CHAPTER - 3 An Empirical Study: Baidynath Case

3.1 Data Model:

Basically Baidynath database is the collection of records stored in tables. It has a set of rules and tools to manage these records. Normally there are different types of databases, each with its own format. The most common known databases types are

➢ Relational Model
➢ Network Model
➢ Hierarchical Model

So far as the Baidynath company is concern it is using the Relational database model. In a Baidynath relational database model the data is stored in multiple tables with some 'relationship' between the tables in order to reduce data redundancy.

The Baidynath relational model of a database has stored data in tables in a 'row-column' arrangement. Each table has a relationship with one or more tables. This relational model
helps to reduce redundancy of data, and helps to maintain data integrity. Each data is identified by its Row-Column position.

Some of the definitions with respect to databases.

3.1.1 Tables

A table is a basic repository in which data is stored, and a specific structure for storing data. It is made up of one or more than one column. Data is stored in the form of rows and columns.

In Baidynath a table contains the related data of one topic like customer_detail table, item_detail table, invoice_detail table, etc. A customer_detail table as follows-

<table>
<thead>
<tr>
<th>S.no.</th>
<th>Customer_Name</th>
<th>Depot_code</th>
<th>Amount_Due</th>
</tr>
</thead>
<tbody>
<tr>
<td>001</td>
<td>Shalini Ayur Medico</td>
<td>J021</td>
<td>1,25,000.00</td>
</tr>
<tr>
<td>002</td>
<td>Lucknow Ayurvedic</td>
<td>L021</td>
<td>9190.00</td>
</tr>
<tr>
<td>003</td>
<td>Agra Ayurvedic Medico</td>
<td>A021</td>
<td>1,40,553.00</td>
</tr>
</tbody>
</table>

This table has three records (rows) and four fields (columns).
3.1.2 Rows

A Baidynath record is one row in a table. The row will span across all the columns of the table, and each row has one full set of information about one 'subject'. In the above table there are three rows, and each row gives the customer name, area code and amount due. Each time a record is added a row is added.

3.1.3 Columns

In the above table each row has four columns or attributes, and if Baidynatn managers needs to add any attribute to records they have to add a columns.

3.1.4 Why Relational databases:

To answer this question, consider the following situation.

User has to maintain the following details of our suppliers.

Name
Address1(H.No. & street)
Address2(Road,Area)
Address3(City,State,and Pin)
Items supplied
Invoice details
Amount due.
If user put these details in a flat file or an excel file, it will look like this

<table>
<thead>
<tr>
<th>Hyderabad Ayurved, 20-1-11/1 Purana Pul, Hyderabad (A.P.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mumbai Ayurved, Kulkami Wadi, Ghotkopar(W), Mumbai</td>
</tr>
<tr>
<td>Jaipur Ayurved, C-112 Tilak Nagar, Shivaji Marg, Jaipur(Raj)</td>
</tr>
<tr>
<td>P.K. Jaggi Enterprises, Dhoolkot M. Village, King Vihar, Ambalacity</td>
</tr>
<tr>
<td>Mahalaxmi Enterprises, Patel Marg, Ghaziabad</td>
</tr>
<tr>
<td>Datia Ayurved, Civil Lines, Datia(M.P.)</td>
</tr>
</tbody>
</table>

Observe that for each time item supplied by the supplier user has to repeat all the details of the supplier like name, address, etc. If a supplier supplies 50 time then user has to repeat his details 50 times. On the other hand, if user have a file for the item details, user has to repeat the item details only like price, code, description etc., for every supplier supplying that item. Either way the user repeat a lot of data. To reduce this redundancy Baidynath has created the tables in the following forms:

Supplier table
- Supplier code
- Supplier name
- Address1
- Address2
- Address3
Item table
  Item code
  Item name
  Description
  Price

Supplier_Item table
  Supplier code
  Item code

The supplier table has a relationship with supplier_item table through the supplier code likewise, the item table has a relationship with the supplier_item table through the item code. The relationship figure as follows

```
Supplier
  Supplier_code
  Supplier_Name
  Address1
  Address2
  Address3

Item
  Item_code
  Item_Name
  Description
  Price

Supplier_Item
  Supplier_Code
  Item_Code
```
Hence by spreading the data across related tables, user can reduce the data redundancy. Besides any changes that user want to make to the supplier's address for example can be made in one place and the same change will be reflected wherever the supplier's address is used.

3.1.5 The primary Key:

A primary key is a unique field or a combination of more than one field that identifies a record.

In the above table the supplier code is the primary key since no record has the serial number. The supplier code is the unique field that identify the supplier in the supplier table. A relationship between tables is built using this primary key.

3.2 Methodology: To identify the role of computers in organizations at Jhansi region to reduce the uncertainties - A Baidyanath Company survey is made. The Business System Planing (BSP) methodology is used by this thesis for analyzing and developing a stable framework to support Baidyanath's business processes. The top down approach
towards process designing is used. During survey the information is collected from distinct sources of the company to test the research question is as follows:

1) Computer Users  
2) Forms and documents used in the organization  
3) Procedure manuals and rule books which specify how various activities are carried out in the organization.  
4) Various reports used in organization.  
5) Computer programs of existing systems.

The important tools which is used to assist this task is data flow diagram which specify the origin of data and how this data flows throughout the company reducing uncertainties by using computer.

3.3 Analysis

3.3.1 Computer Based Inventory Information System:

The first information system found in company is inventory information system. Company contains the computer based inventory control systems. Which uses several files called as master file. Keeps the track of the quantity of each product
presently in stock. In addition it also contains the cost of items, the recorder point, max-point, product code, product name.

This allows the user of the system to locate an item quickly, get a listing of goods that need to be ordered, automatically create and print new orders and perform other similar stock control tasks. Apart from these company also keep track of each individual transaction that occurs within business information on these individual transaction is usually maintained in separate data files called transaction files. One such file keeping track of each individual sales transaction is sales file which depicts to whom products were sold, when for how much, and the invoices or receipt number. A second transaction maintain an in coming record of all new stock received.

Once a decision has been made to accept the orders, company passes through the 3 processes and the computer supports these processes.
1. Check the Balance on Hand: Computer maintains all the record of products stored in store room. The manager stores checks the balance available for each ordered product, if adequate stocks available the fill the order immediately else company prepares the new products.

2. Check the Reorder point: While filling the order, a reorder point of each sold a product is seen by the computer. Any product goes down or equals the reorder point value then that particular product is manufactured.

(Fig. No. 1. Inventory Data Flow Diagram)
3. Update Product Records: When the stock equals the reorder point value new product is ordered to manufacture then these developed product is increased automatically to inventory as entered by the computer.

3.3.2 Purchasing:
The purchasing department issues purchase orders to suppliers for the needed materials, the stock keeper keeps the stock and sends the invoice to account section for payments.

![Data Flow Diagram for Purchasing](image_url)
3.3.3 Sales And Marketing:

The main systems that are involved in filling customer orders- order entry, inventory, billing and accounts receivable are drawn by DFD representation.

Fig. No. 3. Data Flow Diagram For Sales
3.3.4 Accounting System:

The second type of information system found in company is accounting information system. The primary goal of Computer based accounting information system is to maintain a database of customer and records of monthly receipts and payments for each account. Each month system prepares invoices that display the starting balance for the month, a list of individual transactions (both receipts and payments), and the current balance due.

Accounting information system also displays the summary report of monthly activity for each customer and an aging report showing the current 30,60,90 day balances and the duplicate customer invoice when the user receiving inquiries about an account.

The most important output of the accounting information system is the basic monthly statement or invoice. This includes the customer’s name and address, credit terms, starting balance, changes, payments and current balance other
outputs are an aging report to display aged balances and a monthly summary report to provide a synopsis of the current months activity, including balance charges and payments for each customer. In addition, the system provide some historical reports to permit the user to check data from previous months.

According to Mr. Matadin Sharma, manager, Accounts, company's data processing jobs are performed by the accounting information system (AIS) that gather data describing the company's activities, transforms the data into information and makes the information available to uses both inside and outside the company. Basically the accounting system of the company is based on the sales and purchases of products and raw materials. The company has its lot of Depots (Warehouses) in different cities of the all states of the country. Each depots covers all the districts nearer to these depots. These depots has its own sales representative to sell the product. Company gets the order from these depots
through sales order through email services. Raw material is purchased mainly from different states like Assam, Chatisgarh, Madhya Pradesh etc. by sellers. Company has its own farm houses to grow the raw materials.

The company's customers is the depot. Depots makes the purchase order to company. If the credit rating of depot is bad, company may reject their purchase order. In some cases the company obtain verbal commitment from its supplier before the purchase orders are prepared. Suppliers also send invoices to advise the company how much have to pay and statements to collect unpaid bills.

Both the company and its supplier use invoices to advice customers how much money they owe (in debit) and statements to unpaid bill if occurred. The data flows from the distribution system to the management consists of standard accounting report.
Fig. No. 4: Account Data Flow of Organization
3.3.5 Payroll Processing System:

The third type of information system found in company is the payroll information system. Company payroll process is shown by the data flow diagram. First payroll input of data from keyboard. Next gross payroll is calculated using the hourly rate amount retrieved from payroll data file. Net pay is calculated by subtracting taxes as determined from the data in the tax file deduction contained in the payroll data file. The payroll data are transferred to the general ledger file and the paychecks are printed finally distributed to the employees.
Payroll input
Data From
Keyboard

Calculate
Gross
Pay

Payroll
Database file

Transfer payroll
To General
Ledger

Subtract Taxes
And deductions
get Net Pay

Print
paychecks

General
Ledger File

Distribute
Paycheque to
Employee

Fig. No. 5 Payroll Processing System
3.3.6 Office Automation System: The Fourth type of information system found in the company is office automation system (OAS). These are systems that support the automation of various managerial and clerical activities. The primary goals of this office automation is to enhance communications in the workplace and increase the efficiency and productivity of managers and clerical workers. Office automation system includes

- Word Processing: Creating written documents, such as letters, memos, and term papers on the computer.
- Desktop Publishing: Using software with sophisticated publishing capabilities to create documents.
- E-mail: sending mail electronically from one computer to others.
- Voice mail: storing, accessing, retrieving, and distributing messages using the telephone.
- Image retrieval and storage: Conversions of papers documents into electronic files and images for easy retrieval and processing.

- Facsimile transmission or Fax: The transfer of written or pictorial information over phone lines to users anywhere in the world.

Figure shows how managers and clerical staff uses OAS to increase productivity.
3.3.7 Product Manufacturing: Baidynath is manufacturing its ayurvedic medicines through man-power, mechanical devices, Chemists and above all the production Manager. The computer in the company supports the basically manufacturing functions of purchasing, receiving, inventory management, material planning, capacity planning, production scheduling and plant design.

Though the company manufactures 1) Asav Chamanpras 2) Tablets 3) Batis 4) Churans 5) Syrup.

Basic phenomena of making products is different but the role computer in manufacturing is almost same hence we draw DFD of Syrups manufacturing here to display the role of computers.

The syrup is made in batches of 300 or 500 or 250 liters.
3.3.7 Report Formats used by MIS Department in Baidynath:

Following are the four report formats associated with MIS Dept. of Company

1. Regularly scheduling listing
2. Exception listing

3. On demand reports

4. Forecasting reports

1. Regularly Scheduling Listing: This listing appears at a regular basis. These reports are mostly used at the lower level. They provide information regarding every activity that occur within the organization. Weekly payroll listing, quarterly bank interest due and the annual summary of taxes are the examples of Regularly Scheduling Losing.

2. Exception Listing: This listing provides information about activities that are exceptional and not normal. For example, instead of making a list of all those employees who have paid taxes, these reports displays a list of those employee who have not paid taxes. This focuses the attention of the management on the erring employees. All levels of management use it.

3. On Demand Reports: These reports are prepared when requested for. Usually these reports are in the form of a soft
copy format (display mode) because these can be readily seen on a CRT. Both top and middle management need these reports, because it is these two levels which have to examine the rapid change in business.

4. **Forecasting Reports**: These reports help the top management to develop future planning of the organization in terms of time, money and labor power. These reports, based on the previous data, forecast the future requirements of the organization, so that the top management is geared up in time to face the challenges in future.

### 3.3.8 Supply Chain Management in Baidynath

Baidynath manufacturers all the following products at its different organizations situated at the Jhansi, Allahabad, Nagpur, Calcutta, Patna, Bhaddi (Himachal)

<table>
<thead>
<tr>
<th><strong>Product</strong></th>
<th><strong>Therapeutic Uses</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Baidyanath Bhasmas and Pisti</td>
<td>Cough, Diabetes, strengthen muscles, Brain and heart, Liver.</td>
</tr>
<tr>
<td>Baidyanath Kupipakwa Rasayans</td>
<td>Asthama, Paralisis, strengthen muscles, Brain and Heart, Live Kidney, Lungs.</td>
</tr>
<tr>
<td>Baidyanath Ras Rasayanas</td>
<td>Diarrhoea, dysentery, Indigestion colics, all types of fever.</td>
</tr>
<tr>
<td>Baidyanath Lauh and Mandoor</td>
<td>Vomiting, colic and painful micturation.</td>
</tr>
<tr>
<td>Baidyanath Bati, Golian (Pills)</td>
<td>Improves memory and mental weakness, used in diseases of mouth, throat, tongue &amp; stomach.</td>
</tr>
<tr>
<td>Baidyanath Parpati</td>
<td>Excellent uterine tonic, liver disorders,</td>
</tr>
<tr>
<td>Medicine</td>
<td>Effect</td>
</tr>
<tr>
<td>----------------------------------</td>
<td>------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Baidyanath Guggulu</td>
<td>Effective in nervous diseases, gout, rheumatism, leprosy, piles, colitis, spermaturia, asthma, seminal disorders, lumbag &amp; arthritis.</td>
</tr>
<tr>
<td>Baidyanath Churan (Powers)</td>
<td>Acts as a purgative, carminative &amp; stomachic, hyperaciditis, indigestion, constipation, vomiting, dropsy.</td>
</tr>
<tr>
<td>Baidyanath Avleh, Modak and Pak</td>
<td>Tonic &amp; alternative, metal &amp; physical weakness, seminal</td>
</tr>
<tr>
<td>Baidyanath Perfumed hair Oil</td>
<td>Maintain the hair soft &amp; black, Promote the growth of hair.</td>
</tr>
<tr>
<td>--------------------------------------</td>
<td>-------------------------------------------------------------</td>
</tr>
<tr>
<td>Baidyanath Medicinal Oils</td>
<td>Effective in headache, improves memory, relieves stress &amp; strain and is refreshing to brain.</td>
</tr>
<tr>
<td>Baidyanath Ghritas</td>
<td>Cardiac tonic and stringent. Used in breathlessness and congestive cardiac failure.</td>
</tr>
<tr>
<td>Baidyanath Asava and arishtas</td>
<td>Well known for blood circulation, heart diseases and respiratory disorders.</td>
</tr>
<tr>
<td>Baidyanath Prawahi Quath (Kadha)</td>
<td>Bitter tonic, diuretic and diaphoretic, useful in fever, cough, cold neuralgia, giddiness &amp; vataj diseases.</td>
</tr>
<tr>
<td>---------------------------------</td>
<td>--------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Baidyanath kshar and Lavern</td>
<td>Indicated in constipation and liver troubles.</td>
</tr>
<tr>
<td>Anya Upayogi dravya Samuh</td>
<td>Indicated in skin diseases, itching, oozing, eczema</td>
</tr>
<tr>
<td>Baidyanath Patent &amp; Proprietary -</td>
<td></td>
</tr>
<tr>
<td>Allopathic medicines</td>
<td>Effective remedy for gas, griping and indigestion</td>
</tr>
</tbody>
</table>
etc. and it has 600 depots at the different district of the country.

It is the power of information technology that makes the supply chain management feasible because after 15 days stock of each and every product is known by the Manager-Sales through internet or even if any customer needs any ayurvedic medicine, he or she may directly contact the company through e-mail then the company will refer to its nearest depots and will fulfill his or her requirements or else manage the item from company to the address of the customers.

As Baidynath’s suppliers, they can easily share information with Baidynath. A website called “Supplying to Baidynath” was built for present and potential supplier to be able to communicate with Baidynath online. In other words, the supplier will find information relative to both what Baidynath expects from them and what the supplier can expect from Baidynath.
Nowadays, Baidynath is developing and deploying e-Business solution to improve their overall efficiency and responsiveness throughout the supply chain. As they stated “Continuouos development and improvement of e-Business solution is the key for Baidynath in order to shape new, more efficient business models and support common supply chain management processes throughout our global enterprise”(www.Baidynathayurva.com) eBusiness solutions and common processes enable Baidynath to be more responsive to customers and competitive in the market place. Baidynath is focusing on e-business solutions to enable real time communications and workflow both internally and externally for a faster, more efficient linkage between suppliers and the customers.

3.4 Architecture Model:
Since the Baidynath company has different departments, each department has to share the data from other departments to reduce the uncertainties hence the Baidynath a crchitected the
distributed data processing systems. Each department has its own server and data processing capabilities. Now these servers are connected with each other through router to share the data between departments.

The Basic Architecture of Baidynath Database

![Diagram of database architecture]

Fig. No. 8 Architecture of Baidyanath Database
This three-tiered approach used by the Baidynath company is more efficient and more secure because of Protected access since the server side application is responsible to the actual database access, procedures can be implemented to prevent unauthorized access to data. Efficiency since client side procedures can prevent undisciplined access, which would limit performance and clog the network with excess traffic. Only the needed data rows are typically returned over the network. Database structural independence because the client side application does not need to be privy to the details of the database structure, modifications to the database can be accomplished without rewriting the client applications. Stored Procedures: Using stored procedures to perform common tasks is more efficient and faster than using hard-coded queries. By removing dependence on updateable data cursors, database access is also enhanced and the server workload reduced. For example the client-side application can call stored procedures such as Check Inventory, Place-
Order, or Update Account to perform specific tasks without knowing anything about how the data is organized.
Fig. No. 9 Baidyanath Homogeneous Distributed Data Processing System

Client/Server Architecture (Three-tier Architecture)
3.5 Conclusion:

The case study describes how the computer is been used in Baidyanath Ayurved Bhawan Ltd., at Jhansi. The Baidynath company is using the relational model of database in which data is stored in tables. Each table has a relationship with one or more tables. This relational model helps to reduce the redundancies of data, and helps to maintain data integrity. Each data is identified by its row and columns position.

Baidynath company is basically using the homogeneous distributed data processing system and it’s all departments are connected with each other through router to share data between departments. Three-tiered approach is used by the company which is more efficient and more secure due to its efficiency, data structural independence, stored procedures and protected data access techniques.

In this thesis the cost invested for the installation of computers in company and its benefits to Baidynath is also evaluated. The cumulative benefit of Baidynath is also
displayed with the 2% interest rate, per month, the cumulative benefit at the end of 6 months exceeds the invested cost. To know the total benefit within 5 years is estimated from the day of installation of computers.

The Baidynath company also protects the data through four data security levels Database security, Network Security, O/S security and general security. Baidynath data security levels guard against accidental or malicious tempering with data, integrity ensure that any properly authorized access, alteration, deletion or insertion of the data in the database does not change the consistency and validity of data. Baidynath data security system also covers all aspects of database security provided by the Oracle.