STEVENS INSTITUTE OF TECHNOLOGY

Business Process Reengineering

MIS 710 - Final Project

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From a traditional manufacturing process to a fully integrated ERP system

Contents

Introduction

Roche Bobois is a medium-size French company created around 1960 that manufactures and delivers high standing furniture.

The company is working well and generates a decent amount of revenues for the past several years however recently an evaluation was made. During this evaluation, the management realized they are not as efficient as they used to be for example they identified that sales were decreasing yearly and expenses were increasing. Some of the key identification they also explained to us is: that it's a very competitive environment, it Lacks reactivity to complete customers' orders on time and finally It's a very disorganized and inefficient process now a days. That said a little more about Roche Bobois, the company relies on two main core business processes:

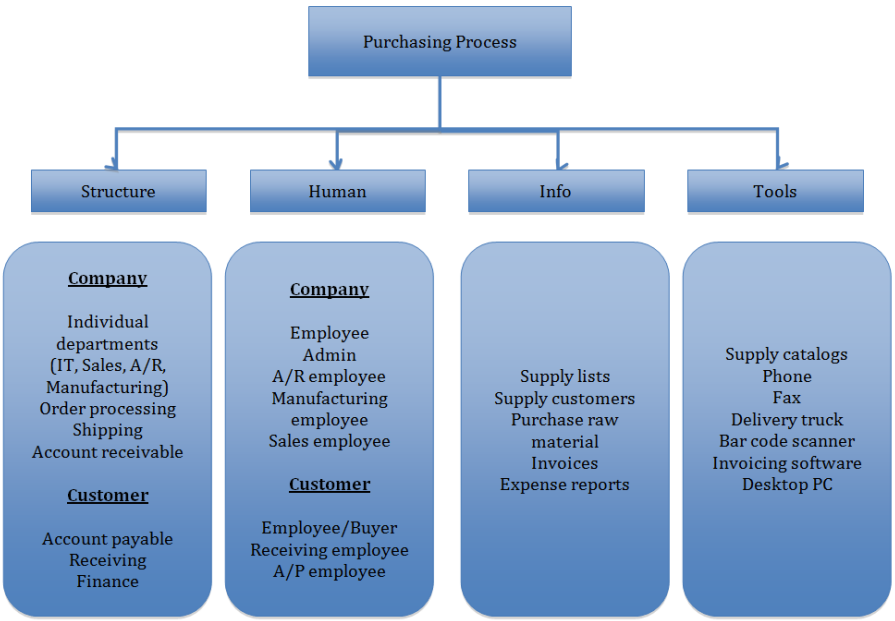
- Recurrent orders made by large specialized retailing stores
- Special orders with particular designs for more luxurious stores

This report will talk about this second process, the order-to-deliver process. The whole process being very manual, many bottlenecks are found to slow it down a lot, causing serious quotations problems.

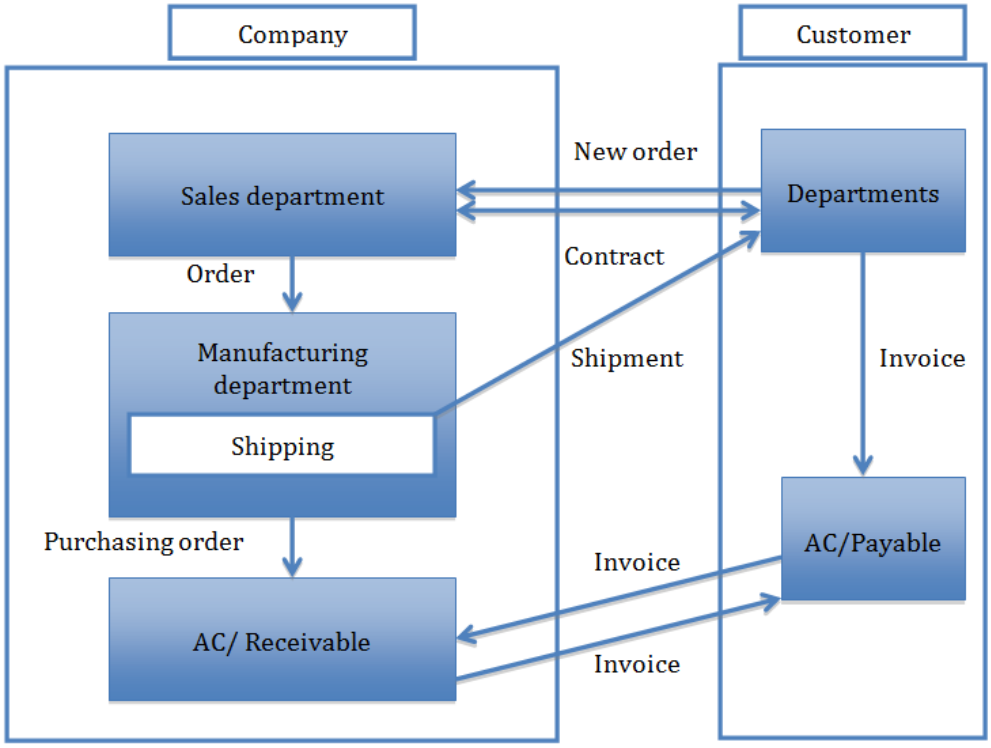
The problems generated by this outdated process made the company realized that it needed to modernize its manufacturing process in order to acquire a better reactivity to the customers' needs and claim more competitiveness in the market.

Development of the initial process

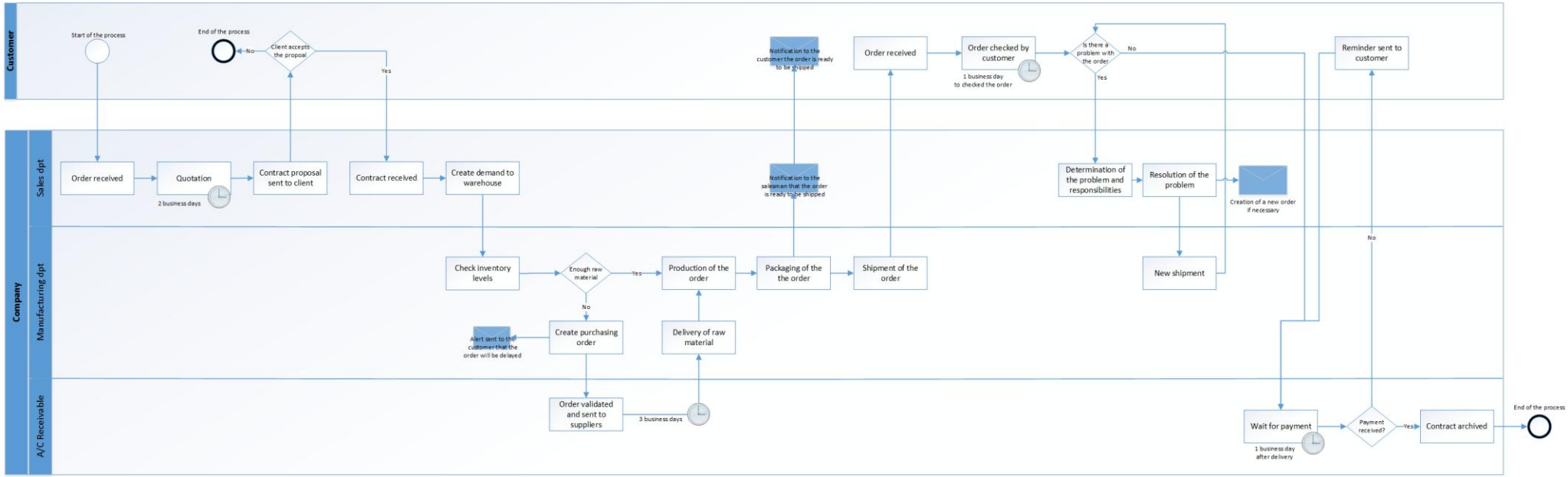
Process Constituents



Relationship Map



Process Map


Customer
Start of the process
End of the process
No
Client accepts the proposal
Yes
Notification to the customer the order is ready to be shipped
Order received
Order checked by customer
1 business day to checked the order
Is there a problem with the order
No
Yes
Reminder sent to customer
Company
Sales dpt
Manufacturing dpt
A/C Receivable
Order received
Quotation
2 business days
Contract proposal sent to client
Contract received
Create demand to warehouse
Notification to the salesman that the order is ready to be shipped
Determination of the problem and responsibilities
Resolution of the problem
Creation of a new order if necessary
Check inventory levels
Enough raw material
Yes
No
Production of the order
Packaging of the the order
Shipment of the order
New shipment
No
Alert sent to the customer that the order will be delayed
Create purchasing order
Delivery of raw material
Order validated and sent to suppliers
3 business days
Wait for payment
1 business day after delivery
Payment received?
Yes
Contract archived
End of the process

AS-IS process

1. Sales department receives an order
2. Sales employee prepares a contract, usually takes about two days.
3. Sales department sends a contract proposal to the customer
4. If the client refuses the proposal, the order is cancelled
5. If client accept the proposal, the client mails the contract signed to the sales department
6. Sales department creates an order form and sends it to the warehouse
7. Manufacturing department checks the inventory level to fulfill the order
    a. If there are not enough raw material, the sales department creats a purchasing order
        i. The A/C receivable checks the order and sends it to suppliers
        ii. An alert is sent to the customer that the order will be delayed
        iii. After 3 business days, raw material is delivered
    b. If there are enough raw material, the production of the order begins
8. Once the production is finished, the order is packed
9. A notification is sent to the salesman that the order is ready to be shipped
    a. A notification is sent to the customer that the order will be shipped
10. Manufacturing department ships the order to the customer
11. The customer receives the order
12. The customer checks the order, which takes about one business day
13. If there is any problems with the order, the sales department determines problems and responsibilities
    a. The sales department solves the problems
    b. The sales department creates a new order if necessary
    c. The order is remanufactured
    d. A new shipment is then sent to the customers by the manufacturing department
14. If there is not a problem with the order, A/C Receivable waits for to receive the payment;
    a. Customers are suppose to send the payment a day after they receive the shipment.
15. If the payment is not received by the A/C Receivable, a reminder is sent to the customer
16. If the payment is received by the A/C Receivable the contract is archieved
17. End of the process

Shortcomings of the process

This classical manufacturing process shows that is process has major flaws for such the company to be able to operate at its maximum efficiency. The whole process being outdates, long, tedious and no technology creates many bottlenecks that prevent the continuous development of this process as efficient as it could be.

- **Inaccurate quotation**: The quotation activity of this process is very troublesome considering the time needed to do the quotation, send it to the customer and wait for the acceptance, the situation has often already changed. Moreover, when a salesman does a quotation for a customer, he is unaware of the other orders that could be made by other salesman at the same time. Thus, it often happens that the quotation are erroneous and inaccurate.
- **Lack of information for the customer**: With the current process, it is impossible for the customer to have a monitoring of its order. In case of unexpected problems during the manufacturing of the order, it makes complicated for the customer to be kept updated.
- **Written communication**: Orders, contracts and reports are entirely handle on paper support, making it difficult to keep good records and causing occasional losses of important documents.
- **No forecasting of needs in raw materials**: Raw material is ordered whenever the inventory levels are insufficient to complete the current orders. It often delays the production and completion in time of some orders, especially for large size orders.
- **Lack of quality control**: Too many orders are flagged as problematic, inaccurate or simply damaged by the customers, implicating most of the time the delivery of a new order. This shortcoming of the system costs a lot of money to the company.
- **Outdated orders**: By having only written communication such as catalogs and other advertisements to place their orders. Many of these products were outdated or no longer manufactured. Therefore, the company could not fulfill what consumers need and moreover could not market and advertise new products due to the lack of technology and knowledge.

Organization goals

In order to make sure the new manufacturing process will be well aligned with the current challenges and objectives of the company, it is important to correctly define the organizational goals at the company scale to insure meaningful and suited successful changes.

Increase the efficiency of working time

In the current process a lot of time is wasted to do the quotation. We need to optimize the working time and maximum number of production during that time. This will reduce the entire process and will able us to provide a faster service and product. Goal: Reduce lost time will increase the process efficiency.

Improve accuracy rate

We noted that the information is not accurate in the current process, this leads to numerous errors, including in financial balance, in the quotation, in the manufacturing and in the order. Therefore our goal is: to improve compliance.

Reduce costs

Reduce the entire company costs and maximize revenue is the very important goal to our company. By improving the cycle time we cut costs. By improving inventory turnover as well as improving the quotation will improve and cut maintenance costs.

Increase control and transparency

We need to have control at each step to avoid the lack of transparency and control. This will improve the process quality by avoiding improper orders, misplaced data and even inaccurate duties and responsibilities. Providing transparency to the customer is also a goal of the company, enabling its customers to follow their orders efficiently.

Process goals

The goal of the process is to improve entire process reactivity by making it better cheaper and faster. With faster decision, more accurate control and specifications from beginning to end. This will also allow the company to achieve its goal of reducing the budgetary cost.

For this, we need to implement different changes:

Implement controls at each stage

We must identify and implement a way to control each stage of the process in order to improve the precision and quality of the process. To do this we must check the validity of:

- **Quotes:** We need to control the accuracy of the quotes to be sure that it is in agreement with the inventory
- **Orders:** We need to control the quality and the compliance of orders to reduce the number of incorrect command
- **Purchases:** We need to verify the validity and necessity of purchasing
- **Payment:** We need to verify the payment to ensure that each customer pays in a timely manner and to apply the necessary sanctions otherwise.

These various controls will support the following organizational goals:

Improve accuracy rate

These process goals will improve accuracy. This will avoid erroneous information since the information will be controlled throughout the process

Reduce costs

This will reduce the cost because the bills will be paid in due time and the quotation will be exact therefore there will be no problem with the budget. These controls will avoid the unnecessary orders by controlling them from the beginning to the end. The company will have the more accurate inventory turnover and therefore the cost of maintenance will decrease.

Automation of quotation

Sending quotation to our consumers will no longer be handmade but done automatically by the system. This will allow the salesperson to better manage and advertise sales rather than focusing just on quotations. The only duty will be to check if the price is correct, this will allow the system to avoid losing money with inaccurate order, avoid simple errors and decrease time from three days to one day to our customers. The automation of quotation will support the following organizational goals:

Increase the efficiency of working time

Automating the quotation system will reduce the number of points of contact between the departments. In fact the person responsible for quote will no longer need to go to check the inventory level and the responsible of purchasing to establish the estimate but rather focus on maximize sales and gaining new customers. This will increase the efficiency of working time.

Reduce costs

This system will checks every quotes and make sure everything is correct and in compliance with the inventory. So it will avoid a budget overrun and the errors in the quotation that can waste money.

Improve accuracy rate

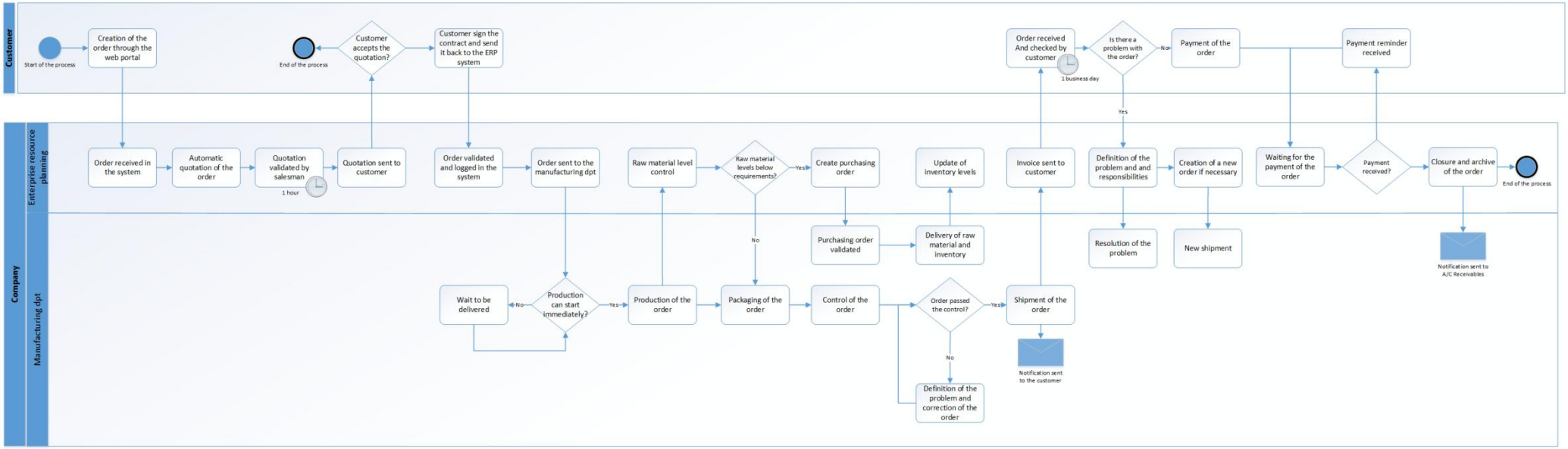
Quotations will be done in real time, which will avoid disputes regarding product availability. The quote will be fairer and system will be updated in real time.

Increase control

It will be easier to control and monitor therefore it will be a more effective process.

Development of the new process

Process map



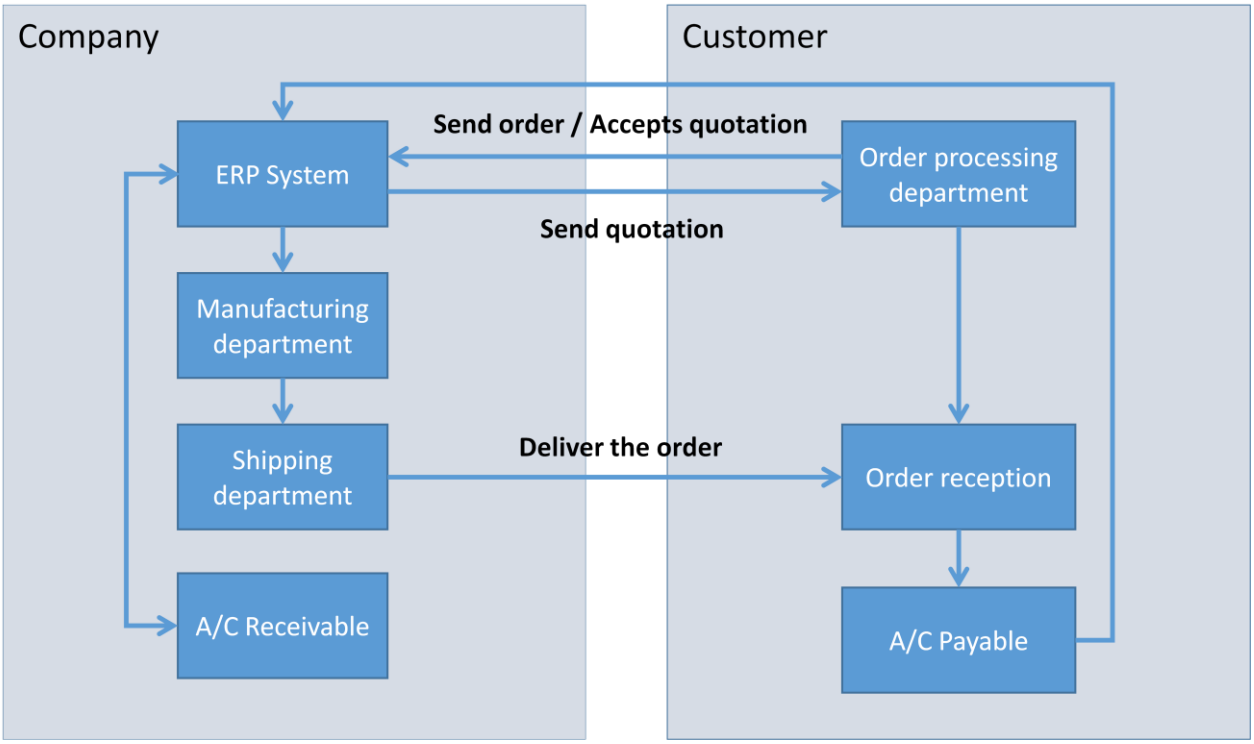
TO BE Process

The ERP system provides a web interface to the customers in order to create and track their orders.

1. The customer places an order in the web interface linked to the ERP.
2. The order is received and logged into the ERP system.
3. An automatic quotation of the order is done by The ERP system
    a. Checking the inventory department, customer location and the size of the order to establish the cost of the order and the earliest date of delivery.
4. A sales man checks this quotation before sending it back to the customer, this step must be performed in less than an hour. It is merely a control step needed to ensure the good behavior of the system.
5. The quotation is sent to the customer.
6. The customer receives the automated quotation
    a. If the quotation is not accepted by the customer, the process ends.
    b. If the quotation is accepted by the customer, he needs to send the signed quotation electronically back to the ERP.
7. The ERP system checks that everything is in order and validates the order one more time.
8. The order is transferred to the manufacturing department in order to start the production.
9. If possible, the production of the order starts immediately. Otherwise, the manufacturing department needs to wait to receive the necessary raw materials.
10. Once the order production has been finished, a parallel level control of creating a PO only if necessary of raw materials which is also done by the ERP system to insure the order control and accuracy.
11. The manufacturing manager validates those PO before being sending it to our suppliers.
    a. Once the raw materials have been delivered, the inventory levels are automatically updated in the system.
12. The order is packed by the manufacturing department.
13. The order is checked by an employee of the manufacturing department before sending it to our customer in order to minimize the risks of having a problem with the order.
14. Once the control check has been passed, it is shipped to the customer. A notification is automatically sent to the customer by the ERP system, indicating that the shipment is on its way.
15. The ERP system automatically sends the invoice to the customer once the order is on its way.
16. The order is received and checked by the customer. The customer has one business day to log any complaint in the system. Passed this day, the company will not be hold responsible for any problem found.
17. If there is a problem with the order, we define the problem and the associated responsibilities, with the creation of a new order if necessary. The ERP system will automatically log the customers' complaints in order to provide insights and analytics to the upper management.
18. Once the problem is identified, the necessary actions are taken with the sending of a new shipment if necessary.
19. When the order has been received and is cored. The customer is satisfied, the ERP system waits for a payment to be made.
20. It automatically sends reminders to the customer if the order is not paid.

21. Once the payment has been received, the order is closed and archived by the system and a notification is sent to the A/C receivable department.

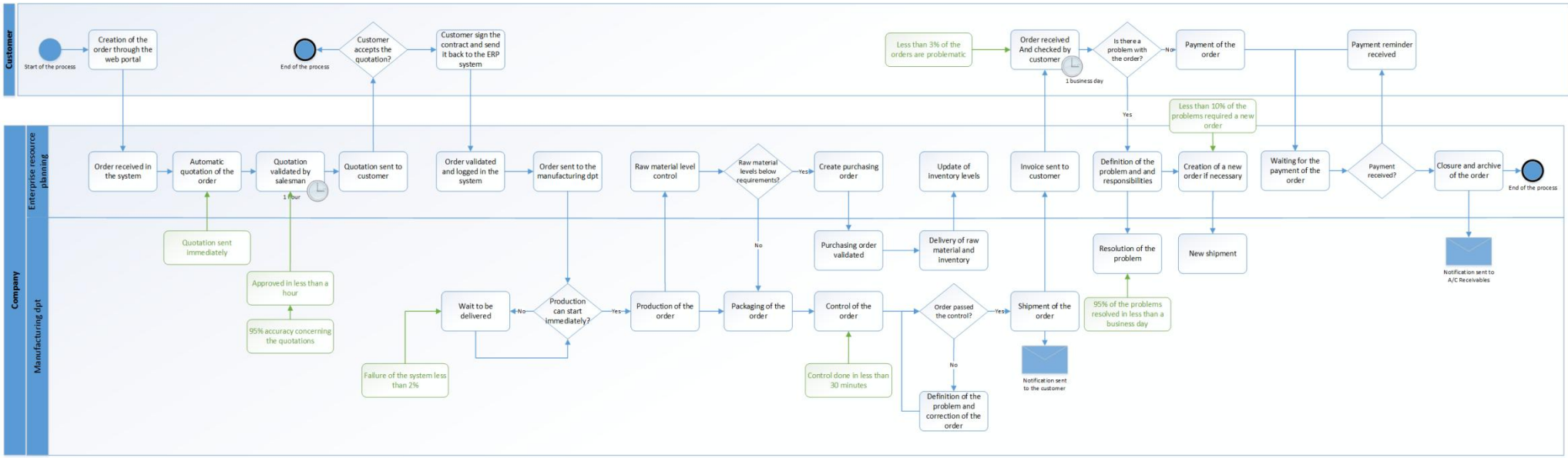
Relationship Map



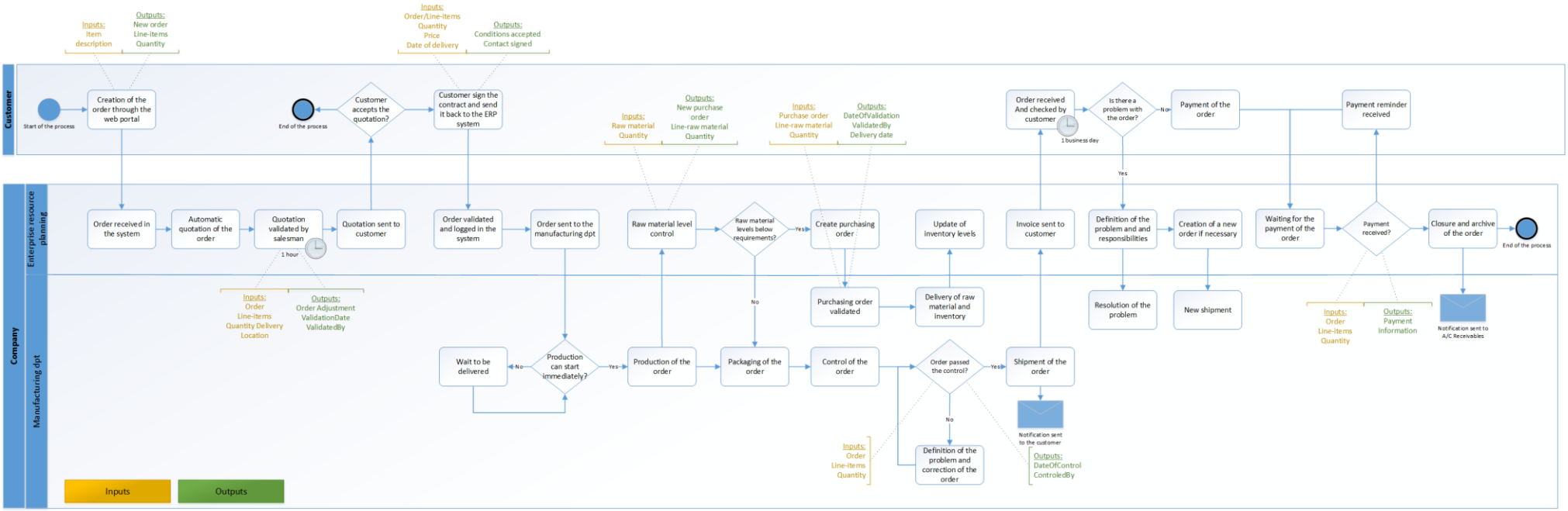
Key Principle of Reengineering used

- Reduce contact points: Integrating one system will be the one contact point with the customer. All departments have only one contact point with the ERP system.
- Centralization: With the deployment of an efficient ERP system, we can have all the information needed in one place and monitor the whole process with one tool.
- Clean Control and Transparency: The ERP system enables the company to have a clear vision of all the steps of the process and to access detailed analytics about it.

Sub-goals of the new process

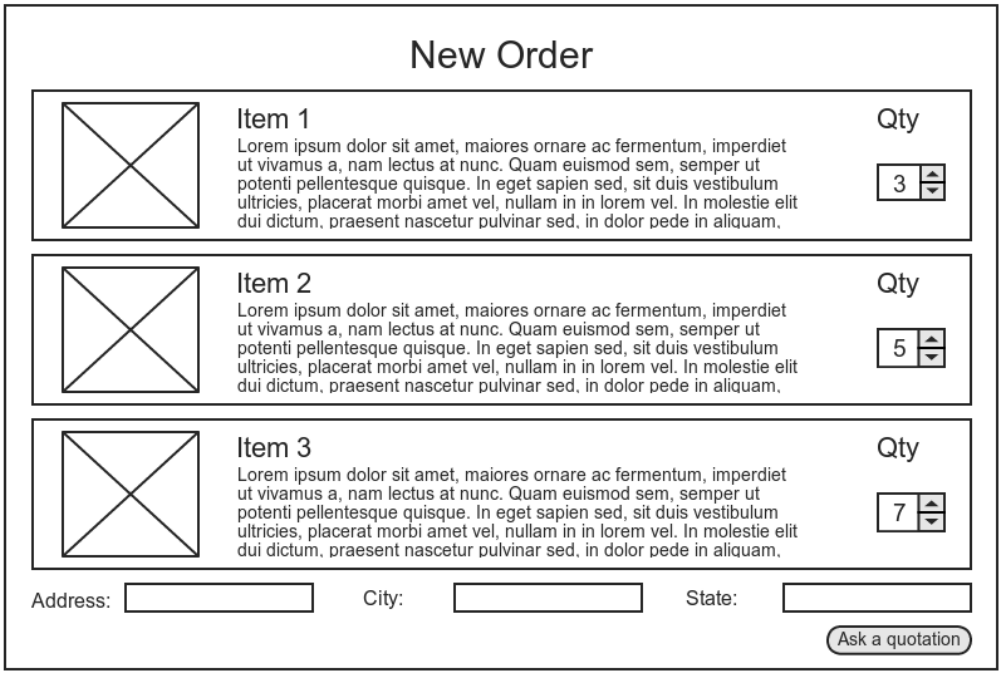


Data Inputs/Outputs

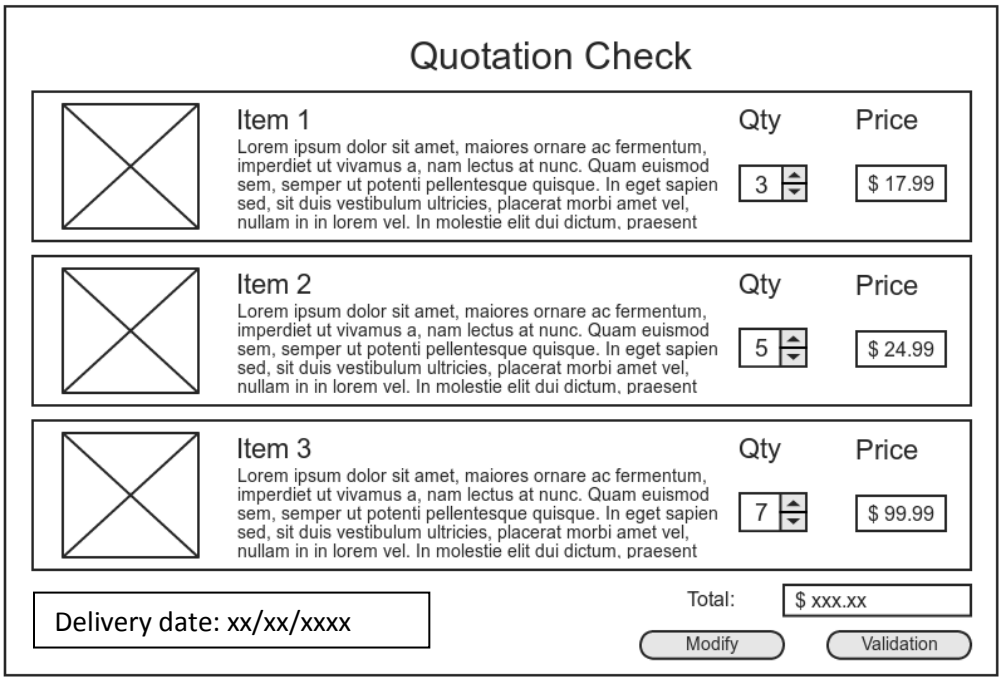


Data forms

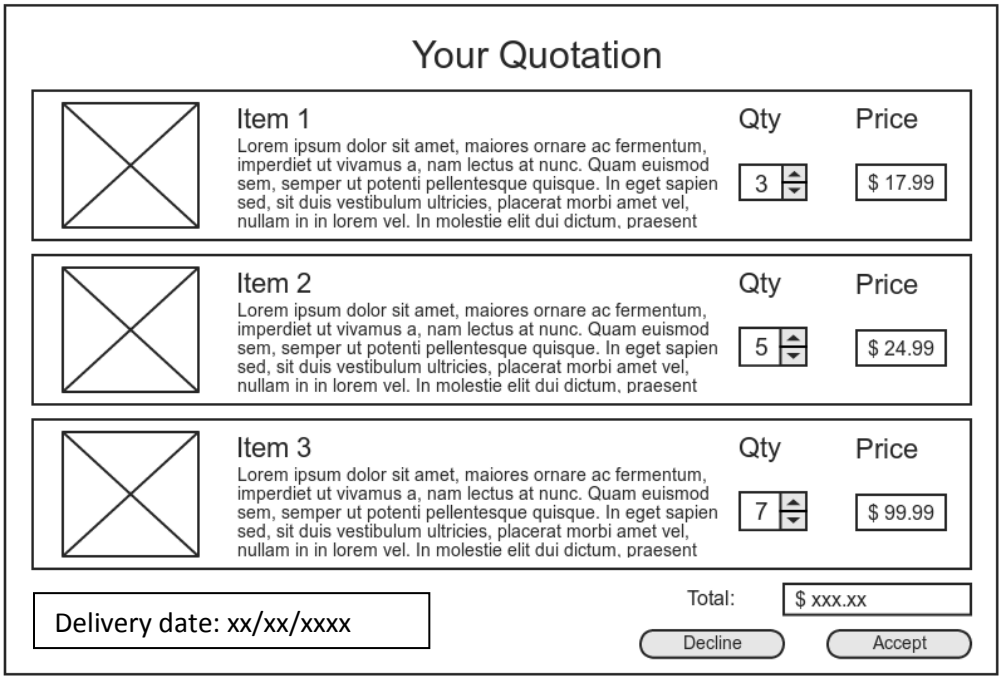
New Order



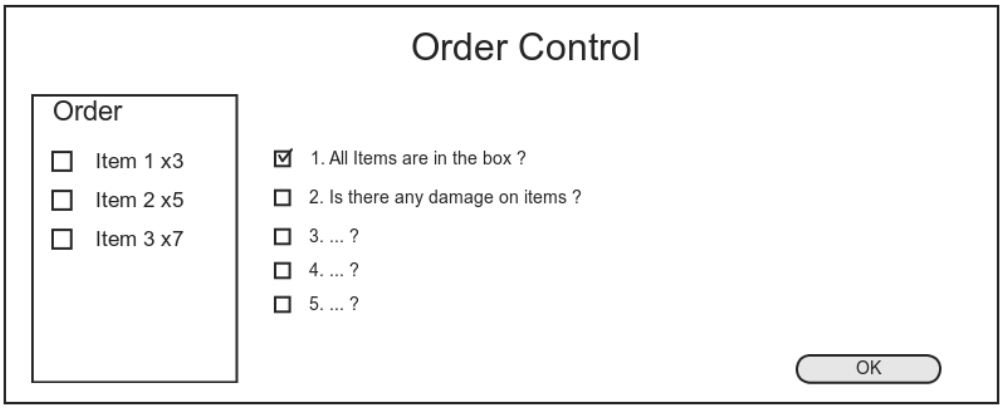
Check quotation



Quotation validation



Order control

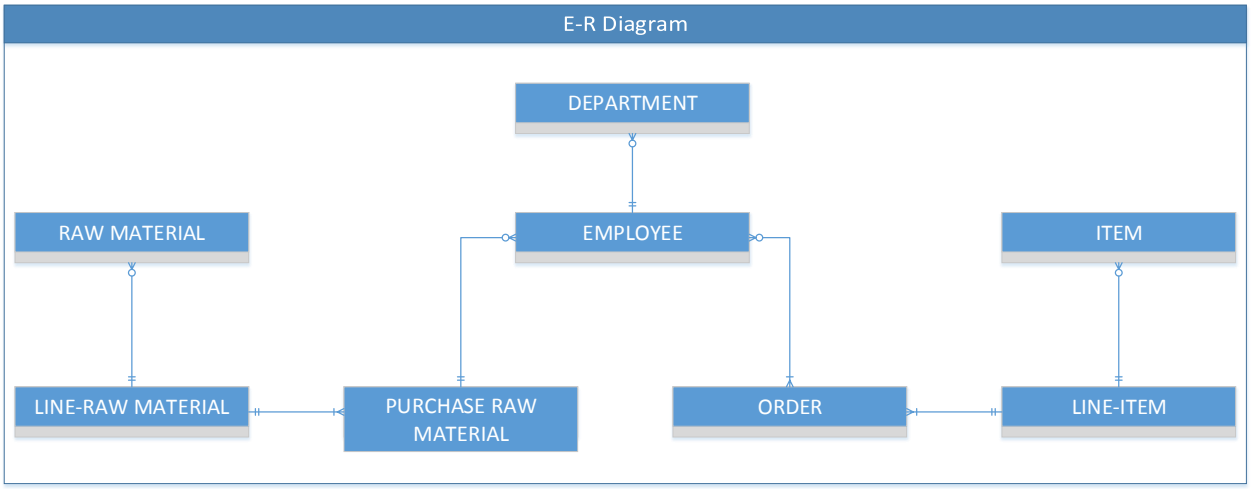


Data model

High-level E-R diagram

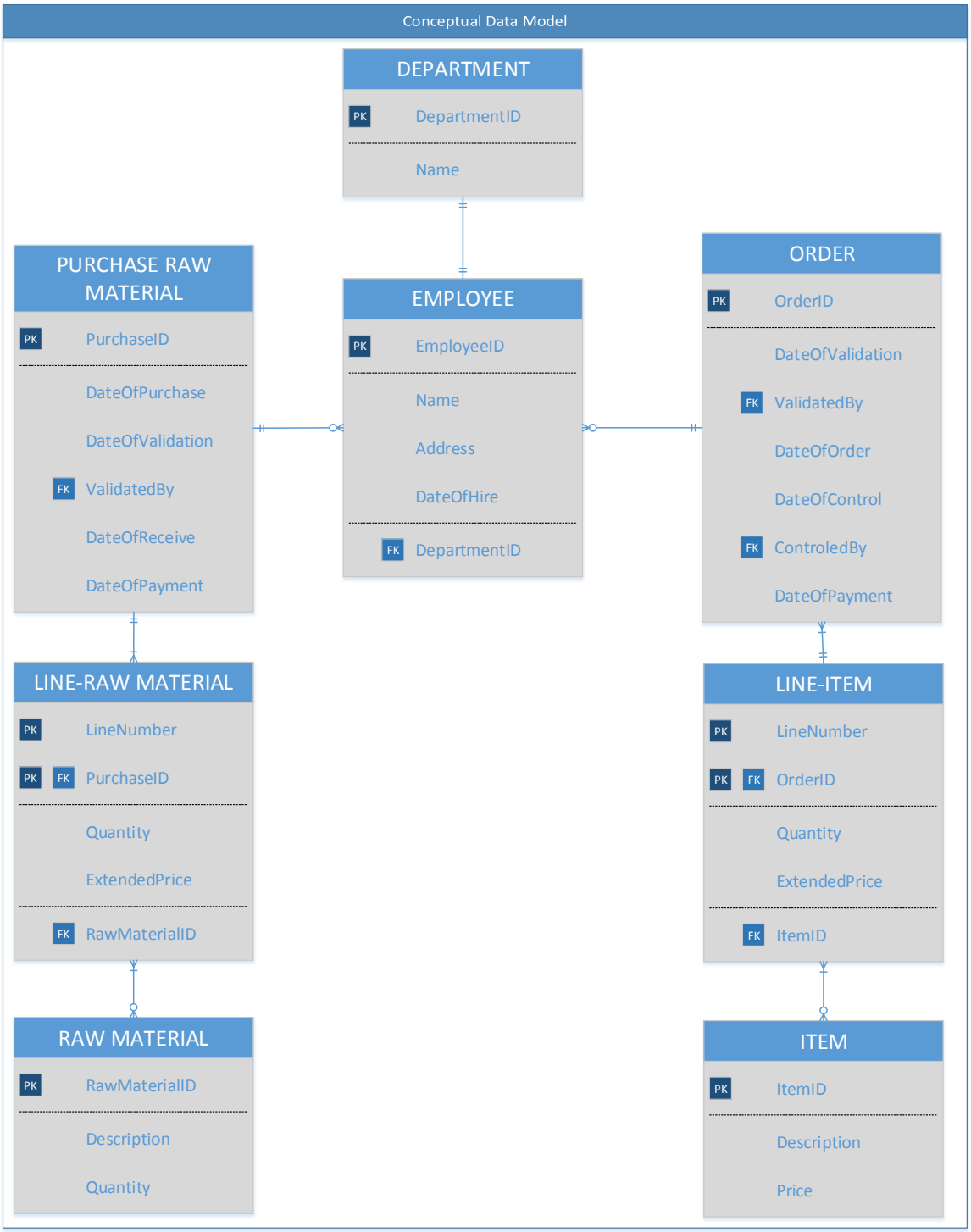
This part provides a high-level E-R diagram showing the major information entities that are impactedand by our process as well as the relationships between the entities.

Please note: The data items are not listed here but in the next paragraph.



Conceptual model

This part shows the normalized data tables with the data items that are needed to implement the conceptual model in the previous paragraph.


Conceptual Data Model
DEPARTMENT
PK DepartmentID
Name
PURCHASE RAW MATERIAL
PK PurchaseID
DateOfPurchase
DateOfValidation
FK ValidatedBy
DateOfReceive
DateOfPayment
EMPLOYEE
PK EmployeeID
Name
Address
DateOfHire
FK DepartmentID
ORDER
PK OrderID
DateOfValidation
FK ValidatedBy
DateOfOrder
DateOfControl
FK ControledBy
DateOfPayment
LINE-RAW MATERIAL
PK LineNumber
PK FK PurchaseID
Quantity
ExtendedPrice
FK RawMaterialID
LINE-ITEM
PK LineNumber
PK FK OrderID
Quantity
ExtendedPrice
FK ItemID
RAW MATERIAL
PK RawMaterialID
Description
Quantity
ITEM
PK ItemID
Description
Price

User roles, groups and responsibilities

	Functions		Jobs and Responsibilities			
Major Process Steps	**Outputs**	**Goals**	**Customer**	**Enterprise Planning**	**Manufacturing Department**	**Others**
Receive an Order	Order received in the system	Fast quotation send back to our customer (1 hour vs. 2 business days)	Creates an order fulfillment through web portal	Receive order in ERP , automatic quotation of the order		
Validation of Quotation	Sent quotation back to our customer in an hour	Receive a signed contract	Approves Quotation, sends a signed contract back	Sent quotation to customer		Sales Man: validates automatic quotation
Signed contract received	Order validated and logged	Start the order	Sends contract	Logs it and validated it. sends order to Manufacturing department	Receive an order notification	
Check inventory level	Production begins immediately or Inventory level is insufficient	Production begins immediately				
Inventory level is insufficient	Updated inventory levels	Delivery of raw materials and inventory		Create a Purchase order , update inventory level	Receives order , checks raw material level ,Validate P.O, receive a delivery of raw material and production	
Inventory Level sufficient	Finished order or a delay due to correction of the order	Maximize the number of finished orders without any problems or delays			Production of the order, packing of the order, control of the order, shipment of the order, and definition of any problems or corrections of the order	
Shipment of the order	Payment of order or allocation of order	Reduce number of allocated orders and receive payment on time, maximize customer satisfaction	Address any problems with the order, Sent payment to A/R	Sent invoice to customer, definition of the problem and creation of a new order if necessary	Sent shipment to customer, Resolution of any problem New shipment	

Payment Reminder	Receive payment	On time and the right amount	Sent payment to A/R	Wait for payment, send customer a reminder, Closure and archive of order	Send A/R a Notification	

Costs benefits

Tangible	Intangible
Productivity and performance improvement	Internal improvement: process, work flow, information access
Cost and cycle time reduction	Save enormous time and effort in data entry and validation of orders
Improved ex: Automated ordering and payment, Faster Ordering time saving time and money. Reduction in quotation from 2 days to 1 hour, PO validation reduction time from 3 days to an hour	Improved customer service: quality, time, delivery, support
Reduce paper flow, time delays , errors, miscommunication	Flexibility, Accuracy and faster access to data for timely decisions, uniform reporting by the system
Automated ERP system, reduce the need of complicated process by eliminating roles of several departments	Increase organizational transparency and responsibility Improve employee satisfaction

Conclusion

In conclusion, implementing the Enterprise Resource Planning (ERP) integrated all departments and functions across our company onto a single computer system that can serve all those different departments' particular needs. To illustrate the diversity, this encompasses every department from sales department, Accounts receivable to the manufacturing department. Each of these departments typically had its own computer system optimized for the particular ways that the department does its work. But ERP combines them all together into a single, integrated software program that runs off a single database. Before implementing the ERP, the old process took a much longer process cycle time due to the waiting time for paperwork and validations. The new ERP system enables the various departments to easily share information and communicate with each other. ERP eliminates the old standalone computer systems, paperwork, and validation time and replaces them with a single unified software program divided into software modules that roughly approximate the old standalone systems roles and responsibilities.

Each department still has their own software, except now the software is linked together so that someone in Finance can look into the warehouse software to see if an order has been shipped or the sales department can view where the order is after they have validated it.

The corporate culture within the organization had change. Corporate culture includes the type of department functions and the way our organization operated as a whole. Changes in work practice will have to be made to fit the system which meant users and employees had to learn a new software program. By using the ERP to improve how we took orders, manufactured goods, shipped and billed for them, we saw value from the software. If we had simply installed the software without changing the ways people do their job or changing department function, we would not have seem any value at all.

To use the ERP as a competitive advantage, our organization had a strategic plan in place in order to maximize the capabilities of the system. The benefits of implementing an EPR system is the primary reason many organizations opt to invest in them. These benefits, when utilized correctly, are what gives one company an advantage over another. After implementation, we could now make fast critical decisions regarding inventory management to prevent backlogs can be forecasted and thus prevented rather than waiting three days. Our employees can perform less mundane routines and focus on other important tasks that involve human thinking such as maximizing the number of sales rather than making a proposal, sending it to the customer, waiting for the customer etc. This lead to less redundancy and better data integrity. The system can now automate quotation. It can identify and eliminate duplicate entries, highlight inconsistencies and merge data to make it more manageable. Data integrity is more reliable due to the capabilities of the system.

Therefore we saw efficiency increases as well. Data entered in the database can be viewed across the enterprise which enables the organization to communicate and make decisions based on real time numbers for example all departments can view whether or not our customer made the payment if not the system sends an automatic reminder to our customer . People in these different locations all see the same information and can update it. When one department finishes with an order it is automatically routed via the ERP system to the next department. To find out where the order is at any point, you need only log in to the ERP system and track it down. The order process moves quickly through the organization, and customers get their orders faster and with fewer errors than before.

ERP can apply that same magic to the other major business processes, such as employee benefits or financial reporting. Employee benefits are the intangible benefits of our ERP system. It makes the employee and department overall jobs' easier by providing them with roles and responsibilities. Employees can access reports and current data they need to analyze. This ease of information access creates less stress during long work days and a greater sense of accomplishment. Our organization can now benefit because employees focus their energy on higher level work rather than acquiring and gathering information. ERP benefits throughout the entire enterprise; include: increased profit, increased productivity, better data integrity and a streamlined process providing greater efficiency. The implementation of the ERP system could potentially have some challenges, but when implemented after careful planning and analysis, it can provide an organization a competitive edge over its competition.

References

All, A. (2011). Secrets of an (Almost) Pain-Free ERP Implementation. IT Business Edge.

http://www.itbusinessedge.com/cm/community/features/interviews/blog/secrets-of-an-almost-pain-free-erp-implementation/?cs=45241&page=1

Burns, M. (2010). How to Select and Implement an ERP. 180 Systems.

http://www.accountingwebcgi.com/whitepapers/ERPWhitePaper.pdf

Houston, N. (2011). ERP Implementation Strategies-A Guide to ERP Implementation

Methodology. Software Advice.

http://www.softwareadvice.com/articles/manufacturing/erp-implementation-strategies1031101/

Implement-erp.com (2007). SAP ERP Implementation.

http://www.implement-erp.com/sap-erp-implementation.html

Sdn.sap.com (2012). Business Process Cycle: Implement Phase.
http://www.sdn.sap.com/irj/bpx/implement

Tapscott, D. (2006). Service Enablement and Competitive Advantage. SAP International.

http://www.sap.com/mexico/camp/pdf/Service_Advantage.pdf

Turbit, N. (2005). ERP Implementation-The Traps. Project Perfect.
http://www.projectperfect.com.au/downloads/Info/info_erp_imp.pdf