7. CASE STUDY: XYZ ORDER SUPPLY CO. LTD.

XYZ Order Supply, established in 1983, sells office equipment, such as copy and fax machines, switchboards, mobiles, computers, software and other office supplies to larger companies. Under its trademark, Top, the company sells products purchased from subcontractors or products it manufactures itself. Conducting business in this way XYZ Order Supply to be independent of anyone else's trademark, branding, and marketing. XYZ management also realized that by advertising and attempting to sell a new product before manufacturing it, they could reduce the capital investment.

In recent years, the means of doing business has changed, and internet-based Order Supply firms have become a serious threat to XYZ Order Supply, whose internal systems are old and inefficient, and can't meet the demands of the changing business environment. In addition, the new Internet-based firms have lower sell expenses because of smart Internet solutions, enabling them to offer lower Price and to invest more money in marketing. Management has decided to revamp its Business process to increasing their marketing shares. A Management/IT consulting company was appointed to study full system & recommend necessary changes:

7.1 INTRODUCTION

Consulting company decides to analyse existing business process by using Object Oriented Methodology for Business Process-Re-engineering.

Main steps. are followed by the consulting company are shown in Figure 23.
Object Oriented Approach for BPR

Define Strategy
a) Set Goal / Objective
b) Identify Team

Scan Environment
a) Technological opportunity
b) Organization Culture
c) Socio-Economic condition
d) Market & Competition

Study As-Is Process
a) Business Vision
b) Business Structure
c) Business Process
d) Business Behaviour/Interaction

Map To-Be Process
a) Identify Gaps /Problems
b) "To-Be" Process

Identify Key Result Areas
a) Analyse modules
b) Analyse Cost & Benefit
c) Set Priority

Implement
a) Prepare Implementation Plan
b) Sign-Off By Top Management
c) Involve Stake Holders
d) Communicate Benefits & Impacts
e) Training
f) Implement Changes

Monitor/Evaluate
a) Monitor & Evaluate
b) Next Cycle

Figure 23: [OO Methodology for BPR]
7.2 DEFINE STRATEGY

Objective of this step is to define Goals of BPR & formation of the team responsible for the BPR exercise.

7.2.1 Set Goal/Objective

At the start of the BPR, first step is to understand the Goals & the objectives of the BPR exercise. Goals for the XYZ Ltd are as follows:

The goal of XYZ Order Supply is to increase its market share from 15 percent to 55 percent in a 24-month period. This is achievable by satisfying its customers, having a highly motivated staff, conducting 5,000 transactions per day, and earning a highly profit from those transactions. However, increasing the current number of transactions, 1,000, to 5,000 will not be easy. To do this, XYZ Order Supply has to increase both the number of regular telephone customers as well as Internet customers. To realize the increase in Internet customers, XYZ Order Supply home page must be easy to find, and its visitors must be encouraged to register. Therefore, registration must be made clearly beneficial to these visitors, or they won't register. XYZ Order Supply must offer something in return for registering, such as a discount off the first order. But increasing the number of visitors and making it beneficial to register is an expensive undertaking for XYZ and can impact the profit in negative terms. On the other hand, making these investments in the home page is necessary to achieve an increase in the number of market shares and ensure a high profit in the future. These goals are marked as contradictory.

The goal of high profit it hindered that fact XYZ Order Supply has too much restricted equity. Inefficient production and purchasing, as well as inaccurate predictions about the incoming orders cause the amount of restricted equity. In addition, the product lines do not always meet the customers' need; clearly, market analysis and production, product development, and market analysis stem from confusion about terminology.
For example, the marketing department, the term "new products," means variations on items. Other problems stem from system issues. For example, the legacy sales systems cannot be connected directly to the internet; many manual steps are required for each sale or transaction on the home page.

The goals for XYZ Order Supply are diagrammed in the goal model shown in Figure 24. It carries processes. The objective of the goal model is to serve as a starting point for setting up a project that implements the vision; in this case, turning XYZ Order Supply firm into the leading supplier of office equipment and supplies.
7.2.2 Identification of the Project Team

Director Marketing was identified as the Sponsor for this project. Project steering committee was formed with senior functional managers from Marketing, Sales,
Procurement/Production & finance department along with the BPR consultant form the consulting company. Senior consultant from the consulting company was assigned as Programme Manager for the Project. Core Working Group was formed with the key user representative from each department including senior member from IS (Information Systems) department.

7.3 SCAN EXTERNAL ENVIRONMENT

Objective of this phase is to understand present business scenario. An Organization can take right decision on changes if management is aware of technological opportunities, market competition & socio-economic condition of the business arena. Changes will have maximum impact on the organization culture. Hence re-look at the own culture will help to plan appropriate change.

7.3.1 Technological Opportunity

Business through Internet is growing every day. e-Commerce market is becoming significant. The market research report of Forrester says that over the next two years, most firms will start transacting on the Net -- propelling US B2B e-commerce revenues to $2.7 trillion in 2004[106]. This growth will be accelerated by eMarketplaces as these online venues increasingly connect communities of buyers and sellers. As these new intermediaries evolve, Forrester expects a dramatic shift in the structure of industry supply chains.

"E-marketplaces offer significant opportunities for buyers to lower prices and streamline buying processes, but those savings require a significant investment," said Matthew Sanders, analyst at Forrester. "Companies can make the most out of these outlays by documenting workflows, leveraging their integration efforts and pushing their purchases online."

The promise of lowering the cost of goods entices buyers, but in order to capture the benefits, purchasing organizations will need to invest heavily in
four areas: 1) changing internal procurement processes; 2) integrating e-marketplaces within internal systems; 3) purchasing B2B applications; and 4) paying e-marketplace transaction fees. These costs, however, won't be the same for all implementations.

According to Forrester, buyers getting started with e-marketplace buying will seek to trim transaction costs associated with processing purchase orders for maintenance, repair and operations (MRO) goods. The price tag for these baseline buyers is around $5.6 million, and it will be driven by a combination of transaction fees, integration software and internal staffing.

Spot market dabblers, those purchasing executives who will use e-marketplaces to make spot purchases for their direct materials will spend $10.7 million in order to help manage costly inventories and avoid shortfalls. Forrester says these buyers will pay the most for new software installation and related consultant fees.

Research by International Data Corp. (IDC) found that worldwide e-marketplace services spending will increase at a compound annual growth rate of 27 percent, from $5.2 billion in 2000 to $17 billion in 2005.

It is clear of the above research data that Internet Technology is growing very fast. XYZ Order Supply firm must change its business process & infrastructure to adopt new technology & learn new way of doing business. Following few paragraphs will explain the e-business transformation which is taking place in the industry in general. XYZ Order supply must keep this industry trend at the time of re-engineering its business processes.

As enterprises transform their processes to exploit the power of IT they go through six levels of change and extend their processes to integrate with those of their trading partners, resulting in cheaper, faster and better processes.

The degree to which e-business initiatives impact an industry varies from simple paper replacement to fundamental changes in business relationships. They also vary greatly in cost, benefit and risk. In reviewing the results from nine industry sectors, it
is evident that process change follows a predictable path. Initially, the focus is on improving internal efficiency but later it shifts to improving relations with consumers and other businesses.

There are six levels of change starting from Level 0, where the enterprise has a physical infrastructure that supports only manual processes. These processes are limited to siloed process definitions.

| Level 1 | The enterprise automates existing processes within each business function (e.g., implementing a stand-alone system for accounting, payroll, or asset tracking). |
| Level 2 | The enterprise recognizes and automates business processes that cross the enterprise's organizational boundaries. This frequently occurs when the enterprise implements an enterprise resource planning solution, or if the enterprise is one of the few that made progress with its business process re-engineering initiatives of yore. |
| Level 3 | The enterprise begins to provide its customers and suppliers with limited remote access to its existing infrastructure and processes. |
| Level 4 | It moves into e-business by adopting an enterprise view of its processes and using online technologies to link itself with its trading partners. In every sector, today's most exciting e-business opportunities are found at Level 4 or above. |
| Level 5 | The enterprise begins to think about itself as a net-liberated organization. A Philosophy for “Post-E-Business Survival” that needs to collaborate with its partners and suppliers in real-time. |
| Level 6 | When the enterprise reaches Level 6, it gains the ability to respond dynamically to customer demand. |

As enterprises evolve their processes through the six levels of change, they will undoubtedly face significant risks. The risk depends on the degree of business change and the complexity of the technology. Business change includes both process changes and changes in organization and culture. Technical complexity may include the complexity of the applications, needs for applications integration and the complexity of the new IT infrastructure. Enterprises are not alone in their e-business endeavours.
and should learn from other industries undergoing similar risk-profiled initiatives. Although the Internet can radically transform an industry's processes or simply "digitize" them, the degree of change does not necessarily dictate the return on effort. Enterprises should not assume that the largest and riskiest e-business endeavours would provide the largest returns. It is the focus on how e-business technologies can improve the critical processes in an enterprise, regardless of the degree of change that drives the greatest returns and leads to competitive advantage.

E-Commerce is an important aspect of the business in future. But company must try to encash its present strength with help of technology. XYZ Order Supply business is based on Telephone orders. Hence the company should try to improve its performance in this core business strength with help of technology.

Old telephone exchange should be replace by the modern digital telephone system. Company should look in to the possibility to use IP (Internet Protocol) phones. This will help to cut down 60-70% of the telephone cost.

CTI (Computer Telephone Integration) should be done for better customer service. Automatic updation of order status to customer thru telephone is a good application to improve customer satisfaction.

Development of Web Site & sales portal is essential to extract full benefit of the internet technology.

WAP (Wireless Application Protocol) is becoming popular & it holds the promise of future technology. Hence Web-Portal of XYZ Order Supply Firm should be WAP enable so that customer can retrieve information through Mobile Phone.

Order desk should receive order 7 x 24 hrs (7 days a week & 24 hrs a day). IVR (Interactive Voice Recording) interface should be developed for support after office hrs.
7.3.2 Organization Culture

XYZ Order Supply Company is very dynamic & aggressive in its own line of business. However it is not very technology focussed & it has not invested much on the modernization in the recent past. Its sales & customer facing people are highly skilled & efficient. Average age group of the employees is 43 & average employment per person is 11 yrs. Hence it is not very young in terms of its work force. Training to the new technology needs to be planned very carefully during the Business Process Re-engineering.

7.3.3 Socio-economic status

Due to the increase of Internet population, market is increasing every day. Population of Internet users are increasing in a rapid speed. 15% of the regular office products are purchased through net transaction. According to the market prediction, this is likely to increase in coming years.

7.3.4 Market & competition

XYZ Order Supply Company operates in a segment where competition is increasing every day. Customers are becoming more & more demanding. Timeline for supply & quality of the product are the key parameter for the Customer satisfaction. The market is very price sensitive. Need for change is the absolutely essential for XYZ Company for the survival in the market. Web based order supply companies are suddenly becoming the threat for the XYZ Order Supply Company. Key business strategy of XYZ co. is to market before production is no more unique. New Web based competitions have following strengths & weakness compare to XYZ Co.
Strength

1. Low inventory cost
   Most of the time supply takes place directly from the procurement point. Flexibility in the change in product line due to low commitment on stock.

2. Low logistic cost
   Supply is directly from the procurement point. Most of the time delivery is taken care by courier companies like DHL, UPS etc.

3. Larger access to the customer & wider reach due to internet.

Weakness

1. Less number of customers with long-term relationship.

2. Customer has less confidence on product quality.

3. Supply chain is not managed by the company. Hence less control over the process.

4. Mostly technology focused business model & limited strength in the area of Financial & Marketing.

5. Personal salesmanship is missing from the business model. Hence limited possibility of push sales.

Table 25: [Strengths & Weaknesses]

XYZ Order Supply firm must come out with a strategy to acquire the strengths of the Web-Based companies.
7.4 STUDY “AS-IS” BUSINESS PROCESSES

Once Goals are set for the process Re-engineering next step is to understand the existing business practices of the XYZ Order Supply Co.

Following Business views under Object Oriented Methodology are used to explain the existing Business Processes/functions of an enterprise:-

- Business Vision
- Business Structure
- Business Process
- Business Behaviour/Interaction

Views are different aspects of the business. One view at one time may be considered to analyse a particular scenario, while several views are considered simultaneously to get the total picture of an enterprise.

7.4.1 Business Vision

The Business Vision view of a business contains the business idea and its goals expressed in a vision statement and goal model. Because it is difficult to formulate a vision statement and goals without defining the key concepts, a conceptual model can be created in parallel to complement this view, to help clarify the key concepts of the business.

The vision statement for XYZ Order Supply is:

"We should be leading supplier of office equipment and supplies. We should offer customers attractive solutions and good value for their money. By not going through a retailer, we cut the expenses. Integrating our sales processes with our customer's purchase processes results in highly efficient communication and delivery. To be able to integrate these processes, we must provide several interface, such as internet, e-
mail, FTP, telephone, and fax. We can integrate further by offering additional services such as inventory tracking & automatics purchasing."

The Conceptual Model helps to understand overall function of the XYZ Order Supply firm. The Conceptual model is shown in Figure 25. This model defines the key concepts that are important for modelling this business. The business plant is one of the key concepts in XYZ Order Supply firm. It consists of the marketing plan, product strategy, Internet strategy, and the business ideas. It should result in high profit. The conceptual model also indicates that the marketing plan that is a part of the business plan also influences the business plan. The vision statement that is manifested in the goal model motivates the business idea.

The product strategy is another key concept in XYZ Order Supply firm. It develops the supplier that manufactures and delivers items. The product strategy also results in production facilities, products sets. The product strategy is based on the market analysis and is also a part of the business plan.

The product sets describe the products. Examples of product sets include printers, copying machines, and handbooks. The products are concepts for the actual items. For example, the product printer HP/5000(which belongs to the product set printers) is the concept or term that encompasses all actual HP/5000 printers. Typical product attributes are description, design reference, and version number. The items are the actual printers, and they have attributes such as a serial number and page.

Implementing the market plan leads to an increased number of market shares. Customers place orders and pay via transactions, which leads to more market shares. An order results in a manufactured and delivered item. The delivered items satisfy a customer's demand. The delivery times or quality requirements are controlled via key ratios, such as optimum delivery times or quality requirements.
Figure 25: [Conceptual Model – XYZ Order Supply Co.]
7.4.2 Business Structure

Organization and Resources are modelled in the Business Structure view. Organization models show the structure of the human resources, and the resource models show structure and behaviour of other resources, such as products, documents, and machines etc.

The structure of an organization is important to understand not only for restructuring purposes, but also for clarifying the responsibilities of each organizational unit.

The object diagram in Figure 26 aims to clarify the structure of the organizational units in XYZ Order Supply firm.

XYZ Order Supply has a Board composed of the president and other shareholders. There are seven departments at XYZ Order Supply firm. XYZ Order Supply includes the following organizational units:

The Financial Department is responsible for the firm's finances, including credit references, credit card checks, and accounts receivable.

The Production Department produces items, either by assembling items that they manufacture or by re-labelling items purchased from subcontractors.

The Purchase Department works with purchasing outside products and developing subcontractor relationships.

The system Department is responsible for the technical infrastructure and information technology of the business. It comprises system analysts, programmers, system architects, operators, and support staff.

The Sales Department, which takes care of Telesales, Direct sales, Postal/mail and Web sales, is responsible for selling products.
The Product Department develops new products sets.

The Marketing Department is responsible for marketing and implementing the marketing plan.

The next subsection shows the organization units interact with each other and how responsibility for each of them can be established.

![Object Model - Organization Structure](image)

Figure 26: [Object Diagram-Organization Structure]

The resource model shows the structure & behaviour of the resources other than human resource. The conceptual model (Refer Figure 25) describing the overall concepts for XYZ Order Supply that helps to explore the resource model.
Figure 27 shows the item and order resources and their organization in relation to additional resources, such as product, production facilities, supplier, key ratio, and products set. The item resource is described with a serial number and a placement. The placement, site, and Geographical Location classes are structured according to the geographical Location Pattern. Production facilities are those necessary to produce the items. The supplier delivers items; it can be a subcontractor or an internal production department. Key Ratio controls restrict equity, delivery time, the optimum time for introduction of new products, and error rate in production. Product is the concept for item; it can be an object, such as the Nokia mobile phone 6150, while the items are the actual phones, with a serial number.
The product sets are used to organize and group the products. For example, writing tables, desk lamps, chairs, bookshelves, file cabinets, and wastebaskets can be organized by grouping them as office furniture. Office furniture can be subject to certain sales campaigns and package solutions; and the office furniture department is staffed with skilled people.

The description attributes, in the Product Connection specification class, can have values such as parts, refill, or refinement. For example, XYZ Order Supply product set switchboard solution. Both products contain other products, including the actual switchboard, computers, fax machines, software, and headsets. The relationship between these two products and their parts is captured by the class Product Connections, and is specified by the class product connection specification. The class Product Set Rule is used to specify that product sets can be connected to each other; for example, the product set Switchboard solution can consist of computers, which is also a product set in itself.
7.4.3 Business Process

Objective of this step is to understand the existing Business Process. Figure 28 explains the existing business process.

Figure 28: [Order Processing – “As-Is” Process]
Business Plan is the driver for XYZ Order supply firm. Marketing management process received direction & business goal from the Business plan. This process gets feedback regarding market from the market research group. Development of the product specification is the part of the marketing management process. Products are either developed by the product development process at the production facility of the company or it is procured from the vendor through Purchase process. Finished product goes to delivery process for supply against customer’s order. Customer places order to sales team. Sales management processes the orders through Delivery Process. Sales Management is responsible for customer satisfaction.

Some of the issues are clearly visible from the process diagram Figure 28.

Sales management process is responsible for accepting order from the customer but it has very poor visibility on product availability/Stock & delivery status. Information related to product features & new product are not available at the point-of-sales.

Purchase & Production process do not get market demand & quality feedback from the sales process. This will lead to over stocking or under stocking of items.

Study of the Available Systems:

Understanding of the existing System is part of the As-Is process study. In case of XYZ Order Supply Co. footprint of the existing systems are as follows:
Refer Figure 29 for Footprint of the existing System shows that there is a Finance system, Sales system & Customer Database. There is some Internet application which can send order to sales system.

There is no product database, stock information or on-line internet based sales system.
7.4.4 Business Behaviour

The Business Behaviour views use interaction analysis to allocate responsibility to organizational units and the business process that interest with them. Interaction analysis is performed simultaneously with business process modelling. Sequence diagrams are used to show the interactions between organizational units as well as the process that take place within or cross each organizational unit.

Considering the BPR goal of the company two important functions are analysed in this case study. These two functions are Order Processing & Purchase.

An interaction is a sequence or a scenario that begins with a business event, such as a question or an order, and ends with a result. For example, XYZ Order Supply accepts credit card orders from customers. Assume that prior marketing and telemarketing have resulted in an inquiry from a customer to the Sales Department. The customer wants to know if a particular item is available and the cost of the item. The customer might also try to negotiate for a better price. If the customer is satisfied with the offer for the item, he or she places an order, pays for it, and receives the payment, in this case a credit card transaction. The production department is responsible for taking the order and delivering the item. The sequence of events for this interaction is shown in Figure 30. The organizational units in the figure are picked up from the object diagram in Figure 26. Figure 30 is based on the action workflow pattern, which is a useful pattern for modelling interactions.
Purchase function is another important area of XYZ Order Supply Co. Figure 31 is the sequence diagram for an interaction analysis for purchasing. The purchase Department is responsible for purchasing items. It must confer with other organizational units in order to determine what to purchase, when to make the purchase, and the quantity to purchase. The first step is to ask the Sales and Marketing departments for prognosis to determine whether there is a demand for the product, and, if so, how much of a demand. The Purchase Department then asks the Production Department about the
stock figures, that is, how much of the product in question is in stock. The financial Department supplies information regarding the liquidity. Once this information is received, the Purchase department begins negotiations with the Supplier, which should result in the purchase of items. The model shown in Figure 31 is also based on the Action workflow pattern.

Figure 31: [Purchase Interaction Analysis]
Object Oriented Methodology of BPR proposes phased implementation of process changes. Hence it is very important to draw interaction diagram for various business objects to analyse interdependencies among themselves.

Focus of the As-Is process analysis is to understand existing business processes & issues related to the existing processes. Generally gaps are identified after detail study of the existing process.
7.5 MAP TO-BE PROCESS

Objective of this step is to identify the Business gaps/issues/problems & propose new business structure/processes to overcome those gaps.

7.5.1 Identify Gaps / Problems

AS-Is process study shows following key issues related to XYZ Order Supply Co.

1) Lack of product, new product, stock & delivery status information to the sales team who are front-ending with customer. Sales representative have to be powered by more backup information support to ensure the growth of the business.

2) Too much of back & forth interaction for sales team with other departments for servicing customer order. This is clearly visible in the Interaction Diagram (Refer Figure 30).

3) Same sales team is handling Tel, Fax, direct order, Order Supply & web-order. Company is focusing on web-order in future. Hence more focus is required on web-sales team.

4) There is no system for materials management. Stock & purchase function need to be improved by better software support.

5) There is no focus or systems support for Web bases sales. Required powerful web-site for the company with on-line order processing & customer support capability. This will boost Web Sales market.
7.6 "TO-BE" BUSINESS PROCESSES

The Business Process View of "To-Be" process focuses on how to carry out the vision and goals outlined in the vision statement, goal model (Refer Figure 24) & conceptual model (Refer Figure 25). Figure 32 depicts the proposed business processes of XYZ Order Supply Co.

The market development process of XYZ Order Supply takes a market analysis as input and delivers a marketing plan as output. The goal of the market development process is to increase the number of market shares. The marketing plan, which is also a part of the whole business plan, controls the process of business development. The goal of the business development process is to achieve an increase in transactions and high profit, which would aid in achieving the overall goal of an increase to 55 percent of market share. The business development process is responsible for developing the business and its strategies, to meet the demands of the market. It delivers a business plan, which is, according to the conceptual model, composed of a market plan, a product strategy, an Internet strategy, and a business idea. In addition to the business plan, the business development process follows the plan itself. For example, the business development process is responsible for developing XYZ Order Supply home page, a critical aspect because it is one of the resources that will be used to increase the number of transactions.

The business plan controls the management process, product development process, production development process, and subcontractor development process. The management process aims to achieve the goal of satisfying customers and motivating staff. It also defines key rations that control the delivery process. The product development process supplies the delivery process with products that meet the customers' expectations. The production development process aims to increase the efficiency of production; it also supplies the delivery process with production facilities. The subcontractor development process is responsible for the
subcontractors' delivery processes. The process ensures that the subcontractors deliver the specified item on time.

The delivery process takes a customer's order as input and delivers an item to that customer. The goal of the delivery process is timely delivery. The process is controlled by the key ratio defined in the management process. When an order is placed, it should be filed as soon as possible. The customer should make payment before delivery. It is also important to reduce inventory, because maintaining too many items in stock is expensive. This means that XYZ staff must be able to accurately predict the number of incoming orders and plan production and purchase based on that prediction. Later on in this case study this process is further decomposed and detailed.

The business processes for XYZ Order Supply were modelled with the process Control Layer pattern and the process supply layer pattern Figure 32. These powerful patterns are often used together to facilitate the structuring of most businesses.
Complex process are generally decomposed for the better understanding. In this case study The Delivery Process of Order Supply is a complex process. Figure 33 shows the overall process for the order processing. Delivery process is a sub-process of the total Order Processing cycle. Figure 34 shows the decomposed delivery process. This explains clearly the function of the following components:
The order process is responsible for on-time delivery, invoice and credit card payments, and customer satisfaction. The process triggered by a placed order and ends with a delivered item and a satisfied buyer. The key ratios, items, and products control the order process. The order process is primarily executed in the sales and financial Department, but it also may involve the procurement process—if, for example, the supply of items is affected.

The procurement process is responsible for delivering items on time to the order process and for satisfying customers. This process is triggered by market and sales prognosis. It then purchases, refines, and sometimes manufactures items, and finally delivers them to the order process. The key ratios that control the efficiency of this process are defined in terms of quality and stock figures. The procurement process involves all organizational units, including subcontractors and suppliers. The customers are not involved in the procurement process.

The customer interaction process is responsible for taking many orders. It is supplied with customer information, item information, and product information. This interaction takes place via XYZ Order Supply home page, telephone, e-mail, or fax.

The assembly line diagram shown in Figure 35 is used to further clarify the delivery process.

This diagram visually depicts the synchronization, interaction, and resources of the three sub-processes. For example, the procurement process delivers manufactured items that supply the order process, which delivers the items to customers. Notice how orders delivered from the customer interaction process are used in both the procurement and the order process.
Figure 33: [Order Processing]
Figure 34: [Delivery Process]
Figure 35: [Assembly Line Diagram]
Effective implementation of Process Change will lead to re-structuring of organization structure. It is clear of the above analysis that XYZ Order Supply company has to re-organize its process to improve synergy between internal departments. Web sales should be given higher focus. Hence it is propose to change the organization as for the following new organization chart (Figure 36).

![Object Diagram - New Organization Structure](image)

**Figure 36: [Object Diagram - New Organization]**
Existing seven departments have been clubbed to four main functional departments. Sales & Marketing has been merged to get maximum synergy.

Purchase & Production are similar functionality related to product. Hence both are clubbed under Product department.

Sales & Marketing department will have sub-department for Web sales & Tel-Fax sales. Warehousing & Delivery has been clubbed & it has put under sales group to improve customer satisfaction in delivery.

Improve market share in the Web based sales. Formation of the Web-sales department is the 1st step towards this goal. Separate sales target should be set for the Web sales. A proper web site should be prepared for XYZ Order Supply Company. Need to ensure the access of the web site from the different search engines. Link to XYZ Company’s web site should be available from the various other popular sites. A marketing plan should be prepared to improve web-sales. End-to-end customer service starting from the product inquires to delivery & collection of payment & after sales support should be planned through the sales portal. Product lines may be reviewed to include items, which are more appropriate for the web-based transactions. The Web-sales department should prepare detail system specification for the necessary software development. This has not been included in the scope of this study.

Development of the required software is essential for the improvement of the level of Customer satisfaction.

Support systems:

XYZ Order Supply firm has several support systems that supply the business process. Some of them are old and must be replaced while others require minor changes in order to achieve the goals of the business. Information about products and documents spans multiple systems and is poorly integrated.
Figure 37 shows the system topology that should be implemented simultaneously with the business processes Re-engineering. Two systems that do not currently exist are: the Product Management system and the materials control system.

The product management system (PMS) is one of the more important systems that must be built, and as soon as possible. A PMS is an information system that organizes and supplies the business with adequate information about the product set, the individual products, and the documents (external documents, such as advertising material, product sheets, data sheets, and manuals, as well as internal documents such as requirement specifications and blueprints). The PMS is used by all organizational units, including subcontractors, who will obtain information from an extranet, and customers, who will download some of the documents from the Internet.

The PMS requirements come from the assembly line diagrams, which indicate the business process supplied by the system; the diagrams also show which resources, such as information, should be used, and how they should be organized to facilitate the execution of the processes. In context of the PMS, this means the information the system delivers and how the system delivers it.

In addition to the PMS, a **Materials Control** system is required. This system, which should be built and integrated with the other systems, supports the production process with production and manufacturing planning, materials purchase, and others. Its requirements are found in the assembly line diagram for the production process.

As mentioned, in addition to these two new systems, existing systems require evaluation. Some require changes; others even need to be replaced entirely.

Internally, XYZ Order Supply firm is migrating from outdated terminals to modern PCs with Web browsers that are connected to an internet. This means that the whole infrastructure must be built upon Web Technology and include an Internet server with XYZ external home page, an internal internet server, and an extranet server for subcontracts.
The customer Database, another of the existing support systems, is a database application that contains customer information. The processes use it to store, find, and change customer information. This system will not be changed. It provides a well-defined interface to the other systems and can be integrated easily.

The sales system is an existing system that supports the sales staff. The system requires a new interface in order for it to be integrated with the rest of the supporting systems in XYZ Order Supply firm.

The telephone system must be replaced as soon as possible. The new Telephone system should be integrated with the sales system, which already contains functionality that can be integrated with a modern switchboard.

The Financial system, used for accounting, invoicing, and credit card transactions, currently works satisfactorily; the business processes that use it do not have additional requirements. This system will remain unchanged.

In the new software architecture shown in Figure 37, the systems are stereotyped packages shown with the standard stereotype: "system". Dependencies are shown with dependency arrows. The sales system is dependent upon the financial system, the Telephone system, the customer database; the materials control system, and the PMS (Product Management System). The financial system is dependent upon the Sales system, and the PMS. The Extranet Application system is dependent upon the PMS, and the Material Control system. The Internet Application system is dependent upon all other information systems (the one bundled in the package collection of information systems). However, access from the Internet and extranet applications is restricted. The system topology can be complemented with an interaction analysis. As is the case with organizational interaction analysis, the systems interactions are analysed using the sequence diagrams, and aim to allocate responsibility to the units (in this case, the systems).

Systems must be prioritised for development planning. giving priority to systems or subsystems in case of project problems, such as delays, should be based on the goal
model; in XYZ case, the goal model in Figure 24. For example, it is better to prioritise the building of the internet applications and add interfaces to the sales system before building the material control system, since the number of goals concerned with internet and sales is greater in number than the number of goals concerned with production and production development.

Figure 37: [Proposed Software Architecture]
7.7 IDENTIFICATION OF KEY RESULT AREA

Re-structure the departments to improve synergy & efficiency of operation. Implement the business process changes as proposed in the “To-Be” process for Order processing. Develop PMS & Material management systems to improve sales process.

Focus on the Web based market. Proposed re-structuring will help is this issue. Separate Business plan is to be prepared for Internet Marketing. Web-sales department should take up this responsibility & suitable e-commerce software should be purchased or developed based on the marketing strategy.

Improve technical infrastructure for both Tel-sales & Web Sales. Develop required systems support to improve customer satisfaction level.

7.7.1 Analysis Modules

Next step is to analyse the propose changes & assess its impact. Following Table will help to analyse the impact.

<table>
<thead>
<tr>
<th>Proposed Change</th>
<th>Purpose</th>
<th>Social Impact</th>
<th>Impact on Business</th>
<th>Impact on Market</th>
</tr>
</thead>
<tbody>
<tr>
<td>Org. Re-Structuring</td>
<td>Better alignment between functional departments.</td>
<td>Nil</td>
<td>Chance of high resistance</td>
<td>Improve customer Service</td>
</tr>
<tr>
<td>Web-Site/Sales Portal</td>
<td>Increase sales thru Internet</td>
<td>Technology focus Image of the company</td>
<td>Increase Web-Sales</td>
<td>Better customer service. Access to new customers.</td>
</tr>
<tr>
<td>Process Name</td>
<td>Risk</td>
<td>Time Line</td>
<td>Cost</td>
<td>Benefit</td>
</tr>
<tr>
<td>----------------------------</td>
<td>--------</td>
<td>-----------</td>
<td>----------</td>
<td>---------</td>
</tr>
<tr>
<td>Org. Re-Structure</td>
<td>Medium</td>
<td>2 mths</td>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td>Web Site/Sales Portal</td>
<td>High</td>
<td>6 mths</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>Develop PMS</td>
<td>Low</td>
<td>3 mths</td>
<td>Medium</td>
<td>High</td>
</tr>
<tr>
<td>Dev. Material control s/w</td>
<td>Low</td>
<td>3 mths</td>
<td>Medium</td>
<td>Medium</td>
</tr>
<tr>
<td>Modernize Tele-sales</td>
<td>Low</td>
<td>2 mths</td>
<td>High</td>
<td>Medium</td>
</tr>
</tbody>
</table>

Table 26: [Impact Analysis]

7.7.2 Cost Benefit Analysis

Table 27: [Cost-Benefit Analysis]

Time line & cost for Org. Re-Structure is assessed based on the implementation plan of the project team. Same for the software development is provided based on the Object Oriented Modelling Approach for Business Process Re-Engineering.
proposal from the software vendor. Hardware modernization plan is based on the input from the SI (System Integration) vendor.

7.7.3 Set Priority

Based on the above cost benefit analysis XYZ Order Supply decides to take up Organizational Re-structuring & development of PMS are two priority items for implementation.

<table>
<thead>
<tr>
<th>Process Name</th>
<th>Priority</th>
</tr>
</thead>
<tbody>
<tr>
<td>Org. Re-Structure</td>
<td>1</td>
</tr>
<tr>
<td>Develop PMS</td>
<td>2</td>
</tr>
<tr>
<td>Web Site/Sales Portal</td>
<td>3</td>
</tr>
<tr>
<td>Modernize Tele-sales</td>
<td>4</td>
</tr>
<tr>
<td>Dev. Material control s/w</td>
<td>5</td>
</tr>
</tbody>
</table>

Table 28: [Priority List]

7.8 IMPLEMENT

In the conventional BPR process, implementation is a major task where most of the BPR initiative fails. This methodology analyse the risk using Object oriented technique. Cost benefit analysis & prioritisation takes care of risk management. However this is the most important phase of BPR.

Schedule review meeting of the BPR Core team & BPR Steering committee were held during this phase. Detail implementation plan was prepared by the core team during his phase.

Software development was outsourced to an Indian Vendor as per the following specification.

7.8.1 Prepare Implementation Plan
a) Implementation plan for Re-structuring was prepared. Staffing plan was reviewed & surplus staff was removed from the organization.

b) System Development plan for PMS was drawn up. Specification details are given in Appendix-III.

7.8.2 Sign-off by Top Management

Support from the top management was essential during the implementation phase. Role of the top management was primarily in the strategic areas, financial commitment. Top management support is also essential for the conflict management between various departments during re-organization. A formal sign-off on implementation plan is essential before implementation of any process change.

7.8.3 Involve Stake Holders

Representative of all the affected user departments were taken during the re-structuring process & during the implementation of the new systems/processes.

7.8.4 Communicates Benefits & Impacts

Formal communication of the new process is an important aspect of the change management. The reason for the change & impact of the changes were explained to all affected departments of the XYZ Order Supply Company.

7.8.5 Training

Elaborate training plan as worked out for the user group during the implementation of PMS. Basis training on Internet was planned for all the people allocated to Web-Sales department.
7.8.6 Implement Changes

BPR project team members are the guide & trainer during this phase. Co-ordination with the other vendors like software or hardware vendors are taken care by the project team.

7.9 MONITOR & EVALUATE

Project management tool of Microsoft was used for project tracking. It was decided that control parameters of the Order processing will be measured after 3 mths of successful implementation re-organization & PMS.

Next Cycle starts parallel to the first implementation or at the end of the first implementation depending on the plan. It is always mandatory to study interaction diagrams to take proper care of interdependencies among various functions at the time of selection of the next module.

7.10 CONCLUSION

XYZ Order Supply firm needed to update to compete with other Order Supply firms that had migrated to the Web and implemented e-commerce systems. XYZ systems were outdated, necessitating the remodelling and improving of the entire business and the support systems. The goal was established to increase market share from 15 percent to 55 percent in a 24-month period. To accomplish this, XYZ Co. realized it would be necessary not only to rebuild or switch the old systems, but also to change the business processes.

Many years ago, XYZ Co. recognized that a lucrative way to conduct business was to market products before they existed, producing them only if the demand was there. The problem was that the sales channels had moved partly to the Internet, and that the products had become increasingly complex. The solution was to integrate not just the customer purchasing process with the Internet, but also the supplier's delivery process.
via an extranet solution. This marketing and motivating the sales force, XYZ would be able to achieve its goal.