

Management Information System
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Week – 03
ERP
Lecture – 12
Business Benefits of ERP

Hello everybody. So, we will continue in our discussion with Business Benefits of ERP or SAP rather. As I have been talking about these benefits for some time because as I was telling you that this is a very important thing about SAP or ERP because it is expensive.

It is also expensive and difficult to implement SAP and not very easy. So, focusing on benefits is very important. You need to understand why taking so much of effort and so much of money can be justified.

You have to justify as a IT manager and future manager of MIS for example, you need to be convinced about the benefits before going for such a complex and important thing.

Firstly, it is very important, useful and very essential. It is absolutely essential, but then you need to take guard and you need to understand what are the risks which we will discuss subsequently and what are the dangers, what are the pitfalls, but first you should know what are the various benefits of SAP.

So, go step by step when you are talking to your internal customers, like your other functional counterparts like production manager, the finance manager the person who you really want to convince or your materials manager etcetera.

When you can explain to them properly the benefits and why it is very important that we must have it and that the benefit is just not the IT departments benefit. The main thing is that it is a business program and not an IT program and IT has nothing to do with it. It is entirely a business thing and that it should be led by business people and also all the requirements should come from the business side.

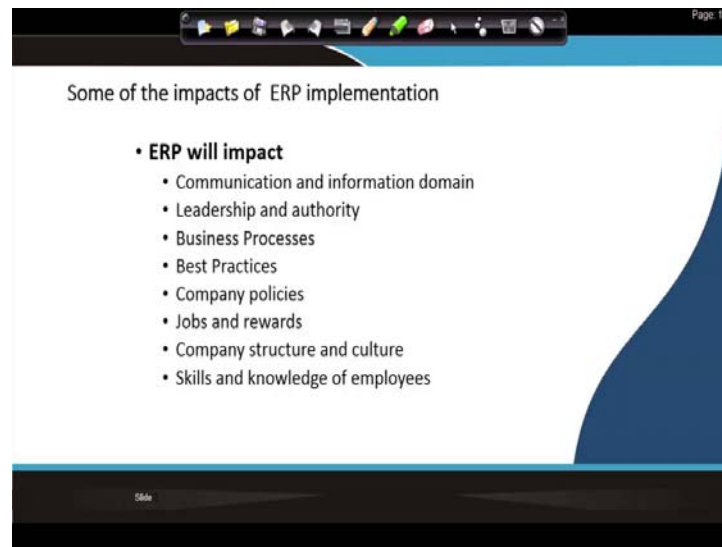
They (business) will design, they will plan, they will implement. In fact, most of the people the functional resources which will come from the consultant side and from your

industry will not be computer people, or programmers. They will be all functional experts, business process experts having process knowledge.

They know the process knowledge and in the team there will be finance guys, there will be materials management guys, there will be supply chain guys, the procurement guys the production planning guys, the sales and marketing guys, but they are not technical programmers. They are not Java programmer or Microsoft Dot-net programmers or ASP SQL programmers etcetera.

We will need programmers, when we do the customization and making of reports etcetera plus we need some system administrators which is known as Basis skill in SAP terminology. The system administrators implement the software in the server and they maintain the server taking backup etcetera and sending the transport or change request etcetera.

Lot of IT work goes in; obviously, you have a complex software running on multiple servers and nowadays it's all running on Cloud environment. So, plenty of IT inputs are required in terms of system management, system administration and of course, coding because you have to do some modifications and develop some reports. But more than 80 percent of the effort of the work is non – IT. It is functional effort from the business team. You can imagine the significance why I am saying repeatedly that it is a business, thing and always think about ERP from the business angle and not from the IT angle. If you think from the IT angle you will have a very different perspective and not the right perspective. So, if you want to get the real right perspective of a ERP system or ERP software, think from the business perspective. Think about that 80 percent effort thing which I was referring to.



Some of the impacts of ERP implementation. - ERP will impact communication and information domain, leadership and authority, business processes, best practices, company policies, jobs and rewards, company structure and culture, skills and knowledge of employees.

So, you see as so, many areas it will impact it starts from communication in an information domain because that is the basis we are talking about information sharing and communication, leadership and authority. Even leadership and authority gets impacted because now things in the organization become more transparent.

So, you do not have to you now depend on somebody like the CFO will give me the communication and will come to know only then, I because it is all available online on a real time basis. So, I have information on a real time basis.

It is how the leadership style will change the authority and how business information flows. Things will change because there is lot of change in roles and responsibilities which happens after ERP are used in the organization.

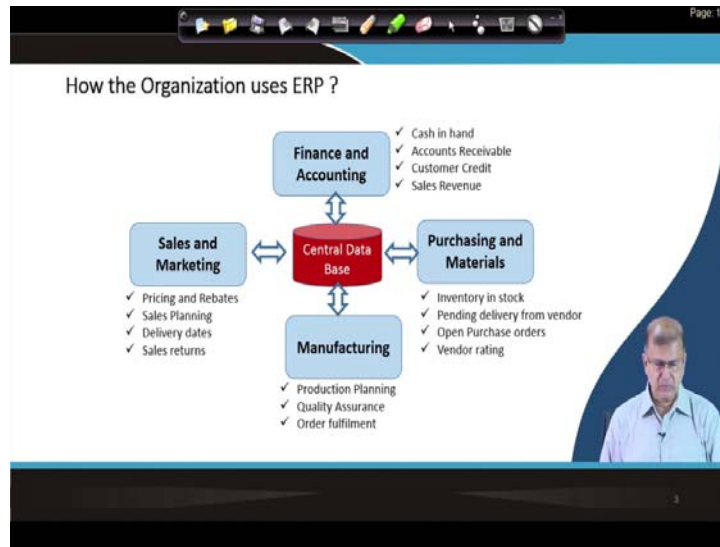
Business process - We have talked a lot on best practices and also we have discussed about Company Policies. Jobs and rewards for example, will change because your roles will change and your skill sets will change. Jobs and rewards also need to change because the way a person was doing work previously before ERP and the way he will be doing after ERP implementation, will be it in a different way because the processes have changed and he will be working fully on IT system. He will be working on things which

are all real time and online etcetera which requires a change in the skill set of all employees.

His job responsibilities they and so, he has to retrained and reskilled and when you retrain and reskill a person of course, his job definition will change and his rewards etcetera will also need to change. So, lot of HR activities changes.

Company Structure and Culture gets impacted very much because now things are very transparent, online and real time and these have got direct impact on the culture of a company. And then the company structure also changes as we can now become more flexible, and have less hierarchical levels etcetera because the decision making pattern changes. The way decision making is happening and taking place within the functional silos etcetera. However, with ERP, once you break down the walls, and restructure the organization, it makes decision making less complicated with reduced hierarchical levels.

We call this “flattening the organization”. Instead of that sharp pyramid we can make it flatter. Skills and knowledge of employees of course, will change because now you are using a very sophisticated software, and all employees will have to become computer savvy.



How the organization uses ERP? - You have the central database and then you have the major functionalities on the all the four sides, namely, Finance and Accounting, Sales and Marketing, Manufacturing, Purchasing and Materials.

I have considered for my lectures mostly these four major functions, but I have told you repeatedly that other areas are also very much involved like - HR, Quality Management, Plant Maintenance, Service Management, Warehouse Management etc. You name it any other functionalities are also part of ERP, but we cannot have so, many of these in the slides as then the slide will become very complicated.

Let us stick to the four major functional areas the common one's namely, finance purchase, manufacturing and sales and how they use ERP? In the finance area we have, cash in hand, accounts receivable, customer credit, sales revenue. These are various accounting functionalities and all of them are included although I am listing a few of course, but there are plenty of others. Now if you move on to sales and marketing on the left , the areas are pricing and rebates, sales planning, delivery dates, sales returns.

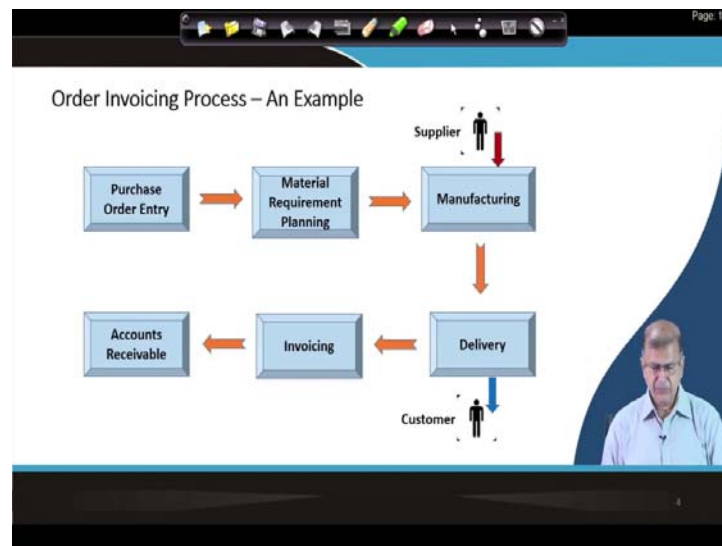
So, all of these activities and sub activities are using ERP. They are using for all the daily business transactions being performed in the organization. I have just listed a few of the common ones. In Manufacturing, some of the major areas are - production, planning, quality assurance, order fulfilment etc.

In Purchasing and Materials module the major sub-area is inventory management. The stock they see always is the most important thing needed to be monitored because neither

it should fall short, and manufacturing should not have any shortage of materials, nor there should be excess inventory.

We know the problem of excess inventory and we also know if there is a shortage then the production will come to a halt and the customer's commitment will not be met. So, you have problem on both sides. Managing the right inventory is one of the major challenges for the purchasing and materials department. They keep constant monitoring of the inventory and the pending delivery from vendors. Pending delivery, open Purchase orders, Vendor rating, Invoice verification, exports and imports etcetera. are the various different functionalities which are being used by Materials and Purchasing module of SAP.

I just listed a few for your benefit of course, but there is a whole list of functional areas and functionalities of all the SAP Modules, which you will get it in the textbooks.



Now to give you an example of one of the process - The Order Invoicing Process. So, you have say a purchase order entry. You create a purchase order for a particular component or raw material you need from your supplier or vendor. Now what happens is you know materials requirement planning (MRP) is not what we were talking about when we were talking about the history of a ERP, but this is a program inbuilt within SAP and is also called materials requirement planning (MRP) with similar and better functionalities. It is a part of a one of the areas / modules of SAP called Production

Planning. Whenever, there is a new order or change in the sales order you run the MRP program (transaction).

When you do a material requirement planning run, it will for the example of a car order in an automobile industry, that to make 100 cars, factory will need 500 wheels and will need 100 batteries (we have one battery in a car).

It will create a purchase order for these items. But, first it will create a Purchase Requisition which the planner will convert to a Purchase Order on a battery company (e.g. Exide). Ordering Exide to deliver 100 batteries by such and such date. Two things are important - the quantity and the date of delivery and of course, the model number and other relevant details about the particular battery make.

At Exide factory, once the battery purchase order entry is made the battery is supplied to the car manufacturer. So, the input on the top you see is the supplier is supplying that 100 battery for manufacturing of the cars. Once the manufacturing is over and the 100 cars are ready it goes delivery to the customers,

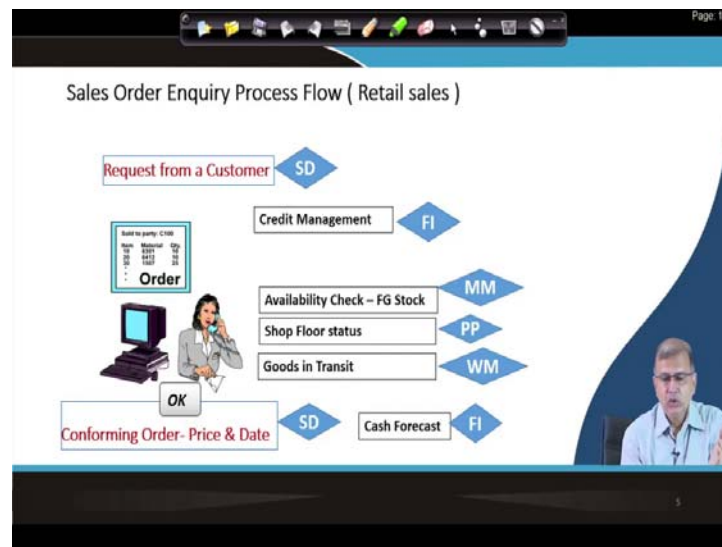
Before final delivery the cars go to finished good stock and from here the cars can be supplied to the customer. The customers for automobile companies like Maruti are their dealers and individuals like us, we buy car from the dealer. So, the dealer is actually the customer for Maruti and we are the customers of the Dealer.

When those 100 cars are supplied to the dealers, Maruti is raising an invoice. Say there is a dealer in Kolkata and he is getting say out of that 100 may be he is getting 20 cars coming to Kolkata and another 20 going to Bombay and 40 cars going to Madras or something like that. When the invoice is raised for 20 cars on that Kolkata dealer, then it becomes something called an Accounts Receivable which is a typical accounting document.

For that car manufacturing company let us say if it is Maruti 100 cars have been distributed over India. 20 has come to Kolkata, 40 has gone to Mumbai etcetera. So, for each of them for the 20 and 40 cars, Invoice has been raised and that invoicing becomes an accounts receivable of a value related to the price of a car, which is say Rs.5 lakhs.

Price of 20 cars is Rs.100 lakhs. Hence, the invoice will be for Rs.100 lakhs. This value becomes the accounts receivable (AR). This is an example of order invoicing process. This it is not the complete process but a part of the process of Order Processing.

From purchase order to the accounts receivable in the books of the finance department, it will show that I (Maruti) is expected to get Rs.100 lakhs money from my Kolkata dealer as it is my accounts receivable. When the Dealer actually give the money then that Purchase Order gets closed because it gets credited with Rs.100 lakhs. So, the receivable gets closed because Rs.100 lakhs has been received. That is when the process actually ends, but here particular process shows how it operates between a purchase order and accounts receivable. This is a portion of the Purchase Order processing cycle as an example to understand how the thing works in that SAP system.



There is another process let us say the Sales Order Enquiry Process flow. I had shown you this picture earlier in my previous section, but here I will talk in details of this. See what this picture talks about is, (it is very interesting slide here) where you have this lady sales manager or a sales officer of say same battery company, taking the example of Exide battery she works for sitting in a sales office in say Lucknow in UP.

She is operating from the Lucknow sales office, the Lucknow dealer of excide battery calls her on her phone. She gets a call that the dealer wants 100 batteries of this Maruti car (e.g. Alto) . There are different battery models for different cars and Maruti Alto car needs a certain type of battery and the dealer needs 100 of them. When can you give it to

me (the dealer) as I need these very urgently? This lady (Exide Sales Manager) looks into her SAP screen and then starts doing lot of things.

So, what happens? It starts with request from a customer that is the phone call she had received. When she gets a customer's call (dealers call) that I want 100 batteries, the first thing she does is, she goes and does a Credit Check in the Credit Management area which is a finance function (FI module). She checks the credit limit of this particular dealer, whether he has paid for his previous supplies? Sales usually works on credit and nobody pays cash immediately on delivery. So, you get a material, and you have an agreed credit day may be 15 days or 30 days within which you will have to release your payment.

So, this varies from product to product and from company to company, but there has to be some credit days. Now she goes and checks whether this dealer has paid up his previous orders which was say whatever quantity and so, much money was pending. It could be yes or it could be no. If it is yes, then it is fine and she is happy that no overdue are there with the customer and further batteries can be supplied for this new order.

But if it is no and he has not paid up then she will tell him that against your past order of Rs.50 lakhs, Rs.10 lakhs is pending. Please release the cheque and I will process your new order. So, she has all the information including that from the finance function although she is working as a sales officer sitting in Lucknow and the head office is in Kolkata. She just received a call from the dealer and while she is holding the phone, she goes to a screen and checks, his outstanding and tells him that Rs.10 lakhs is outstanding and that he should send the cheque by today evening? Without getting the cheque, she will not process any new order, even though it is urgent for the dealer. Now it is up to the dealer. If he wants the battery supply very urgently he will have to release his cheque. So, this is how Credit Management works. This is a finance function and this is the first that any sales person does.

Now suppose the dealer says yes I will send the cheque in 2 hours' time and you process my order because it is very urgent and customers are waiting. Now she goes to a transaction known as Availability Check. What does she do in this transaction? She goes into the screen and checks how much stock is available for this battery and in which locations.

This is a materials management function and she finds out that out of that 100 requirement may be in her own stock there are about 10, there are 50 batteries are available in the warehouse in Lucknow. And balance 40 probably is available in the factory in Haldia for example, near Kolkata. This is the nearest factory from Lucknow or maybe all the 40 is not available. Maybe 20 are available and rest are under manufacturing. She needs to now check the shop floor status? She goes to the production planning module (PP module) on her computer screen and checks the stock in transit or whatever is under manufacturing. From this report, she comes to know that 40 batteries will be ready in another 3 days' time as it is under manufacturing. It will take another one week to get that 20 batteries considering transport time from Haldia. So, she can book 40 batteries to get in 7 days time. And she checks also goods in transit whether anything is in transit. The feature being used is a part of warehouse management module (WM) which gives information about anything being shipped from Haldia to their warehouse in Mughal Sarai somewhere near Lucknow.

She checks all that and then she tells her customer over phone while he is holding the phone and she gets all the information in maybe just 5 or 6 or 10 minutes of time. And she tells the customer, that 10 batteries he will get it today after I get a your cheque then only I release this 10. Another 50 are lying in my warehouse in Mughal Sarai and I will get it delivered by tomorrow as Mughal Sarai is quite close to to Lucknow. So, once I get your cheque I will release the order on Mughal Sarai warehouse. So, they will deliver 50 batteries tomorrow.

So, you get 10 today evening 50 tomorrow evening. The balance 40 is under manufacturing which will take 7 days of time. Four 4 days in the factory and then another 2-3 days for transport for coming from Haldia to Lucknow. So, in another 7 days time you will get another 40 batteries. Do you agree with this? So, 10 battery today 50 tomorrow and another balance 40 , 7 days later and if the person says yes, then she can confirm the order she confirms all the order price and date.

This is an SD functionality sales and distribution and then finally, when she books the order what happens is that 100 batteries costing maybe say 2000 rupees each. So, that 100 batteries means 2 lakhs. So, the 2 lakhs rupees becomes a cash forecast as soon as she books the order. So, suppose that payment credit term is 15 days the cash forecast means the day the customer receives 10, 50 and 40 for each of these days you add 15

days and accordingly so, much of value comes as a cash forecast which a finance function is.

The finance manager and the finance department comes to know that this is my cash forecast. Which means on that particular date I am supposed to get so, much money from this particular supplier.

Because everybody is managing his her own resources, the finance department is continuously monitoring how much cash flow is taking place into the company, how much money is coming in because he has arrange for cash outflow (payment to suppliers) and this an everyday process where the company is receiving cash and company is paying cash. Cash outflow examples: are giving payment to suppliers, paying electricity bills, utility expenses, employee salaries etcetera. There is outflow of cash and supplier payment is happening almost every day, or on periodic basis like salary payment etcetera.

So, the accounts and finance department is continuously monitoring what sort of cash I am receiving every day because of every sale. So, that for him becomes information that he knows that on such and such date this will be my cash position. Cash balance is extremely important for the finance department to monitor on a daily basis.

I just gave you one example of a Sales Order Enquiry process and how SAP or ERP works. One person, a sales officer or sales manager sitting in one office somewhere, who is a sales person, but he or she is referring to so, many functionalities of SAP from sales and distribution, to finance, to materials management, to production planning, to warehouse management, to sales and distribution and finally, finance.

See finally, everything has to end in the finance because end of the day you know it's all about my account getting credited with money. So, that is how the whole business works everywhere. So, all process will end somehow in finance.

The power of SAP was demonstrated by this example where she could do in just about 10 or 15 minutes of time and without talking to anybody. She gets a call from her customer (dealer), and she could close the sales order without talking to either her factory, or the warehouse in Mughal Sarai, or the warehouse manager, of the finance department at the head office in Kolkata.

She does not have to waste any time because when you call up the person may be he is not available, busy in a meeting , or on leave , or not in his desk etc. so, many things can happen and you get delayed as you are not getting the information you are looking for.

But , having SAP (ERP) all the information is at her fingertip literally (because when you are punching your keyboard you are using your fingertip) and that is how you are getting your information.

You do not have to depend on any human being for information. That is the power of ERP, the power of SAP and that is what managing information system is all about. This is the essence which you need to learn to appreciate, the beauty, the power, the strength of SAP or ERP and why it is so important for running a business.

You cannot run a business without this, you can I mean could you realize when I was telling you all this how things are so, easy or smooth. So, when you have information you have power. She has so, much of power, when a customer calls up asking whether she can supply him 100 batteries as soon as possible, she said just hold on for 10 minutes and I will give you a call back right in 10 minutes and I will tell you the position by date when I can give you the batteries.

And after 10 minutes she calls up and tells him yes today you get 10 tomorrow you get another 50 and 7 days later you get another 40 that is your 100 is that good enough for you then fine I am closing the deal? And you clear my payment of the last order. So, everything is being taken care of.

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Impact of a Goods Receipt Transaction.....

A simple Goods Receipt transaction can trigger several activities , e.g.

- Stock and Value of inventory get updated
- Inspection Lot gets created to trigger a quality inspection
- Stock and Consumption account updated
- Purchase order history gets updated
- A transfer request is created to move the goods to the warehouse
- Vendor evaluation process gets initiated



Impacts of a Good Receipts transactions another process something comes in your factory and you are receiving a material? A simple good receipt transaction can trigger several activities, - stock and value of inventory gets updated. So, as soon as you receive the stock the value of inventory, total inventory value of the company goes up by so, much of value say whatever the 100 pieces came and the worth is 10 lakhs. So, you have total valuation of the company going up by 10 lakhs and you added so much of inventory. Another activity gets triggered for the received material, an inspection lot gets created for the quantity of item received and a trigger for quality inspection gets created. Automatically.

All that the security officer at the factory gate has done, is that he entered, supply of such item of such and quantity such on that date and time. The value of the whole company goes up because the inventory value has gone up as soon as the security person has completed the data entry.

Inspection lot gets created to trigger a quality inspection and on the screen of the quality manager, says there is an inspection job pending. If you see this pending work you will see one pending inspection of 100 quantities of such material has arrived and it is pending for his action. So, now, he has to get into his job, go to the stores and do the inspection. On completion of inspection the stock and consumption accounts get

updated. This is the accounting activity which happens as soon as the material gets accepted by the quality control.

So, your stock account gets updated by value and consumption account also gets updated. So, these are accounting area. In the general ledger or account book , consumption account also gets updated because that material will have to be consumed.

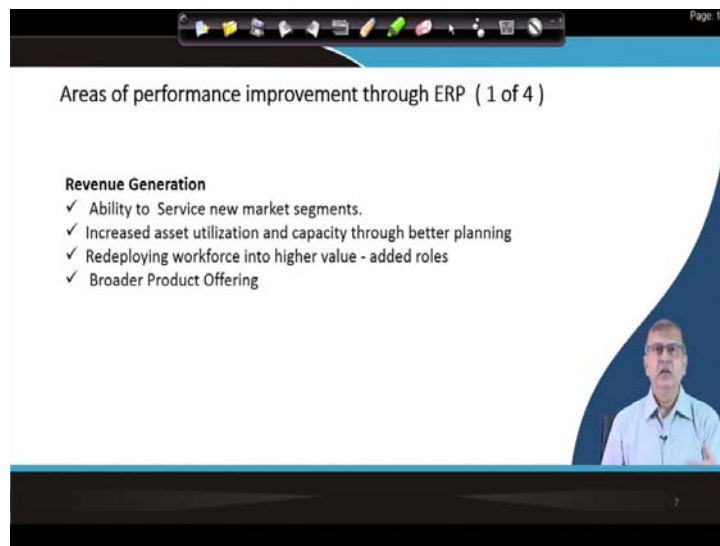
Purchase Order history gets updated. Now you are regularly buying some material from that particular vendor for this material. So, there is a history because you want to analyse and you want to evaluate your vendor as to how good he is and how timely delivery he gives, the quality of his product, whether there is any rejection, whether it is 100 percent accepted or 90 percent or 10 percent whatever needs to be documented. This way you evaluate because you have multiple vendors for a particular item, like Maruti is getting battery from many vendors and Exide is one of them. So, there are 3 or 4 battery manufacturing company. So, they get continuously evaluated and there are various utilities of this vendor evaluation, about which I will talk later.

A Transfer Request is created to move the goods to the warehouse. So, after the quality check there will be a Transfer Request. So, it has to move to the warehouse or the store from the security gate. So, then a transfer request that is document which is created in the system and then vendor evaluation process gets initiated that I already explained. So, that is another process which gets initiated and the purchase department now evaluate the vendor based on the timeliness of the delivery etc. So, whether it did deliver on time the same date or later date etcetera and then after the quality inspection, they will also add whether all 100 percent was accepted or not. So, accordingly the vendor rating gets changed. Many activities get triggered from a single transaction, like the Goods Receipt (GR) transaction. So, all this is happening automatically and SAP and ERP is doing it. So, this is how the software is working, the transactions are happening and each of the transactions are generating data and information.

The data elements are date of supply, quantity of items which got approved by quality etc. From this data, what information is generated? Information generated are vendor's evaluation score. Purchase Order history gets updated. If he had delivered on right time and 100 percent material got accepted , vendor gets an A rating. Otherwise he would have got say B rating because he delivered one day late. He may have delivered on time,

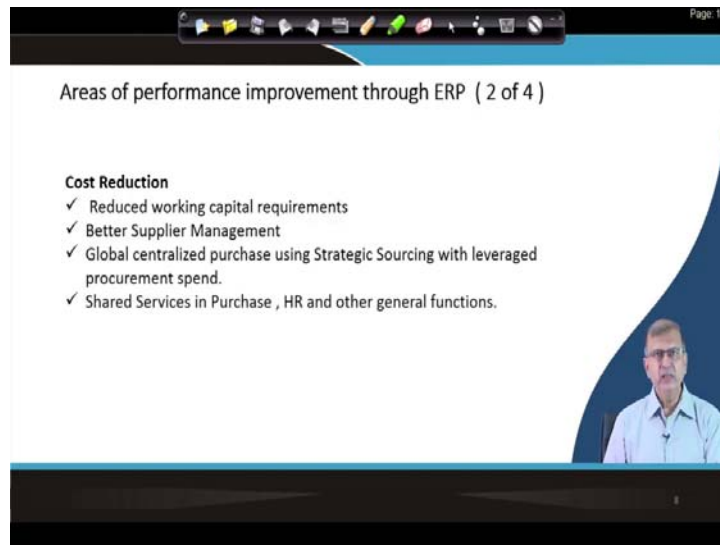
but then 10 percent of the item got rejected. So, quality was a problem. So, he gets B rating or may be if more items were rejected, he gets a C rating. So, we rate vendors with A , B or C based on their performance.

So, when you get a A rating means what? Next time when you get an order you will get more quantity. You will get more order quantity and customer will rely on you more because you deliver on time and you deliver the right thing. So, if I have 4 or 5 vendors I will give more percentage of the order quantity to you. So, that is why this vendor information is so, important. So, this is information which is created from the data collected from the security gate and quality inspection report. So, you need to know where and how is the data generated and what is the corresponding report or information created.



Areas of performance improvement through ERP. - Revenue generation through its ability to service new market segments, increased asset utilization and capacity through better planning, redeploying workforce into higher value added roles and broader product offering. These are some very generic advantages and performance improvement in various areas. So, these are all some examples which I have selected. I will quickly run through as there is not much to explain and are very understandable by themselves.

So, one is revenue generation gets impacted I mean it is an area of improvement when you use SAP or ERP.



Cost reduction - That is the main thing we started with when we talked about inventory cost reduction etcetera and reducing working capital requirements. I have already explained that. Better supplier management - Global centralized purchasing using strategic sourcing with leveraged procurement spend. Shared services in Purchase, HR and other general functions are things which I will talk later.

When you have a multinational company and you have say common item you purchase in several countries or if within a country we have many factories spread across the country and you have a central purchase department. In such a scenario the main item is bought by the central purchase team from a vendor and then the item gets distributed to different factories. So, you can now leverage your weight because you can do everything online and you can place a bulk order on a supplier and he will supply it to the various factories. So, then you can get lot of price advantage. and you can save lot of cost because you are buying at a bulk.

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Areas of performance improvement through ERP (3 of 4)

Strategic Positioning

- ✓ Better information to run the business (Real Time and Decision Support Systems)
- ✓ Strong and flexible foundation to support future growth (seamless IT Platform)
- ✓ Improved supply chain integration (with Vendors and Customers' ERP systems)
- ✓ Standardized processes across divisions. This is very important for global / multi-national organizations (commonality of processes).
- ✓ Ability to more easily operate as a "single" business.
- ✓ Better employee productivity
- ✓ Better employee satisfaction through job-enrichment

Strategic Positioning: - Better information to run the business. So, it is mostly about information, as I said earlier - real time decision support system, strong and flexible foundation to support the future growth, seamless IT platform that is you know it has everything, all knowledge and information is available in that IT platform.

So, that supports your growth, improved supply chain integration with vendor's customer's ERP system which I had explained earlier with the Tata Motors example. Standardized processes across divisions. - This is very important for global and multinational operations where you have multiple companies working together so, you need to have standardized business processes. This standardization is enabled through ERP.

Ability to more easily operate as a single business again the same thing I mean if you are using a single software platform you are actually working like a single business unit although you are different companies of the same say group for example. Different companies located in different countries, but you can literally work seamlessly as a single company.

Better employee productivity :- you have seen how productivity is impacted positively when you are using such softwares and better employee satisfaction through job enrichment.

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Areas of performance improvement through ERP (4 of 4)

Improved Customer Satisfaction

- ✓ Reduced contract cycle times
- ✓ More accurate availability and delivery info
- ✓ Single face to the customer for sales, status and service
- ✓ Quicker response to contract and order changes
- ✓ ATP – Availability to Promise. Products can be booked for specific customers

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Improved customer satisfaction - I have discussed earlier also that reduced cycle time more accurate availability of delivery info, single face to the customer for sales, status and service. The example I gave you about that sales lady working in Lucknow, handling dealer's orders. Providing quick response to contract and order changes through MRP and ATP (availability to promise) which helps in committing supply to specific customers to ensure that they get their order in time. So, products can be booked for specific customer. So, you can book by specific for customers so much quantity etc. like she was doing for the Haldia plant, blocking the 40 quantity from the factory to be delivered within 7 days to her dealer provided he confirmed the order. Once the dealer confirms those quantities will be booked and no other sales person can divert these batteries to be delivered to any other party. It will be exclusively reserved for you. This is another important and strong functionality called availability to promise (ATP) in the SD module of SAP and with that we end this session.

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REFERENCES

- Enterprise Resource Planning : Rajesh Ray
- Enterprise Resource Planning Systems : O'Leary

IIT Madras NPTEL 11

Thank you very much.