

PAPER – 6 : INFORMATION TECHNOLOGY AND STRATEGIC MANAGEMENT

Section–A : Information Technology

Attempt all questions.

Question 1

(a) Describe briefly the following terms:

- (i) Server
- (ii) Data Bus
- (iii) Dumb terminal
- (iv) WORM Disk
- (v) Repeaters.

(5 × 1 = 5 Marks)

(b) Explain each of the following:

- (i) Subroutine
- (ii) PROM
- (iii) Web casting
- (iv) Assembler
- (v) Data transformation.

(5 × 1 = 5 Marks)

Answer

- (a) (i) Server: A server is a computer system that provides services to other computing systems – called clients – over a network. Server operates continuously on a network and waits for service request from other computers on the network. It provides better access control and can reduce costs by reducing duplication of hardware/software.
- (ii) Data Bus: The data bus is an electrical path that connects the CPU, memory, and the other hardware devices on the motherboard. In fact, the bus is a group of parallel wires. The number of wires in the bus affects the speed at which data can travel between hardware components.
- (iii) Dumb Terminal: It consists of I/O devices for data entry and obtaining result but has no processing capability. It cannot process the data at its own level, instead the data is processed by the central server. These terminals are used in central processing environment.
- (iv) WORM Disk: It refers to Write Once, Read Many optical laser disks, or WORM disks. Once the data has been written to the medium, they only can be read, not

updated or changed. Companies generally store their proprietary information in WORM disk. These are 3½ inch diskette of 200 MB capacity onwards.

- (v) Repeaters: Repeaters are devices that solve the snag of signal degradation which results as data is transmitted along the cables. It boosts or amplifies the signals before passing it through to the next section of cable.
- (b) (i) Subroutine: A subroutine is a subset of instructions that appears over and again in the program or finds application in several programs. A great deal of coding effort can be saved through judicious use of subroutines to handle tasks which are encountered repetitively.
- (ii) PROM: Programmable read only memory is a non-volatile memory which allows the user to program the chip with a PROM writer. The chip can be programmed once, there after, it cannot be altered.
- (iii) Web Casting: It is a web based technology, which allows users to passively receive broadcast information rather than actively search the web for information. It allows users to choose from a menu of sources, specifying what kind of information is needed. Once selected, the information is automatically forwarded to the user e.g. Internet news services.
- (iv) Assembler: It refers to a computer program that translates programs written in symbolic coding to produce machine language programs.
- (v) Data transformation: The data transformation layer receives data from the data sources, cleans and standardizes it, and loads it into data repository.

#### Question 2

Answer any two of the following:

- (a) Describe salient features of Hierarchical Database structure.
- (b) Explain value added services being offered by a Data Centre.
- (c) What is Supply Chain Management? Discuss the potential problems which can be addressed through supply chain management. (2 × 5 = 10 Marks)

Answer

- (a) Salient features of Hierarchical Database:

In a hierarchical database, records are logically organized into hierarchy of relationship. It is arranged in an inverted tree pattern. The following are salient features:

- ❖ Database structure is less flexible as relationship between records are relatively fixed by the structure.
- ❖ It requires that hierarchy of records must be determined and implemented before a search.
- ❖ Ad hoc queries are difficult and time consuming to accomplish.
- ❖ Frequent management queries may not be supported as effectively.

- ❖ Day to day operational data can be processed rapidly.
  - ❖ Any group of records with natural relation may fit nicely.
  - ❖ Records are logically structured in inverted tree pattern.
  - ❖ It provides the parent – child relationship amongst the nodes.
  - ❖ It implements one-to-one and one-to-many relationship.
- (b) The following value added services are offered by a data centre.
- (i) Data monitoring: This is done via a database agent, which enables the high availability of the database through comprehensive automated management.
  - (ii) Web monitoring: It assesses and monitors website performance, availability, integrity and responsiveness from a site visitor's perspective. It also reports on HTTP and FTP service status.
  - (iii) Backup and Restore: It provides centralized integrated management solution for enterprise data storage using specialized backup agents for data base, operating system, open files and application.
  - (iv) Intrusion detection system: It helps in detecting inappropriate, incorrect or anomalous activity. It provides automated network based security assessment and policy compliance evaluation.
  - (v) Storage on demand: It provides the backend infrastructure so as to give a robust and cost effective storage strategy. It provides infrastructure to access information at any time with security, reliability and availability needed to meet the requirements of a company.
- (c) Supply Chain Management (SCM): Supply Chain Management (SCM) is the process of planning, implementing and controlling the operations of the supply chain with the purpose to satisfy customer requirements as efficiently as possible. It spans all movement and storage of raw materials, work-in-process inventory, and finished goods from point-of-origin to point-of-consumption.
- A SCM must address the following problems:
- (i) Distribution Network Configuration: Number and location of suppliers, production facilities, distribution centres, warehouse and customers.
  - (ii) Distribution Strategy: Centralised versus decentralized, direct shipment, cross docking, pull or push strategies, third party logistics.
  - (iii) Information: Integrate systems and processes through the supply chain to share valuable information including demand signals, forecasts, inventory and transportation.
  - (iv) Inventory Management: Quantity and location of inventory including raw materials, work-in-process and finished goods.

## Question 3

- (a) Explain the various components of a Decision Support System.
- (b) Describe the factors which have contributed to the growth of Local Area Network.

(4 + 6 = 10 Marks)

## Answer

- (a) Components of a DSS: A decision support system has four basic components: (i) The users, (ii) Database, (iii) Planning language, and (iv) Model base.
  - (i) The users: The user of a Decision Support System (DSS) is usually a manager with an unstructured or semi-structured problem to solve. In fact, user does not require a computer background to use a DSS for problem solving. He must have thorough understanding of the problem and the factors to be considered in finding a solution.
  - (ii) Database: DSS includes one or more databases. These databases contain both routine and non-routine data from both internal and external sources. The data from external sources include data about economic condition, market demand for goods and services and industry competition, whereas internal data includes data from the financial and managerial accounting system, marketing, production and personnel department.
  - (iii) Planning language: Two types of planning languages are commonly used in DSS.
    - (a) General Purpose: These languages allow user to perform many routine tasks viz., retrieving various data from a database or performing statistical analysis, budgeting, forecasting and worksheet oriented problem. The languages used in most of the spread sheets are the good examples.
    - (b) Special purpose: Special purpose planning languages are statistical languages viz., SAS, SPSS and Mini Tab. These languages perform statistical and mathematical operations.
  - (iv) Model Base: The model base is the brain of the decision support system because it performs data manipulation and computations with the data provided to it by the user and database. Model base is custom developed model that does some types of mathematical functions viz., cross-tabulation, regression analysis, time series analysis, linear programming and financial computation. The analysis provided by the routines in the model base is the key to supporting the user's decision.
- (b) Growth of LAN

The following factors have contributed to the growth of LAN.

  - (i) Security: Security for programs and data can be achieved using servers that are locked through both software and physical means such as diskless nodes.

- (ii) Expanded PC Usage: Once a LAN has been set up, it actually costs less to automate all processes as existing PCs can be easily converted into nodes by adding network interface card.
- (iii) Distributed Processing: LAN with inter-user communication and information exchange helps to develop distributed processing system.
- (iv) Electronic mail and Message Broadcasting: E-mail allows users to communicate more easily among themselves through a mail-box on the server.
- (v) Organisational Benefit: The information flow becomes a lot smoother with various departments, having the ability to access or request for information and data pertinent to them. Besides these, it leads to reduction in costs of Hardware, Software, and also in time, and cost of training on manpower to use the system.
- (vi) Data Management Benefit: Since data is located centrally on the server, it becomes much easy to manage it, as well as back it up.
- (vii) Software cost and upgradation: Network version software cost is less compared to single version software. Software upgrade is easy as package is stored centrally on the server.

#### Question 4

An electric supply company charges the following rates from its consumers:

| No. of unit consumed    | Charges/unit<br>(Rs.) |
|-------------------------|-----------------------|
| For the first 200 units | 2.50                  |
| For the next 300 units  | 3.50                  |
| Over 500 units          | 5.00                  |

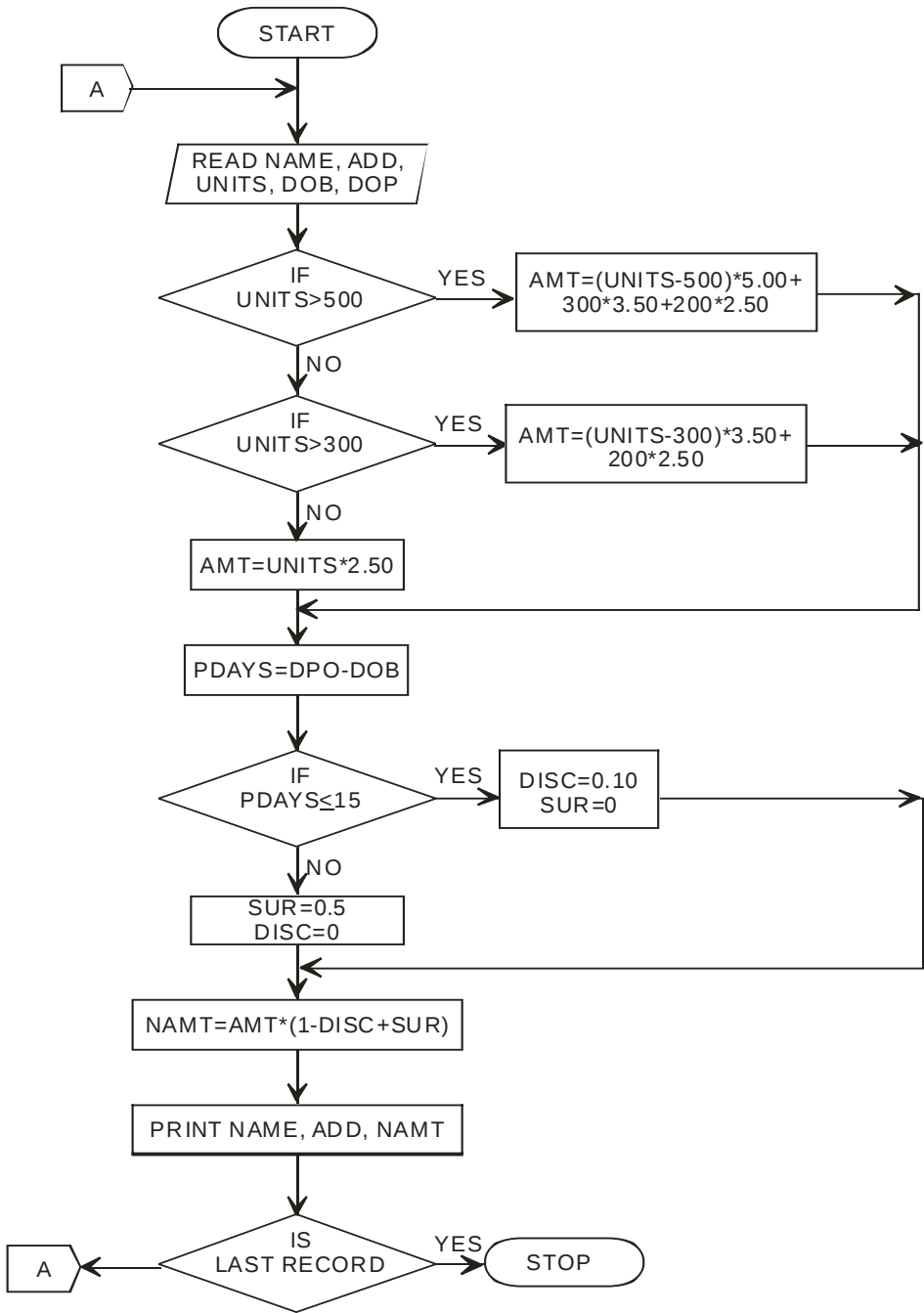
Computer database of the company has the following information:

- Consumer Name
- Address
- Unit consumed
- Bill date
- Payment date

If the consumer pays his bill within 15 days from the bill date, 10% discount is given. If he makes the payment after 15 days from the bill date, 5% surcharge is levied. Draw a Flow Chart to calculate the net amount of the bill for each consumer and print it. (10 Marks)

Answer

The required flowchart is given below:



Question 5

Write short notes on the following:

- (i) TCP/IP
- (ii) Intranet. (2 × 5 = 10 Marks)

Answer

- (i) TCP/IP: The protocols used on the Internet are called TCP/IP (Transmission Control Protocol/Internet Protocol). A TCP/IP protocol has two parts which create packet switching network:

- (a) TCP deals with exchange of sequential data.
- (b) IP handles packet forwarding as is used on the Internet.

TCP/IP has following four layers.

- (i) The Application Layer, which provides service directly to the user.
- (ii) The Transport Layer, which provides end-to end communication between applications and verifies correct packet arrival.
- (iii) The Internet Layer, which provides packet routing for error checking, addressing and integrity.
- (iv) The Network Interface Layer, which provides an interface to the network hardware and device drivers. This can also be called the data link layer.

Some reference books also include a fifth layer namely Physical Layer as part of TCP / IP which transmits the data from one system to another system in the form of 0<sup>s</sup> and 1<sup>s</sup>.

The TCP protocol breaks file or message in small packets. Each packet is then given a header, which contains the destination address. The packets are then sent over the Internet. The IP protocol guides the packets so that they arrive at the destination. Once there, the TCP protocol reassembles the packets into the original message.

- (ii) Intranet: The Intranet is a type of information system that facilitates communication within the organization, among widely dispersed departments, divisions and regional locations. Intranets connect people together with Internet technology using the Web Browsers, Web Servers and Data warehouses in a single view. With an Intranet, access to all information, applications and data can be made available through the same browser. The objective is to organize each individual's desktop with minimal cost, time and effort to be more productive, cost-efficient, timely and competitive.

Some of the key benefits of using Intranet are:

- ❖ Reduced administrative costs – printing, paper, software distribution, mailing, order processing, telephone.
- ❖ Easier, faster access to information.
- ❖ Easier, faster access to remote locations.

- ❖ Latest, up-to-date research base.
- ❖ Easier access to customers and partners.
- ❖ Collaborative, group working.

### SECTION-B : Strategic Management

Attempt all questions

#### Question 6

State with reasons which of the following statements is correct/incorrect (attempt any three):

- (a) Environmental constituents exist in isolation and do not interact with each other.
- (b) Tele-shopping is an instance of direct marketing
- (c) A core-competence is a unique opportunity of an organisation not shared by other.
- (d) Acquisition is a strategy.
- (e) Strategy follows structure. (3 × 2 = 6 Marks)

#### Answer

- (a) INCORRECT: Environmental constituents such as economic, legal, society, technology and other macro and micro elements are interwoven through complex and haphazard linkages. These constituents comprise of multitude of forces that are inter-related and inter-dependent. They are termed as environment as they are outside the main periphery of business but may affect its functioning directly or indirectly.
- (b) CORRECT: Direct marketing is done through various advertising media that interact directly with customer. Teleshopping is a form of direct marketing which operates without conventional intermediaries and employs television and other IT devices for reaching the customer. The communication between the marketer and the customer is direct through third party interfaces such as telecom or postal systems.
- (c) INCORRECT: Core competencies are unique strengths rather than opportunities of an organisation. They are resources and capabilities that serve as a source of competitive advantage over rivals. In comparison with competitors an organisation is in better position to leverage and take advantage of the core competencies.
- (d) CORRECT: An acquisition is a strategy through which one firm buys a controlling or complete interest in another firm. Acquisition of an existing concern is an instant means of achieving growth through expansion and/or diversification. Ideally, acquisition strategy should be used when the acquiring firm is able to enhance its economic value through ownership and the use of the assets that are acquired.
- (e) INCORRECT: Structures are designed to facilitate the strategic pursuit of a firm and, therefore, follows strategy. Without a strategy or reasons for being, it will be difficult to design an effective structure. Strategic developments may require allocation of resources

and there may be a need for adapting the organization's structure to handle new activities as well as training personnel and devising appropriate systems.

Question 7

Briefly answer any two of the following:

- (a) Define T.Q.M.
- (b) What is meant by Concentric diversification?
- (c) Explain the term star in the context of BCG matrix. (2 × 2 = 4 Marks)

Answer

- (a) Total Quality Management: TQM or Total Quality Management is a people-focused management system that aims at continual increase in customer satisfaction at continually lower real cost. There is a sustained management commitment to quality and everyone in the organisation and the supply chain is responsible for preventing rather than detecting defects.

TQM is a total system approach (not a separate area or program) and an integral part of high-level strategy. It works horizontally across functions and departments, involves all employees, top to bottom, and extends backward and forward to include the supply chain and the customer chain. TQM stresses learning and adaptation to continual change as keys to organizational success.

- (b) Concentric diversification: Concentric diversification amounts to related diversification. In this form of diversification, the new business is linked to the existing businesses through existing systems such as process, technology or marketing. The new product is a spin-off from the existing facilities and products/processes. There are benefits of synergy with the current operations. However, concentric diversification differs from vertically integrated diversification in the nature of the linkage the new product has with the existing ones.

While in vertically integrated diversification, the new product falls within the firm's current process-product chain, in concentric diversification, there is a departure from this vertical linkage. The new product is only connected in a loop-like manner at one or more points in the firm's existing process/technology/product chain. In concentric diversification there are benefits of synergy with the current operations.

- (c) Star in BCG Matrix: BCG growth-share matrix is a simple way to portray an organisation's portfolio of investments. Growth share matrix also known for its cow and dog metaphors is popularly used for resource allocation in a diversified company. The matrix is based on combinations of relative market share of the products or SBUs and their market growth rate.

Stars, a position in the matrix, are characterised by high market share and high growth rate. They are products or SBUs that are growing rapidly. They also need heavy investment to maintain their position and finance their rapid growth potential. Business organisations that enjoy star positions have best opportunities for expansion and growth.

## Question 8

What is Strategic Management? What benefits accrue by following a strategic approach to managing? (5 + 5 = 10 Marks)

## Answer

In a highly competitive marketplace, companies can operate successfully by creating and delivering superior value to target customers and also learning how to adapt to a continuously changing business environment. So to meet changing conditions in their industries, companies need to be farsighted and visionary, and must have a system of managing strategically.

Strategic management starts with developing a company mission (to give it direction), objectives and goals (to give it means and methods for accomplishing its mission), business portfolio (to allow management to utilise all facets of the organisation), and functional plans (plans to carry out daily operations from the different functional disciplines).

The overall objective of strategic management is two fold:

- ◆ To create competitive advantage, so that the company can outperform the competitors in order to have dominance over the market.
- ◆ To guide the company successfully through all changes in the environment.

The following are the benefits of strategic approach to managing:

- ◆ Strategic management helps organisations to be more proactive instead of reactive in shaping its future. Organisations are able to analyse and take actions instead of being mere spectators. Thereby they are able to control their own destiny in a better manner. It helps them in working within vagaries of environment and shaping it, instead of getting carried away by its turbulence or uncertainties.
- ◆ Strategic management provides framework for all the major business decisions of an enterprise such as decisions on businesses, products, markets, manufacturing facilities, investments and organisational structure. It provides better guidance to entire organisation on the crucial point - what it is trying to do.
- ◆ Strategic management is concerned with ensuring a good future for the firm. It seeks to prepare the corporation to face the future and act as pathfinder to various business opportunities. Organisations are able to identify the available opportunities and identify ways and means as how to reach them.
- ◆ Strategic management serves as a corporate defence mechanism against mistakes and pitfalls. It helps organisations to avoid costly mistakes in product market choices or investments. Over a period of time strategic management helps organisation to evolve certain core competencies and competitive advantages that assist in its fight for survival and growth.

## Question 9

What is meant by Functional strategies? In term of level where will you put them? Are functional strategies really important for business? (4 + 2 + 4 = 10 Marks)

## Answer

Once higher level corporate and business strategies are developed, management need to formulate and implement strategies for each functional area. For effective implementation, strategists have to provide direction to functional managers regarding the plans and policies to be adopted. In fact, the effectiveness of strategic management depends critically on the manner in which strategies are implemented. Strategy of one functional area can not be looked at in isolation, because it is the extent to which all the functional tasks are interwoven that determines the effectiveness of the major strategy.

Functional area strategy such as marketing, financial, production and Human Resource are based on the functional capabilities of an organisation. For each functional area, first the major sub areas are identified and then for each of these sub functional areas, contents of functional strategies, important factors, and their importance in the process of strategy implementation is identified.

In terms of the levels of strategy formulation, functional strategies operate below the SBU or business-level strategies. Within functional strategies there might be several sub-functional areas. Functional strategies, are made within the higher level strategies and guidelines therein that are set at higher levels of an organisation. Functional managers need guidance from the business strategy in order to make decisions. Operational plans tell the functional managers what has to be done while policies state how the plans are to be implemented.

Major strategies need to be translated to lower levels to give holistic strategic direction to an organisation. Functional strategies provide details to business strategy & govern as to how key activities of the business will be managed. Functional strategies play two important roles. Firstly, they provide support to the overall business strategy. Secondly, they spell out as to how functional managers will work so as to ensure better performance in their respective functional areas. The reasons why functional strategies are really important and needed for business can be enumerated as follows:

- ◆ The development of functional strategies is aimed at making the strategies-formulated at the top management level-practically feasible at the functional level.
- ◆ Functional strategies facilitate flow of strategic decisions to the different parts of an organisation.
- ◆ They act as basis for controlling activities in the different functional areas of business.
- ◆ The time spent by functional managers in decision-making is reduced as plans lay down clearly what is to be done and policies provide the discretionary framework within which decisions need to be taken.
- ◆ Functional strategies help in bringing harmony and coordination as they remain part of major strategies.
- ◆ Similar situations occurring in different functional areas are handled in a consistent manner by the functional managers.

## Question 10

Read the following case and answer the questions at the end:

Dr. Sukumar inherited his father's Dey's Lab in Delhi in 1995. Till 2002, he owned 4 labs in the National Capital Region (NCR). His ambition was to turn it into a National chain. The number increased to 7 in 2003 across the country, including the acquisition of Platinum lab in Mumbai. The number is likely to go to 50 within 2-3 years from 21 at present. Infusion of Rs. 28 crores for a 26% stake by Pharma Capital has its growth strategy.

The lab with a revenue of Rs. 75 crores is among top three Pathological labs in India with Atlantic (Rs. 77 crores) and Pacific (Rs. 55 crores). Yet its market share is only 2% of Rs. 3,500 crores market. The top 3 firms command only 6% as against 40-45% by their counterparts in the USA.

There are about 20,000 to 1,00,000 stand alone labs engaged in routine pathological business in India, with no system of mandatory licensing and registration. That is why Dr. Sukumar has not gone for acquisition or joint ventures. He does not find many existing laboratories meeting quality standards. His six labs have been accredited nationally whereon many large hospitals have not thought of accreditation; The College of American pathologists accreditation of Dey's lab would help it to reach clients outside India.

In Dey's Lab, the bio-chemistry and blood testing equipments are sanitised every day. The bar coding and automated registration of patients do not allow any identity mix-ups. Even routine tests are conducted with highly sophisticated systems. Technical expertise enables them to carry out 1650 variety of tests. Same day reports are available for samples reaching by 3 p.m. and by 7 a.m. next day for samples from 500 collection centres located across the country. Their technicians work round the clock, unlike competitors. Home services for collection and reporting is also available.

There is a huge unutilised capacity. Now it is trying to top other segments. 20% of its total business comes through its main laboratory which acts as a reference lab for many leading hospitals. New mega labs are being built to encash preclinical and multi-centre clinical trials within India and provide postgraduate training to the pathologists.

Questions:

- (i) What do you understand by the term Vision? What is the difference between 'Vision' and 'Mission'? What vision Dr. Sukumar had at the time of inheritance of Dey's Lab? Has it been achieved? (2 + 2 + 2 + 2 = 8 Marks)
- (ii) For growth what business strategy has been adopted by Dr. Sukumar? (2 Marks)
- (iii) What is the marketing strategy of Dr. Sukumar to overtake its competitors? (6 Marks)
- (iv) In your opinion what could be the biggest weakness in Dr. Sukumar's business strategy? (4 Marks)

Answer 10

- (i) A Strategic vision is a road map of a company's future – providing specifics about technology and customer focus, the geographic and product markets to be pursued, the capabilities it plans to develop, and the kind of company that management is trying to create. A strategic vision thus points an organisation in a particular direction, charts a strategic path for it to follow in preparing for the future, and moulds organisational identity.

A company's Mission statement is typically focused on its present business scope – “who we are and what we do”. Mission statements broadly describe an organisation's present capabilities, customer focus, activities, and business makeup. Mission is also an expression of the vision of the corporation. To make the vision come alive and become relevant, it needs to be spelt out. It is through the mission that the firm spells out its vision.

Dr. Sukumar's vision at the initial stage was to turn his one pathological laboratory firm into a national chain of pathological laboratories.

He is in the process of achieving the vision as a number of Labs have been opened and others are in pipeline. However, at the same time the market share is low when compared with the external benchmark from US market.

- (ii) To a large extent Dr. Dey's Lab has opted the business strategy of internal growth rather than going in for acquisitions or joint ventures. The reason for such a strategy is that Dr. Sukumar does not find many existing laboratories meeting the quality standards. To fund its growth and raise funds it has also given a 26% stake to Pharma Capital.
- (iii) Dr. Sukumar's marketing strategy is superior to its competitors. Over a period of time it is able to evolve itself as reference lab for many leading hospitals. This is a testimony of the level of confidence it enjoys among the medical professionals. It provides a high level of customer services because of the following:
- ◆ Product mix: It possesses technical expertise to conduct 1650 variety of tests.
  - ◆ Quality: The laboratories use modern methods to conduct tests. Even routine tests are conducted with highly sophisticated procedures. Technology such as bar coding and automated registration of patients is also used. Thus there are no mistakes in the identity of samples. There is also daily sanitisation and validation of lab equipments.
  - ◆ Speed: Laboratories are working round-the-clock. Further, using modern systems the company is able to deliver test results faster.
  - ◆ Convenience: There are 500 collection centres for the laboratory, thereby the reach is more. Additionally, system of collection of samples from home also provide convenience to the patients and others.
- (iv) A weakness is an inherent limitation or constraint of the organisation which creates strategic disadvantage to it. In the case it is given that Dr Sukumar has not gone for

mergers and acquisition as he does not find many prospective laboratories meeting the quality standards. Thus its biggest weakness is its inability to capitalise the opportunities through mergers and acquisitions. Acquisitions and partnerships can help in leveraging the existing goodwill.

Many of these labs must be enjoying a lot of goodwill in their region. In fact, a business in the medical field such as a pathological laboratory, trust and faith are important. On account of its size and available resources Dey's Lab could have easily acquired some of these labs and built upon their names. With resources it should be feasible to modernise them to make them compatible with the business ideology and quality systems of the Dey's Lab. However, it appears that the company lacked capability to modernise an existing laboratory.