



# R.D. Engineering College, Ghaziabad

Approved by AICTE & Affiliated to Dr.APJ Abdul Kalam Technical University, Lucknow

## Department of Management Studies

**Session:-2022-23**

### **MARKETING MANAGEMENT**

#### **Case study:-1**

**Topic:-HLL goes adult with its ice creams**  
**(Excerpt from *Business Today*, May 8, 2005)**

The summer looks hot. That isn't the weatherman talking, but the ice cream marketer, who seems to have abandoned an age-old positioning of the product (as a fun, family treat) in favour of a new one: as an adult indulgence. Leading the new strategy is HLL, which has reworked the marketing communication of its Kwality brand to something more risqué. Its TV and billboard ads show adults "pleasuring it up" quite suggestively. What's up? According to an HLL spokesperson, the repositioning is "a bid to reflect the sensorial awakening in society". "Evidence of which", the spokesperson continues, "is to be found in the spending one sees at malls and multiplexes". At any rate, says the spokesperson, given that half of the country's population is between 18 and 34, its new communication better reflects its image as a youthful and indulgent brand. Rivals haven't yet followed suit. On the contrary, ones like the Anand-based milk marketing cooperative Amul, whose officials were not available for comment, are sticking to their family-centric campaigns, Will HLL's new positioning put its Rs.89 crore (2004 revenue) ice cream business on the boil? Hard to say. For, this is one category where availability plays a bigger role than just branding.

**Question: What are the market segmentation, targeting and positioning insights that you draw from this case? Why is HLL repositioning its Kwality brand of ice creams?**

  
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**Session:-2022-23**

**MANAGERIAL ECONOMICS**

**Case Study-2**

Commodity	Original price	New price	Original demand	New demand
A	14	16	54	49
B	6	9	14	12
C	96	100	44	39
D	10	8	29	34

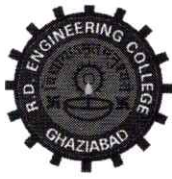
### Questions:

(a) Calculate price elasticity demand for A, B, C, D.

(b) Which commodity has more elasticity of demand and which commodity has less elasticity of demand?

  
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## Department of Management Studies

**Session:- 2021-22**

### **MARKETING MANAGEMENT**

#### **Case study:-1**

**Topic:- That CSR (Corporate Social Responsibility) thing!**

**[Source: Business Today, May 8, 2005]**

It shouldn't surprise anyone that Indian companies have just discovered the marketing pay-off of their corporate social responsibility (CSR) initiatives. They could get by with focusing on real or perceived product attributes, and with profit-mindedness being considered a coarse sentiment, any CSR programme they launched was far removed from their core businesses, brands, even consumers.

There has been a spate of corporate CSR initiatives over the past few years. Companies have been quick to respond to crises (such as the Gujarat earthquake or the Tsunami that hit the southern part of the country) or shown inherent goodness in plugging gaps in the government's efforts to provide healthcare and education to all – in a country as vast as India, there will always be gaps – but there has been little effort to link such work to things such as marketing, even corporate strategies. Most CSR activities are, at best, charity, not very different from discrete acts of philanthropy and, at worst, a mere humane façade of a for-profit-only capitalist system.

This is why recent advertising campaigns by the country's two largest fast moving consumer goods (FMCG) companies, Hindustan Lever Limited (HLL) and ITC are significant. The first, a campaign for Surf Excel Quick Wash with the tagline *Do bucketpaani ab rozana hai bachnai* (I will save two buckets of water a day), has struck a chord in a country where the shortage of water is an endemic phenomenon. "We decided it would be of immense benefit to a household if a technology could be developed that would reduce the water consumed in the washing of clothes and the amount of effort required while rinsing while delivering superlative cleanliness", says an HLL spokesperson. Surf's sales, say sources in the market, have gone up by as much as 15% since the advertisement, starring actress-turned-social-activist and former Member of Parliament, Shabana Azmi, went national (the company had tested the strategy in water-starved Tamil Nadu last year with another actress-turned-social-activist Revathy Menon).

Then, there is ITC's *Working for you, working for India* campaign, one strand of which focuses

  
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on the company's e-choupal initiative, an effort that seeks to enhance rural incomes, then, sell a variety of products and services to rural customers (apart from sourcing agricultural produce from them). The tagline itself smacks of old-style image-led CSR activity, but given what the e-choupal does, it is actually an attempt to build and position the company's brand around the idea of doing something for the country.

In some ways, ITC's e-choupal is a far stronger example of a CSR-brand linkage than the Surf Excel campaign. It is a programme that is obviously advantageous to the company, yet it is accomplished by enough socially relevant goodies to make it look the way a government programme targeted at rural development ideally should. HLL, coincidentally, has an initiative that fits the bill, its Project Shakthi that uses Women's self help groups in rural areas to further its reach. "The problem with old-style CSR was that the benefactors were not in control of what they would get", says Vivek Vaidya, a brand consultant. With brand or corporate strategy driven CSR, they are.

**Questions:** Explain the success of *Do bucket paani ab rozana hai bachnai* (I will save two buckets of water a day) campaign for Surf Excel. What consumer behaviour insights can you draw from this case. Identify the personal and interpersonal factors that affect consumer behaviour for the product/service described in the case.

  
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## Department of Management Studies

**Session:- 2021-22**

### **MANAGERIAL ECONOMICS**

#### **Case study-2.**

The retailer's fixed costs are Rs. 50000 and his variable costs are 12% of net sales. Out of the gross margins, he meets his fixed and variable costs.

Products	Profit margin on selling price	Percentage of rupee sales
Pens	40%	30%
Pencils	30%	10%
White papers	35%	40%
Carbon sheets	50%	20%

- (i) Calculate retailer's break-even point.
- (ii) How much profit will the retailer makes on a sales value of Rs. 100000.

  
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## Department of Management Studies

**Session:- 2020-21**

### **MARKETING MANAGEMENT**

#### **Case Study:-1**

##### **Topic:-Marketing Beyond the Veil**

Many marketers think that marketing to Saudi Arabian women is a very difficult task. Women in Saudi remain behind the *purdah* and it is difficult to *talk* to them.

Saudi Arabia is one of the largest markets in west Asia and is a homogenous society. There exists a wrong notion among some marketers that Saudi women are passive consumers. Many Saudi women are often highly educated. About 3,80,000 women work in Saudi Arabia and the number of female students in the colleges is set to rise about 1,75,000 in the next two years. Most women work in the traditional fields of health and education. Some are even employed in retailing, designing, publishing and manufacturing.

They are exploring ways to sell products to Saudi women since Saudi Arabia is considered a young market. Shopping malls are an utter flop as women find these out-of-town malls inconvenient. MNCs have realized that Saudi women are brand conscious and make the buying decision for household items. MNCs have been searching intensively for women who can act as intermediaries between the company and the clients and those who have links with colleges, women groups, etc.

Marketers should now stop underestimating the sophistication of Saudi women as consumers. It is time they recognized that they are the emerging economic force. A woman emerging out of a car fully covered by the *purdah*, may hold a degree in finance or law or medicine and so on, and she may be a potential consumer given her educational background and culture.

  
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**Questions:** List out the differences between Consumer Behaviour of Women in a *closed culture* (as described by this case) in Saudi Arabia and in a *open culture* (say, in Western Eupore). Highlight the cultural implications for a Woman consumer and also for a marketer in the given context. Think of creative applications of 'reference groups' to market to the Saudi Arabian Women, say for a personal care product.

  
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## Department of Management Studies

**Session:- 2020-21**

### **MANAGERIAL ECONOMICS**

#### **Case study-2.**

Despite stiff increase in tariff by Doordarshan (DD) in march 1987 actual revenue declined. This study indicated that the number of small and medium advertisers which was on the increase before the tariff hike has now been on decline. Further there has also been a noticeable shift in favor of 20 and 10 seconds spots from 30 or more seconds spots before the hike in tariff. The study found that there has been a steep decline in the actual number of advertisements on Doordarshan. This is across all TV centers and program segments. But it was more significant in the case of channel II of Delhi and Bombay. The second channel of Bombay DD TV had no advertisements since the increase in tariff as against revenue of Rs.15, 000/- to Rs.20, 000/- per month in the corresponding months of the previous year. In case of Delhi DD TV's second channel, the number of advertisements declined from a rate of 40 to 65 per month in May to July 1986 to a rate of 12 to none between may to July 1987. Even the actual revenue has fallen. It was about Rs.55, 000/- to 71,000/- per month in May-June period of 1986. In the current year, however, it developed to Rs.28, 000/- in June and was nil by July 1987.

#### **Questions:**

- (a) What happened to revenue after tariff hike for advertisement in DD?
- (b) Why has revenue declined?
- (c) Is the price-elasticity of demand for DD TV advertisements high/low/zero?
- (d) What tariff (or price) policy should DD follow for TV advertisements?

  
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## Department of Management Studies

**Session :- 2019-20**

### **MARKETING MANAGEMENT**

#### **Case study :-1**

#### **Topic:- EuroDisney – managing the marketing environmental challenges**

Michael Eisner joined the Walt Disney company as the chairman of the board in 1984, after his successes at the ABC television network and Paramount. The same year, Tokyo Disney was completing its first year of operations after five years of planning and construction, when the Walt Disney Co. entered into an agreement with Oriental Land Company in Japan. More than 10 million people visited the park that year, spending \$355 million. This was \$155 million more than had been expected and was partially attributed to the average expenditure per visitor being \$35, rather than the estimated \$21. The timing of the Tokyo Disneyland opening coincided with a rise in income and leisure time among the Japanese. Tokyo Disneyland thus became quickly profitable. Growth continued, and by 1990 more than 14 million people visited the park, a figure slightly higher than the attendance at Disneyland in California and about half the attendance at Walt Disney World in Florida. Though, Disney was not a financial partner in the Tokyo venture, it was reaping the profit from its franchise (10% royalty from admission and 5% from merchandise and food sales).

The Tokyo park was in some ways a paradox. Tokyo Disneyland is nearly a replica of the two parks in US. Signs are in English, and most food is American style. The management of the Oriental Land Company demanded this because they wanted visitors to feel they were getting the real thing and because they had noted that such franchises as McDonald's have enormous success in Japan, as Japanese youth embraced American-style culture. Yet, a few changes were necessary, such as the addition of a Japanese restaurant. The product was readily accepted by the Japanese, an acceptance attributed by some to the enthusiastic assimilation of the Japanese to Western ways. The success of the Tokyo Disneyland led the company to consider expansion into Europe.

In 1984, a few months after his arrival at Disney, Eisner decided to create a Disney resort

  
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in Europe. In 1985, Disney announced that it had narrowed its locational choice to two countries, Spain and France. The park was scheduled to open in 1992 at either location. Since the park was estimated to provide about 40,000 permanent jobs and would draw large numbers of tourists, the two countries openly courted Disney. If Disney opted for a Spanish location, the park would have to be like the ones in the U.S, where the visitors are outside for almost all amusements. However, Disney had learnt from the Tokyo experience that the cold weather does not necessarily impede attendance. But the colder climate in Paris area would require more indoor shows. Furthermore, France would require more focus on technology and historical themes.

After three years of discussions, the search culminated with the selection of a site at the heart of Europe: Marna-la-Vallee, France. Euro Disney was officially born. The total investment by 1992 was estimated at between \$2.4 to 3 billion. Disney opted for a 49% stake. France was in full economic crisis and Disney was taking advantage of this crisis. In a real estate coup, the French Government sold Disney some very expensive land at a bargain price and. In spite of the economic benefits the park was expected to bring, many people in France feared that the Park would be one more step toward the replacement of the French culture with that of the US. Critics called EuroDisney “a cultural Chernobyl”.

Disney headed off the criticism by explaining in the French press that Walt Disney was of French Huguenot descent, with an original name of D’Isigny rather than Disney. Disney also agreed to make French the first language in the park, although relying heavily on visual symbols. Disney would build an attraction, Discovery Land, based on the science fiction of France’s Jules Verne; and a movie theater featuring European history. Many concessions were made to soothe the French resistance. Disney admitted that it may have to alter its no-alcohol policy for this park, but it didn’t. The park also emphasized that Pinocchio was Italian, Cinderella was French and Peter Pan flew in London.

The marketing campaign began in October, 1991. The sales division began ambitious programs to inspire European families to mark the Euro Disney resort on their vacation agendas. The Sales division established a strong presence in all the major markets through special partnerships with leading companies in the travel industry. On April 12, 1992, Euro Disney hosted the biggest event in Disney history, the official opening of the Euro Disney resort. Looking at the future, Euro Disney had two primary objectives : to achieve profitability as quickly as possible and to better integrate Euro Disney into its European environment while reinforcing its greatest asset – Disney heritage. Disney announced plans to add a second theme park, the Disney MGM Studios-Europe and a water park. Disney was so optimistic that it was negotiating the possibility of creation of creating a third theme park at the beginning of the new millennium.

  
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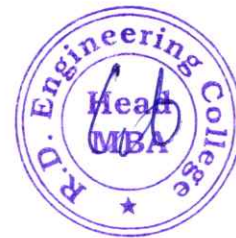


The Park admission fee cost US \$45 for an adult and \$30 for a child under 11, a price about 50% higher than the corresponding Disney World price. The US Disney park's formula in terms of inelasticity of demand did not apply and the demand fell sharply (a 15% decrease in attendance for a 10% increase in price.) Attendance figures were kept secret, but this attitude reinforced the idea that even in terms of attendance, the objectives were not reached. The financial results were not as strong as hoped and the very difficult economic environment contributed to not meeting the ambitious objectives.

As Eisner started an interview with Larry King, he quipped, "Everybody is giving us 42 reasons why we've made a mistake, because we have financial problems... We are not either responsible for the real estate crisis nor the high French interest rate, which are dreadfully penalizing us. Not a single manager, whomever he be, could manage so many uncontrollable forces."

**Questions:** Describe the importance of environmental scanning for Disney in its EuroDisney venture. How does the marketing environment affect Disney's marketing? Single out each of these environmental variables and suggest ways for Disney to manage them.

  
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## Department of Management Studies

**Session :- 2019-20**

**DESIGN THINKING**

**Case study :-2**

### Background

This study is part of a larger research project on how to use design thinking to find creative and sustainable solutions to environmental problems.

The study followed students from the Water Treatment class of the Université de Moncton's (Canada) civil engineering program over their four-month 2019 semester.

They were tasked with solving a water quality problem in a nearby rural community, where the water supply contains a higher-than-normal concentration of arsenic

### Method

The students were divided into two groups, one group was tasked with finding solutions using the traditional technical approach to problem solving, while the other group was instructed to follow a design thinking process.

The group tasked with applying the design thinking process followed started by conducting ethnographic surveys to gain empathy for the people affected by the issue, as well as for the problem they are experiencing. Users were observed daily in order to understand their aspirations and needs.

The problem was then defined and redefined through an iterative process in order to learn about different perspectives and information surrounding the issue. The findings were then briefly summarized into a succinct problem statement so everyone could work towards the same goal.

  
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During ideation, many ideas were proposed, some of them were kept and others were discarded. Prototypes were created quickly to help assess which ideas work best.

### Insights

The design thinking group said that it was easier to define the problem by speaking to the people they were designing for. This helped them to better understand the needs and concerns of those affected by the problem.

Most interestingly, the students from this group mentioned that design thinking led them to generate more ideas and, ultimately, to produce more diverse possible solutions which were more feasible and based on real needs.

### Results

The study concluded that the design thinking group had a higher level of creativity, and they developed an appreciation for the user's needs which is something that isn't currently taught to them in traditional engineering training.

The study found that using design thinking more often to solve civil engineering problems, especially environmental ones, can lead to more innovative solutions that are typically difficult to address because of their complexity and scope.

  
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### SESSION 2018-2019 MARKETING MANAGEMENT Case Study:-1

#### Topic:-Master of the Online Supermall (excerpt from Business Today, May 2004)

Amazon.com could well go down in history as a love child born of the heady fling that the stockmarket had with dotcoms in the late 1990s. But the company, founded by Jeff Bezos in July 1995 when the internet was still an untested business medium, is a survivor-par-excellence. It floundered a bit in the swirl of the dotcom bust, but unlike thousands that were swept away, Amazon.com reinvented itself and emerged stronger.

The 40-year old Bezos, a computer science grad from Princeton University, is the pioneer of Internet Retailing. His compelling vision introduced a new paradigm for retail, the click-and-buy model; buy goods from a website instead of a physical store, from wherever there is an internet connection: home, office or cyber-café. A model that gave convenience to buyers, and mind-boggling market reach to sellers.

Named after the mighty Amazon river and its numerous tributaries that surge through dense rain forests, Amazon.com was started with an initial investment of a few thousand dollars. In less than three weeks after the website went live, Bezos and his wife Mackenzie were pulling in sales of over \$20,000 a week. And soon after going public in 1997, the company had a market capitalization higher than that of its brick-and-mortar rivals. In 1999, Bezos was chosen as *Time* Magazine's 'Person of the Year'. But things changed soon after and the dotcom bust saw Amazon.com lose almost 90 percent of its market cap in 2000.

Bezos didn't give up on his vision. He set about transforming Amazon.com from a website selling books into something much bigger: the world's largest online retailing platform. A series of tie-ups with companies like Toys R Us and Target helped give the website the feel of an online supermall where a customer could buy almost anything. Marketing initiatives followed – from free shipping to highly discounted prices to very customized offerings (based on customer profile) to wide distribution through sites which can divert traffic to Amazon.com for a small commission. But the biggest move was Bezos' decision to make the site 'more global'.

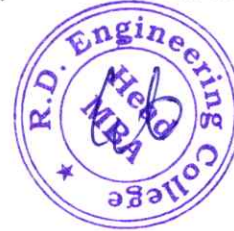
  
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The moves have paid off. The company announced its first full-year profit in 2003. It has been making money now for three straight quarters and revenues have exceeded a billion dollars for the last six quarters. If proof was needed that there is money to be made in online retailing, this is it. And Bezos has proved that the right idea, coupled with perseverance, pays in the end.

**Questions:** How does Amazon.com bring utility or create value for its customers? Explain the marketing framework of Amazon.com? What do you learn about marketing from the Amazon story?

  
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## Department of Management Studies

**Session:- 2018-19**

### **MANAGERIAL ECONOMICS**

#### **Case study-2.**

Maruti Udyog Ltd (MUL) enjoys monopoly in spare parts. Along with dealers, MUL is exploiting Maruti vehicle users. Often the vehicle user has to change the clutch plate twice in six months and has to pay Rs.3, 567/-. MUL charges the price of clutch at imported cost while clutch plate is actually made by clutch auto private Ltd at Faridabad. The replacement of a silencer costs Rs.800/-. The cost of spare parts and repairs by any reckoning is three to four times compared to Ambassador or Fiat. A random sample indicates that every eighth car has faulty clutch. In the context of defective parts and exorbitant cost of repairs, saving in fuel in Maruti as compared to other auto makers is of little consequence. Maruti vehicle users in dilemma they cannot get spare parts or get their cars repaired except through Maruti Udyog or its authorized dealers. But both charge huge amounts, not giving guarantee for a single day. MUL is thus, indifferent to the genuine grievances of its customers.

#### **Questions:**

- (a) Define a monopoly and stage its main features.
- (b) Why MUL is called a monopoly? Does it enjoy monopoly in car manufacture?
- (c) In what way do customers suffer from monopoly practices of MUL.
- (d) What do you suggest to remedy the situation?



  
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under the aegis of IQAC  
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

SUBJECT CODE: KCS501

SUBJECT NAME: DBMS

## Case Study 1

### Hospital Management System

**Aim:** XYZ hospital is a multi specialty hospital that includes a number of departments, rooms, doctors, nurses, compounders, and other staff working in the hospital. Patients having different kinds of ailments come to the hospital and get checkup done from the concerned doctors. If required they are admitted in the hospital and discharged after treatment.

The aim of this case study is to design and develop a database for the hospital to maintain the records of various departments, rooms, and doctors in the hospital. It also maintains records of the regular patients, patients admitted in the hospital, the check up of patients done by the doctors, the patients that have been operated, and patients discharged from the hospital.

**Description:** In hospital, there are many departments like Orthopedic, Pathology, Emergency, Dental, Gynecology, Anesthetics, I.C.U., Blood Bank, Operation Theater, Laboratory, M.R.I., Neurology, Cardiology, Cancer Department, Corpse, etc. There is an OPD where patients come and get a card (that is, entry card of the patient) for check up from the concerned doctor. After making entry in the card, they go to the concerned doctor's room and the doctor checks up their ailments. According to the ailments, the doctor either prescribes medicine or admits the patient in the concerned department. The patient may choose either private or general room according to his/her need. But before getting admission in the hospital, the patient has to fulfill certain formalities of the hospital like room charges, etc. After the treatment is completed, the doctor discharges the patient. Before discharging from the hospital, the patient again has to complete certain formalities of the hospital like balance charges, test charges, operation charges (if any), blood charges, doctors' charges, etc.

Next we talk about the doctors of the hospital. There are two types of the doctors in the hospital, namely, *regular doctors* and *call on doctors*. Regular doctors are those doctors who come to the hospital daily. Calls on doctors are those doctors who are called by the hospital if the concerned doctor is not available.

### Table Description:

Following are the tables along with constraints used in *Hospital Management* database.



- DEPARTMENT:** This table consists of details about the various departments in the hospital. The information stored in this table includes department name, department location, and facilities available in that department.  
**Constraint:** Department name will be unique for each department.
- ALL\_DOCTORS:** This table stores information about all the doctors working for the hospital and the departments they are associated with. Each doctor is given an identity number starting with DR or DC prefixes only.  
**Constraint:** Identity number is unique for each doctor and the corresponding department should exist in DEPARTMENT table.
- DOC\_REG:** This table stores details of regular doctors working in the hospital. Doctors are referred to by their doctor number. This table also stores personal details of doctors like name, qualification, address, phone number, salary, date of joining, etc.  
**Constraint:** Doctor's number entered should contain DR only as a prefix and must exist in ALL\_DOCTORS table.
- DOC\_ON\_CALL:** This table stores details of doctors called by hospital when additional doctors are required. Doctors are referred to by their doctor number. Other personal details like name, qualification, fees per call, payment due, address, phone number, etc., are also stored.  
**Constraint:** Doctor's number entered should contain DC only as a prefix and must exist in ALL\_DOCTORS table.
- PAT\_ENTRY:** The record in this table is created when any patient arrives in the hospital for a check up. When patient arrives, a patient number is generated which acts as a primary key. Other details like name, age, sex, address, city, phone number, entry date, name of the doctor referred to, diagnosis, and department name are also stored. After storing the necessary details patient is sent to the doctor for check up.  
**Constraint:** Patient number should begin with prefix PT. Sex should be M or F only. Doctor's name and department referred must exist.
- PAT\_CHKUP:** This table stores the details about the patients who get treatment from the doctor referred to. Details like patient number from patient entry table, doctor number, date of check up, diagnosis, and treatment are stored. One more field status is used to indicate whether patient is admitted, referred for operation or is a regular patient to the hospital. If patient is admitted, further details are stored in PAT\_ADMIT

  
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table. If patient is referred for operation, the further details are stored in PAT\_OPR table and if patient is a regular patient to the hospital, the further details are stored in PAT\_REG table.

**Constraint:** Patient number should exist in PAT\_ENTRY table and it should be unique.

7. **PAT\_ADMIT:** When patient is admitted, his/her related details are stored in this table. Information stored includes patient number, advance payment, mode of payment, room number, department, date of admission, initial condition, diagnosis, treatment, number of the doctor under whom treatment is done, attendant name, etc.

**Constraint:** Patient number should exist in PAT\_ENTRY table. Department, doctor number, room number must be valid.

8. **PAT\_DIS:** An entry is made in this table whenever a patient gets discharged from the hospital. Each entry includes details like patient number, treatment given, treatment advice, payment made, mode of payment, date of discharge, etc.

**Constraint:** Patient number should exist in PAT\_ENTRY table.

9. **PAT\_REG:** Details of regular patients are stored in this table. Information stored includes date of visit, diagnosis, treatment, medicine recommended, status of treatment, etc.


**Constraint:** Patient number should exist in patient entry table. There can be multiple entries of one patient as patient might be visiting hospital repeatedly for check up and there will be entry for patient's each visit.


10. **PAT\_OPR:** If patient is operated in the hospital, his/her details are stored in this table. Information stored includes patient number, date of admission, date of operation, number of the doctor who conducted the operation, number of the operation theater in which operation was carried out, type of operation, patient's condition before and after operation, treatment advice, etc.

**Constraint:** Patient number should exist in PAT\_ENTRY table. Department, doctor number should exist or should be valid.

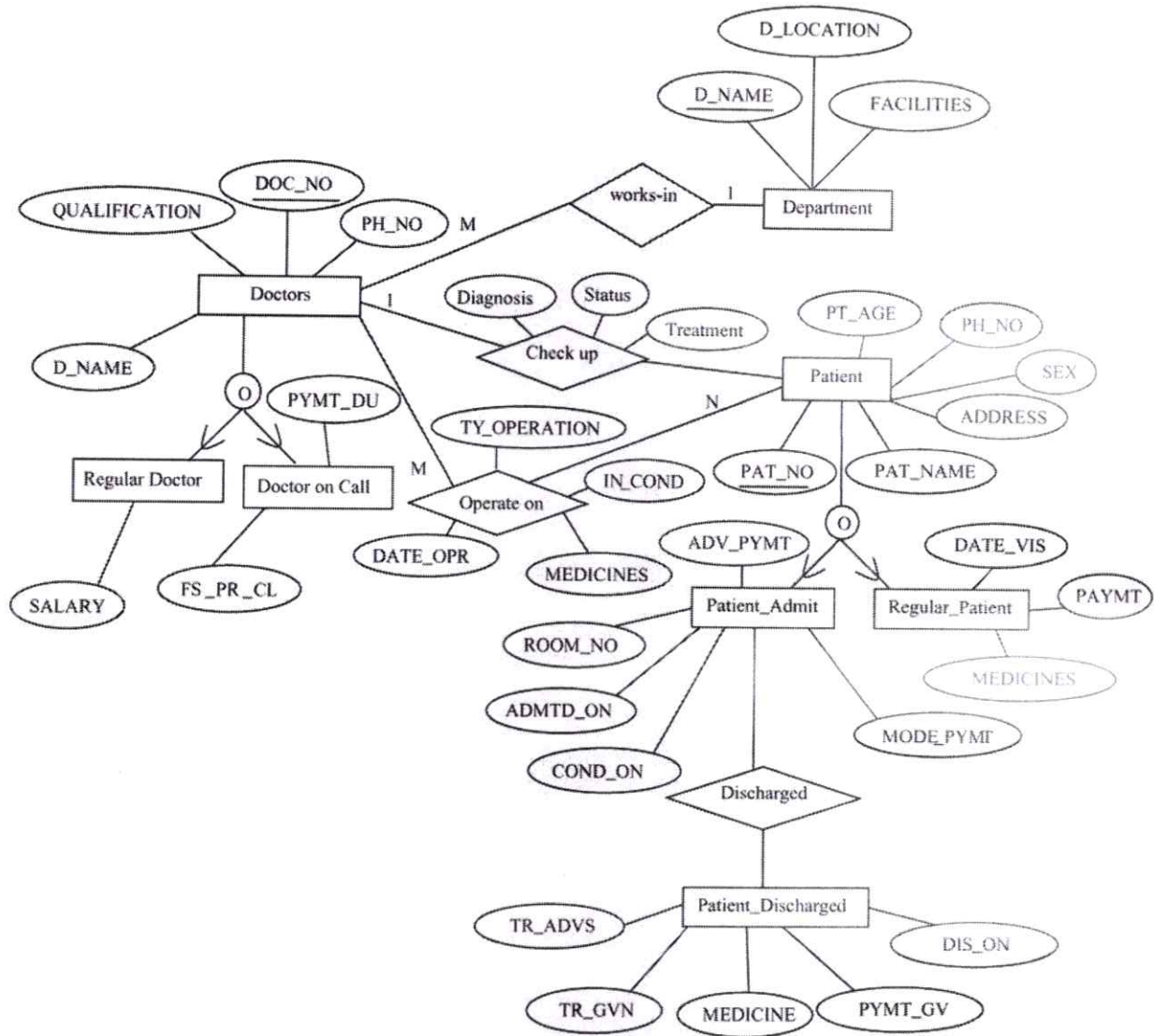
11. **ROOM\_DETAILS:** It contains details of all rooms in the hospital. The details stored in this table include room number, room type (general or private), status (whether occupied or not), if occupied, then patient number, patient name, charges per day, etc.

**Constraint:** Room number should be unique. Room type can only be G or P and status can only be Y or N

  
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## E-R Diagram



### Relational Database Schema for Case Study

The relational database schema for *Hospital Management* database is as follows:

1. DEPARTMENT (D\_NAME, D\_LOCATION, FACILITIES)
2. ALL\_DOCTORS (DOC\_NO, DEPARTMENT)
3. DOC\_REG(DOC\_NO, D\_NAME, QUALIFICATION, SALARY, EN\_TIME, EX\_TIME, ADDRESS, PH\_NO, DOJ)

  
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4. DOC\_ON\_CALL (DOC\_NO, D\_NAME, QUALIFICATION, FS\_PR\_CL, PYMT\_DU, ADDRESS, PH\_NO)
5. PAT\_ENTRY (PAT\_NO, PAT\_NAME, CHKUP\_DT, PT\_AGE, SEX, RFRG\_CSTNT, DIAGNOSIS, RFD, ADDRESS, CITY, PH\_NO, DEPARTMENT)
6. PAT\_CHKUP (PAT\_NO, DOC\_NO, DIAGNOSIS, STATUS, TREATMENT)
7. PAT\_ADMIT (PAT\_NO, ADV\_PYMT, MODE\_PYMT, ROOM\_NO, DEPTNAME, ADMTD\_ON, COND\_ON, INVSTGTN\_DN, TRMT\_SDT, ATTDNT\_NM)
8. PAT\_DIS (PAT\_NO, TR\_ADVS, TR\_GVN, MEDICINES, PYMT\_GV, DIS\_ON)
9. PAT\_REG (PAT\_NO, DATE\_VIS, CONDITION, TREATMENT, MEDICINES, DOC\_NO, PAYMT)
10. PAT\_OPR (PAT\_NO, DATE\_OPR, IN\_COND, AFOP\_COND, TY\_OPERATION, MEDICINES, DOC\_NO, OPTH\_NO, OTHER\_SUG)
11. ROOM\_DETAILS (ROOM\_NO, TYPE, STATUS, RM\_DL\_CRG, OTHER\_CRG)

  
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## Case Study 2 Railway

### Reservation

**Aim:** The railway reservation system facilitates the passengers to enquire about the trains available on the basis of source and destination, booking and cancellation of tickets, enquire about the status of the booked ticket, etc.

The aim of case study is to design and develop a database maintaining the records of different trains, train status, and passengers. The record of train includes its number, name, source, destination, and days on which it is available, whereas record of train status includes dates for which tickets can be booked, total number of seats available, and number of seats already booked. The database has been developed and tested on the Oracle.

### Description:

Passengers can book their tickets for the train in which seats are available. For this, passenger has to provide the desired train number and the date for which ticket is to be booked. Before booking a ticket for a passenger, the validity of train number and booking date is checked. Once the train number and booking date are validated, it is checked whether the seat is available. If yes, the ticket is booked with confirm status and corresponding ticket ID is generated which is stored along with other details of the passenger. After all the available tickets are booked, certain numbers of tickets are booked with waiting status. If waiting lot is also finished, then tickets are not booked and a message of non-availability of seats is displayed.

The ticket once booked can be cancelled at any time. For this, the passenger has to provide the ticket ID (the unique key). The ticket ID is searched and the corresponding record is deleted. With this, the first ticket with waiting status also gets confirmed.

### List of Assumption

Since the reservation system is very large in reality, it is not feasible to develop the case study to that extent and prepare documentation at that level. Therefore, a small sample case study has been created to demonstrate the working of the reservation system. To implement this sample case study, some assumptions have been made, which are as follows:

1. The number of trains has been restricted to 5.
2. The booking is open only for next seven days from the current date.
3. Only two categories of tickets can be booked, namely, *AC* and *General*.
4. The total number of tickets that can be booked in each category (*AC* and *General*) is 10.
5. The total number of tickets that can be given the status of waiting is 2.

  
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6. The in-between stoppage stations and their bookings are not considered.

## Description of Tables and Procedures

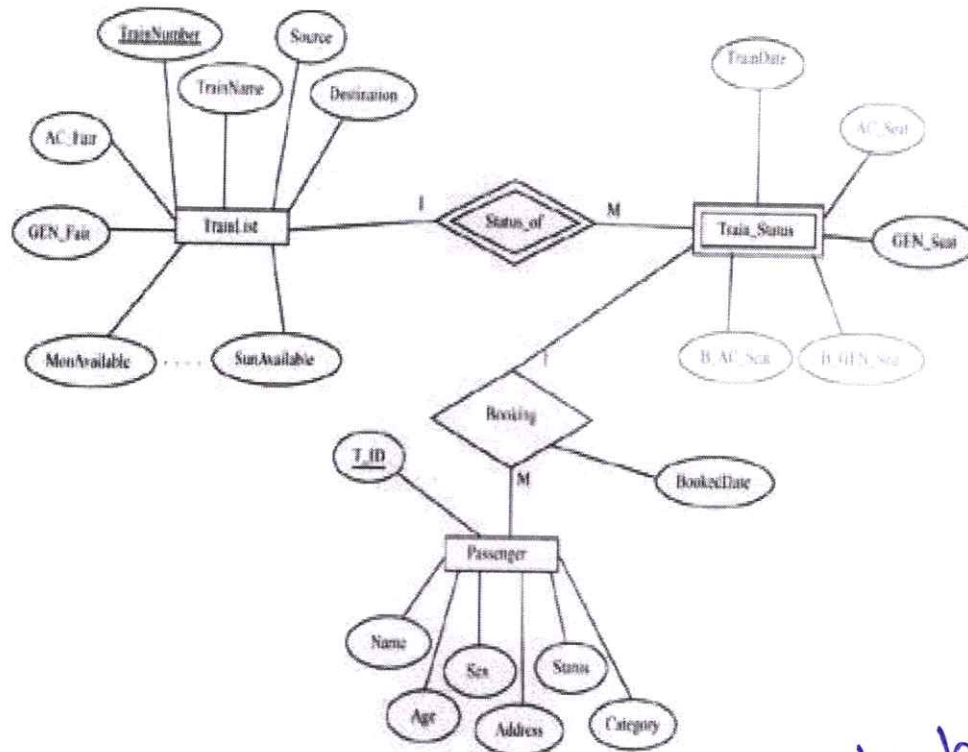
Tables and procedures that will be created are as follows:

1. **TrainList:** This table consists of details about all the available trains. The information stored in this table includes train number, train name, source, destination, fair for AC ticket, fair for general ticket, and weekdays on which train is available.  
*Constraint:* The train number is unique.
2. **Train\_Status:** This table consists of details about the dates on which ticket can be booked for a train and the status of the availability of tickets. The information stored in this table includes train number, train date, total number of AC seats, total number of general seats, number of AC seats booked, and number of general seats booked.  
*Constraint:* Train number should exist in TrainList table.
3. **Passenger:** This table consists of details about the booked tickets. The information stored in this table includes ticket ID, train number, date for which ticket is booked, name, age, sex and address of the passenger, status of reservation (either confirmed or waiting), and category for which ticket is booked.  
*Constraint:* Ticket ID is unique and the train number should exist in TrainList table.
4. **Booking:** In this procedure, the train number, train date, and category is read from the passenger. On the basis of the values provided by the passenger, corresponding record is retrieved from the Train\_Status table. If the desired category is AC, then total number of AC seats and number of booked AC seats are compared in order to find whether ticket can be booked or not. Similarly, it can be checked for the general category. If ticket can be booked, then passenger details are read and stored in the Passenger table.
5. **Cancel:** In this procedure, ticket ID is read from the passenger and corresponding record is searched in the Passenger table. If the record exists, it is deleted from the table. After deleting the record (if it is confirmed), first record with waiting status for the same train and same category are searched from the Passenger table and its status is changed to confirm.

  
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## E-R diagram



  
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### Case Study 3

#### Painting Hire Business

#### System Description:

A local businesswoman has decided to start her own Internet business, called Masterpieces Ltd, hiring paintings to private individuals and commercial companies.

Because of your reputation as a database designer she has called upon your services to design and implement a database to support her new business. At the initial planning meeting, to discuss the design, the following user requirements were requested.

The system must be able to manage the details of customers, paintings and those paintings currently on hire to customers. Customers are categorized as B (bronze), S (silver), G (gold) or P (platinum). These categories entitle a customer to a discount of 0%, 5%, 10% or 15% respectively.

Customers often request paintings by a particular artist or theme (eg animal, landscape, seascape, naval, still-life, etc). Over time a customer may hire the same painting more than once.

Each painting is allocated a customer monthly rental price defined by the owner. The owner of the painting is then paid 10% of that customer rental price. Any paintings that are not hired within six months are returned to the owner. However, after three months, an owner may resubmit a returned painting.

Each painting can only have one artist associated with it.

Several reports are required from the system. Three main ones are:

1. For each customer, a report showing an overview of all the paintings they have hired or are currently hiring
2. For each artist, a report of all paintings submitted for hire
3. For each artist, a returns report for those paintings not hired over the past six months

Remember to **identify key attributes** and any **foreign key attributes**.

  
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**Pages to be created**

**Customer Rental Report**

Customer Rental Report					
Customer No: _____				Customer Category: _____	
Customer Name: _____				Category Description: _____	
Customer Address: _____				Category Discount: _____	
_____					
_____					

Painting No	Painting Title	Painting Theme	Date of Hire	Date Due Back	Returned (Y/N)
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

**Artist Report**

Artist Report						
Artist No: _____				Year of Birth: _____	Age: _____	
Artist Name: _____				Year of Death: _____	(if applicable)	
Country of Birth: _____						

Painting No	Painting Title	Theme	Rental Price (monthly)	Owner No No	Owner Name	Owner Tel
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____

  
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## Return to Owner Report

Return To Owner Report		
Owner No: _____	Owner Name: _____	
	Owner Address: _____	
	_____	
	_____	
Painting No	Painting Title	Return Date
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

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### Case Study 4

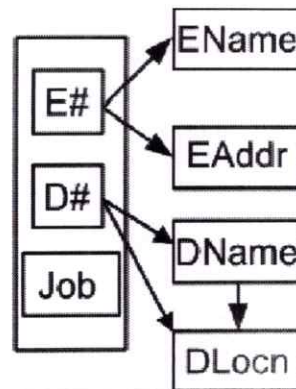
The WORK relation illustrates data about employees, their job title and the department they are assigned to. From examining sample data and discussions with management we have found that employees can have multiple job titles and can be assigned to more than one department. Each department is completely sited in a single location but a city could have more than one department at some time.

WORK JOB	ENAME	EADDR	E#	D#	DNAME	DLOCN
HELPER	DAVIS	111 FIRST ST	12	1	PRESSING	ALCOA
HELPER	SPENCE	222 SECOND ST	78	1	PRESSING	ALCOA
ELECTRICIAN	MURPHY	100 MAIN ST	66	2	WELDING	NIOTA
FOREMAN	SMITH	300 BROAD ST	77	9	PACKING	LOUDO
CLERK	WILSON	111 FIRST ST	99	7	PAYROLL	MEMPH
CLERK	DAVIS	111 FIRST ST	12	1	PRESSING	ALCOA
CLERK	SPENCE	222 SECOND ST	78	1	PRESSING	ALCOA
CLERK	DAVIS	111 FIRST ST	12	5	MAILROO	ONEID/M

For this relation, a composed key is required as no one attribute is a candidate. It turns out that the following SRN depicts the situation:

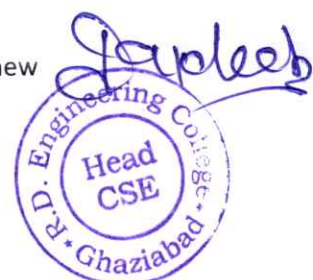
**WORK ( Job, EName, EAddr, E#, D#, DName, DLocn )**

and the functional dependency diagrams would be:



There are numerous problems with the data model as it currently stands. We cannot add new employees until they have a job title and a department assignment. We can easily lose

  
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department data by removing an employee who is the sole person assigned to a department. Certain updates require careful propagation of changes throughout the database. Careful decomposition can take care of these problems. The employee data makes an obvious grouping and should be decomposed to get it into at least 2NF. It will actually go to BCNF as there are no further problems. It is ready to become a table.

EMPLOYEE E#	ENAME	EADDR
12	DAVIS	111 FIRST ST
78	SPENCE	222 SECOND ST
66	MURPHY	100 MAIN ST
77	SMITH	300 BROAD ST
99	WILSON	111 FIRST ST

The Dept relation is another logical decomposition to remove the partial dependency and move to 2NF. Careful examination reveals the transitive dependency still exists so further decomposition is necessary.

DEPT D#	DNAME	DLOCN
1	PRESSING	ALCOA
2	WELDING	NIOTA
9	PACKING	LOUDON
7	PAYROLL	MEMPHIS
5	MAILROOM	ONEIDA

Job-Worked winds up looking like the original relation's key. All three attributes are still the composed key. Since there are no dependencies, there is nothing to prevent this relation from being BCNF so it is ready too.

JOB-WORKED E#	D#	JOB
12	1	HELPER
78	1	HELPER
66	2	ELECTRICIAN
77	9	FOREMAN
99	7	CLERK
12	1	CLERK
78	1	CLERK
12	5	CLERK

To remove the transitive dependency, we will decompose Dept into Department and Dept- Locn.

  
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Each of these is now in BCNF.

DEPARTMENT D#	DNAME
1	PRESSING
2	WELDING
9	PACKING
7	PAYROLL
5	MAILROOM

DEPT-LOCN D#	DLOCN
1	ALCOA
2	NIOTA
9	LOUDON
7	MEMPHIS
5	ONEIDA

  
  
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## Case Study

### 5

A relational database is to be designed for a medium sized Company dealing with industrial applications of computers. The Company delivers various products to its customers ranging from a single application program through to complete installation of hardware with customized software. The Company employs various experts, consultants and supporting staff. All personnel are employed on long- term basis, i.e. there is no short-term or temporary staff. Although the Company is somehow structured for administrative purposes (that is, it is divided into departments headed by department managers) all projects are carried out in an inter-disciplinary way. For each project a project team is selected, grouping employees from different departments, and a Project Manager (also an employee of the Company) is appointed who is entirely and exclusively responsible for the control of the project, quite independently of the Company's hierarchy. The following is a brief statement of some facts and policies adopted by the Company.

- Each employee works in some department.
- An employee may possess a number of skills
- Every manager (including the MD) is an employee
- A department may participate in none/one/many projects.
- At least one department participates in a project.
- An employee may be engaged in none/one/many projects
- Project teams consist of at least one member.



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**For the above business stories you are expected to create the following.**

1. Analyze the data required.
2. Normalize the attributes.
3. Create the logical data model (ER diagrams).

  
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