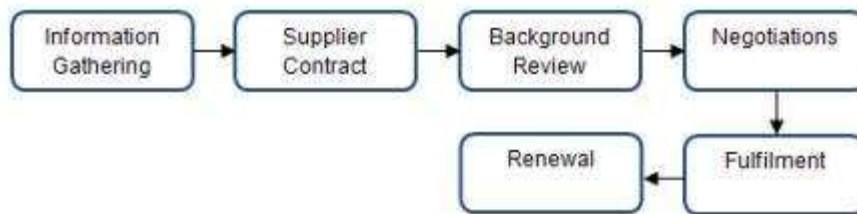
In order to ensure that everything goes well through to the end, you would have to keep track of the progress of the procurement using Block Chain Technology. This would mean that you should keep checking on the suppliers in order to ensure that they are abiding by the terms of the contract and will be able to supply you with the goods and services by the deadline. Should there be any discrepancies or any issues, you should always let the supplier know by means of the method of communication decided on at the time of making the contract.

The organization must always be willing and open to change. This is in respect of all changes required in order to ensure the efficiency of the process. These changes could be in the form of technological

advancements and even changes to the workforce, among other changes. In terms of technology, any new equipment and machinery required to handle these goods may need to be purchased. Similarly, with regard to the workforce, you would need to employ workers, who are highly skilled and trained when it comes to dealing directly with suppliers. It is always best for an organization to have different teams within who are specialized in different fields. This would make procurement management even easier. Each team could then deal with the relevant areas of buying and will also have the expertise required.

3.0 PROCUREMENT DOCUMENTS

In order to understand procurement documents, it is important to understand the term *Procurement Management*. Procurement is the purchase of goods and services at the best possible price to meet a purchaser's demand in terms of quantity, quality, dimensions and site. The procurement cycle in businesses work, which follows the below steps:



- Information Gathering - A potential customer first researches suppliers, who satisfy requirements for the product needed.
- Supplier Contract - When a prospective supplier has been identified, the customer requests for quotations, proposals, information and tender. This may be done through advertisements or through direct contact with the supplier.
- Background Review - The customer now examines references for the goods/services concerned and may also consider samples of the goods/services or undertake trials.
- Negotiation - Next the negotiations regarding price, availability and customization options are undertaken. The contract regarding the purchase of the goods or services is completed.
- Fulfillment - Based on the contract signed, the purchased goods or services are shipped and delivered. Payment is also completed at this stage. Additional training or installation of the product may also be provided.
- Renewal - Once the goods or services are consumed or disposed of and the contract has expired, the product or service needs to be re-ordered. The customer now decides whether to continue with the same supplier or look for a new one.

Documents involved in the procurement cycle are called *procurement documents*. Procurement documents are an integral part of the early stages of project initiation. The purpose of procurement documents serves an important aspect of the organizational element in the project process. It refers to the input and output mechanisms and tools that are put in place during the process of bidding and submitting project proposals and the facets of work that make up a project. In a nutshell, procurement documents are the *contractual relationship between the customer and the supplier of goods or services*.

3.1 Examples of Procurement Documents

Some examples of what constitutes procurement documents include the *buyer's commencement to bid* and the summons by the financially responsible party for concessions. In addition, *requests for information between two parties and requests for quotations, and proposals and seller's response are*

also parts of procurement documents. Basically, procurement documents comprise of all documents that serve as invitations to tender, solicit tender offers and establish the terms and conditions of a contract.

3.2 Types of Procurement Documents

A few types of procurement documents are:

- RFP - A *request for proposal* is an early stage in a procurement process issuing an invitation for suppliers, often through a bidding process, to submit a proposal on a specific commodity or service.
- RFI - A *request for information* (RFI) is a proposal requested from a potential seller or a service provider to determine what products and services are potentially available in the marketplace to meet a buyer's needs and to know the capability of a seller in terms of offerings and strengths of the seller.
- RFQ - A *request for quotation* (RFQ) is used when discussions with bidders are not required (mainly when the specifications of a product or service are already known) and when price is the main or only factor in selecting the successful bidder.
- Solicitations: These are invitations of bids, requests for quotations and proposals. These may serve as a binding contract.
- Offers - This type of procurement documents are bids, proposals and quotes made by potential suppliers to prospective clients.
- Contracts - Contracts refer to the final signed agreements between clients and suppliers.
- Amendments/Modifications - This refers to any changes in solicitations, offers and contracts. Amendments/Modifications have to be in the form of a written document.

3.3 Structure of a Procurement Document

Most procurement documents adopt a set structure. This is because it simplifies the documentation process and also allows it to be computerized. Computerization allows for efficiency and effectiveness in the procurement process. In general, procurement documents have the following attributes:

- Requires potential bidders to submit all particulars for the employer to evaluate the bidder.
- All submissions to be set out in a clear and honest manner to ensure that the short-list criterion is unambiguous.
- Clear definition of the responsibilities, rights and commitments of both parties in the contract.
- Clear definition of the nature and quality of the goods or services to be provided.
- Provisions without any prejudice to the interests of either party.
- Clear and easy to understand language.

3.4 Commonly Encountered Procurement Documents

- Engineering and Construction Work
 - *Minor/Low Risk Contracts:* In this type of contract, services are required by an organization for a short period and the work is usually repetitive. Hence, this type of contract does not require high-end management techniques.

- *Major/High Risk Contracts:* Here, the type of work required is of a more difficult nature and here the implication of sophisticated management techniques is required.
- **Services**
 - *Professional* - This requires more knowledge-based expertise and this requires managers, who are willing to put more time and effort into seeking research in order to satisfy the customer's criteria.
 - *Facilities* - More often than not, in this type of service the work outsourced is the maintenance or operation of an existing structure or system.
- **Supplies**
 - *Local/Simple Purchases* - Goods are more readily available and hence does not require management of the buying and delivery process.
 - *International/Complex Purchases:* In this case, goods need to be bought from other countries. A manager's task is more cumbersome and a management process is required to purchase and delivery. In addition, the manager needs to look into cross-border formalities.

4.0 SUPPLY CHAIN MANAGEMENT

In an organization, if a product is manufactured using raw materials from various suppliers and if these products are sold to customers, a supply chain is created. Depending on the size of the organization and the number of products that are manufactured, a supply chain may be complex or simple. Supply Chain Management refers to the management of an interconnected network of businesses involved in the ultimate delivery of goods and services to customers. It entails the storage and transport of raw materials, the process of inventory and the storage and transportation of the final goods from the point of manufacture to the point of consumption.

4.1 Links in the Supply Chain

Customer - The start of the supply chain is the customer. The customer decides to purchase a product and in turn contacts the sales department of a company. A sales order is completed with the date of delivery and the quantity of the product requested. It may also include a segment for the production facility depending on whether the product is available in stock or not.

Planning - Once the customer has made his/her sales order, the planning department will create a production plan to produce the product adhering to the needs of the customer. At this stage, the planning department will be aware of raw materials needed.

Purchasing - If raw materials are required, the purchasing department will be notified and they in turn send purchasing orders to the suppliers asking for the deliverance of a specific quantity of raw materials on the required date.

Inventory - Once the raw materials have been delivered, they are checked for quality and accuracy and then stored in a warehouse till they are required by the production department.

Production - Raw materials are moved to the production site, according to the specifics laid out in the production plan. The products required by the customer are now manufactured using the raw materials supplied by the suppliers. The completed products are then tested and moved back to the warehouse depending on the date of delivery required by the customer.

Transportation - When the finished product is moved into storage, the shipping department or the transportation department determines when the product leaves the warehouse to reach the customer on time.

4.2 Levels of Activities in the Supply Chain

In order to make sure that the above supply chain is running smoothly and also to ensure maximum customer satisfaction at the lowest possible cost, organizations adopt supply chain management processes and various technologies to assist in these processes. There are three levels of

activities Supply Chain Management in that different departments of an organization focus on to achieve the smooth running of the supply chain. They are:

Strategic - At this level, senior management is involved in the supply chain process and makes decisions that concern the entire organization. Decisions made at this level include the size and site of the production area, the collaborations with suppliers, and the type of product that is going to be manufactured and so forth.

Tactical - Tactical level of activity focuses on achieving lowest costs for running the supply chain. Some of the ways this is done is by creating a purchasing plan with a preferred suppliers and working with transportation companies for cost effective transport.

Operational - At the operational level, activity decisions are made on a day-to-day basis and these decisions affect how the product shifts along the supply chain. Some of the decisions taken at this level include taking customer orders and the movement of goods from the warehouse to the point of consumption.

4.3 Technology and Supply Chain Management

In order to maximize benefits from the supply chain management process, organizations need to invest in technology. For the optimal working of the supply chain management process, organizations mainly invest in Enterprise Resource Planning suites. Also, the advancement of Internet technologies allows organizations to adopt Web-based software and Internet communications.

4.4 Theories of Supply Chain Management

A number of experts in the field of supply chain management have tried to provide theoretical foundations for some areas of supply chain management by adopting organizational theory. *Some of these theories are:*

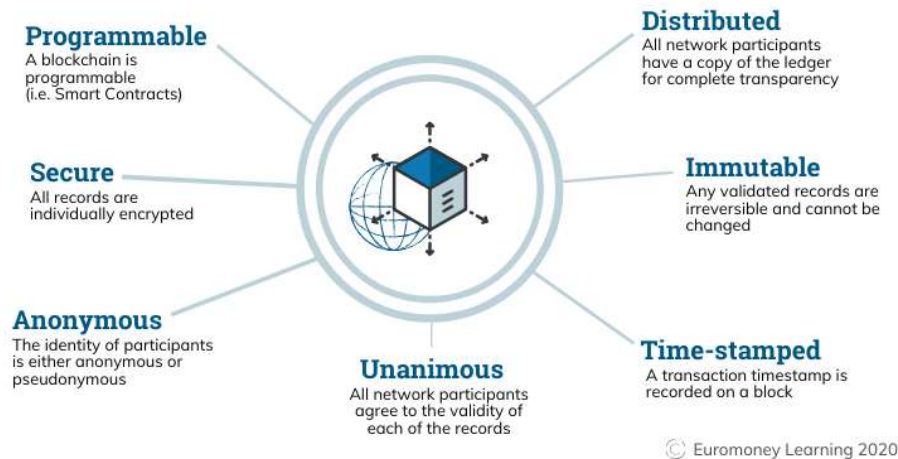
- Resource-Based View (RBV)
- Transaction Cost Analysis (TCA)
- Knowledge-Based View (KBV)
- Strategic Choice Theory (SCT)
- Agency Theory (AT)
- Institutional theory (InT)
- Systems Theory (ST)
- Network Perspective (NP)



5.0 BLOCK CHAIN TECHNOLOGY

Block chain is a system of recording information in a way that makes it difficult or impossible to change, hack, or cheat the system. A block chain is essentially a digital ledger of transactions that is duplicated and distributed across the entire network of computer systems on the block chain. Each block in the chain contains a number of transactions, and every time a new transaction occurs on the block chain, a record of that transaction is added to every participant's ledger. The decentralized database managed by multiple participants is known as *Distributed Ledger Technology* (DLT). Block chain is a type of DLT in which transactions are recorded with an immutable cryptographic signature called a hash.

The Properties of Distributed Ledger Technology (DLT)



This means if one block in one chain was changed, it would be immediately apparent it had been tampered with. If hackers wanted to corrupt a Blockchains system, they would have to change every block in the chain, across all of the distributed versions of the chain. Blockchains such as *Bit coin* and *Ethereal* are constantly and continually growing as blocks are being added to the chain, which significantly adds to the security of the ledger. Blockchains seems complicated, and it definitely can be, but its core concept is really quite simple. A Blockchains is a type of database. To be able to understand block chain, it helps to first understand what a database actually is.

A database is a collection of information that is stored electronically on a computer system. Information, or data, in databases is typically structured in table format to allow for easier searching and filtering for specific information. What is the difference between someone using a spreadsheet to store information rather than a database? Spreadsheets are designed for one person, or a small group of people, to store and access limited amounts of information. In contrast, a database is designed to house significantly larger amounts of information that can be accessed, filtered, and manipulated quickly and easily by any number of users at once.

Large databases achieve this by housing data on servers that are made of powerful computers. These servers can sometimes be built using hundreds or thousands of computers in order to have the computational power and storage capacity necessary for many users to access the database simultaneously. While a spreadsheet or database may be accessible to any number of people, it is often owned by a business and managed by an appointed individual that has complete control over how it works and the data within it.

5.1 Advantages of Block chain

Accuracy of the Chain : Transactions on the block chain network are approved by a network of thousands of computers. This removes almost all human involvement in the verification process, resulting in less human error and an accurate record of information. Even if a computer on the network were to make a computational mistake, the error would only be made to one copy of the block chain. In order for that error to spread to the rest of the block chain, it would need to be made by at least 51% of the network's computers—a near impossibility for a large and growing network the size of Bit coin's.

Cost Reductions: Typically, consumers pay a bank to verify a transaction, a notary to sign a document, or a minister to perform a marriage. Block chains eliminates the need for third-party verification and, with it, their associated costs. Business owners incur a small fee whenever they accept payments using credit cards, for example, because banks and payment processing companies have to

process those transactions. Bit coin, on the other hand, does not have a central authority and has limited transaction fees.

Decentralization: Block chains does not store any of its information in a central location. Instead, the block chain is copied and spread across a network of computers. Whenever a new block is added to the block chain, every computer on the network updates its block chain to reflect the change. By spreading that information across a network, rather than storing it in one central database, block chain becomes more difficult to tamper with. If a copy of the block chain fell into the hands of a hacker, only a single copy of the information, rather than the entire network, would be compromised.

Efficient Transactions: Transactions placed through a central authority can take up to a few days to settle. If you attempt to deposit a check on Friday evening, for example, you may not actually see funds in your account until Monday morning. Whereas financial institutions operate during business hours, five days a week, block chain is working 24 hours a day, seven days a week, and 365 days a year. Transactions can be completed in as little as ten minutes and can be considered secure after just a few hours. This is particularly useful for cross-border trades, which usually take much longer because of time-zone issues and the fact that all parties must confirm payment processing.

Private Transactions: Many block chain networks operate as public databases, meaning that anyone with an internet connection can view a list of the network's transaction history. Although users can access details about transactions, they cannot access identifying information about the users making those transactions. It is a common misperception that block chain networks like bit coin are anonymous, when in fact they are only confidential. That is, when a user makes public transactions, their unique code called a public key, is recorded on the block chain, rather than their personal information. If a person has made a Bit coin purchase on an exchange that requires identification, then the person's identity is still linked to their blockchain address, but a transaction, even when tied to a person's name, does not reveal any personal information.

Secure Transactions: Once a transaction is recorded, its authenticity must be verified by the block chain network. Thousands of computers on the block chain rush to confirm that the details of the purchase are correct. After a computer has validated the transaction, it is added to the block chain block. Each block on the block chain contains its own unique hash, along with the unique hash of the block before it. When the information on a block is edited in any way, that block's hash code changes—however, the hash code on the block after it would not. This discrepancy makes it extremely difficult for information on the block chain to be changed without notice.

Transparency: Most Block chains are entirely open-source software. This means that anyone and everyone can view its code. This gives auditors the ability to review crypto currencies like Bit coin for security. This also means that there is no real authority on who controls Bit coin's code or how it is edited. Because of this, anyone can suggest changes or upgrades to the system. If a majority of the network users agree that the new version of the code with the upgrade is sound and worthwhile then Bit coin can be updated.

CONCLUSION

Procurement management is a very important function. Every project will require some amount of purchasing. In some cases, just purchasing some materials or goods and in some cases outsourcing the entire project work to a third-party service provider. Procurement management involves contract management as well. Hence procurement management must be carried out very diligently. Procurement management is known to help an organization to save much of the money spent when purchasing goods and services from outside. It also has several other advantages. What is Procurement? Procurement is the process of acquiring goods and services by purchasing, renting, or leasing. The procurement process includes preparing specifications and solicitations. The procurement process also includes evaluating bids and proposals, awarding contracts, and contract administration. Solicitations a document that describes what you need and gives vendors instructions for responding. The State spends a significant amount of money through the procurement process. So, it is important for employees who purchase for state agencies and institutions to know and comply with the procurement laws, rules, policies and procedures.

It should be kept in mind, however, that this procurement management system must run efficiently and smoothly for all benefits to be reaped. The key to this would therefore be an efficient system as well as the right supplier and resources. For the purpose of procurement management, there should be a team of highly trained individuals, if procurement management plays a key role. As an example, a hospital should have a dedicated procurement team and should employ strong procurement management techniques and tools.

In most organizations, the procurement department is one of the busiest. Managers need to purchase goods or services required for the smooth running of their organization. For example, in a hospital, a procurement manager needs to purchase medicines and surgical instruments among others. These goods and services need to be purchased at the lowest possible cost without any deficit in quality. The documentation that passes between the procurement manager of an organization and a supplier are the *procurement documents*.

Supply Chain Management is a branch of management that involves suppliers, manufacturers, logistic providers, and most importantly, the customers. The supply chain management process works through the implication of a strategic plan that ensures the desired end product leaving a customer with maximum satisfaction levels at the lowest possible cost. The activities or the functions involved in this type of management process are divided into three levels: the strategic level, the tactical level and the operational level.

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