



Reg. No.

Manipal Institute of Technology
DEPARTMENT OF HUMANITIES & MANAGEMENT

II SEMESTER M.TECH ENGINEERING MANAGEMENT

PROGRAM ELECTIVE

END SEMESTER EXAMINATIONS, APRIL 2017

SUBJECT: MANAGEMENT INFORMATION SYSTEM [HUM-5237]

REVISED CREDIT SYSTEM

Time: 3 Hours

MAX. MARKS: 50

Instructions to Candidates:

- ❖ Answer **ALL THE** questions.
- ❖ Missing data may be suitably assumed.
- ❖ Draw suitable sketches wherever necessary.

- 1A.** State and explain the definition of Management Information System (MIS) given by Gordon B. Davis & H. Olson focusing on its present relevance in Business **03**
- 1B.** "MIS conceptual structure is defined as a federation of functional subsystems" Explain this statement with suitable examples. **03**
- 1C.** Explain the classification of Information systems into operation support and management support systems with suitable examples. **04**
- 2A.** Explain any two types of systems and elaborate on the needs of an MIS professional to be knowledgeable on the same to develop an information system. **04**
- 2B.** Compare the classical economic model and administrative models of decision making by stating its assumptions. **03**
- 2C.** Quoting relevant examples, explain how information systems can be used for gaining strategic and competitive advantage. **03**
- 3A.** Explain the Allen Newell and Herbert A. Simon model of human problem solving and state its application. **04**
- 3B.** Explain the planning and analysis phases in SDLC approach of MIS development. **03**

- 3C. Explain the work breakdown structure adopted in MIS design and development with suitable examples. 03
- 4A. Explain any four key tasks performed in conceptual design of MIS. 03
- 4B. Explain the fundamental weaknesses in MIS design and development. 04
- 4C. State and explain six specific factors to be considered in forms design of MIS. 03

5 CASE

Pole Star Distributors Ltd. originally started as a small trader who used to import goods from third world countries and sell these in India. Slowly it expanded its business to an importing house. It was established about fifty years back and over the years has built a substantial nation-wide selling and distribution organization within India. Its headquarters are in Mumbai but it has warehouses and regional sales offices, it has regional sales centers in all the major towns of all the states of India. Although the business started as a purely an importing one, it has created a strong selling and distribution network on the basis of imported product range. The existence of a strong distribution and selling network enabled them to take on distributorships of a wide range of Indian manufacturers. Today they sell about 50% of indigenous manufactured products while 50 % products continue to be imported from other countries. The imported items, of course, involve license formalities and a separate license section has been established (adjacent to the Delhi regional sales office) to deal with these matters. The License Section's job is also to liaison with the customs department and other agencies. Pole Star Distributors Ltd. markets several range of machines and other household customer products. The machine range includes refrigerators, air conditioner, electrical goods, electronic gadgets, apparels, footwear, cosmetics, packaged food, soaps, toothpastes, confectionery, biscuits, etc. The product mix includes imported products and popular domestic brands. Over a period of time, it also started marketing products of smaller manufacturers under its brand name 'XENON' the variety and the range of products is so wide, that on an item to item basis, the number will be over 10000 items.

Because of the large variety and wide range of machine equipment's and other products, the business is divided into six divisions and is being managed by the divisional managers. After a lot of discussions and number of trials, the Pole Star Distributors Ltd. decided to create the product divisions as: White Goods Division, Electrical Engineering Division, Electronics Division, Cosmetics Division, Apparel & Footwear Division, and Foods & Confectionery Division. The first three divisions are supposed to provide the complete solution to its customers. Apart from selling the end product, they are to provide guidance to the customer, do necessary installation and may sometimes need for a take orders for customized product. For the customized

solutions, the divisional managers have specialist staffs at the head office to deal with these requirements. These three divisions also share a workshop in Mumbai, where a certain amount of assembly work can be carried out. Necessary technical support staff that can carry out installation work in that field is present in the workshops. The division also sells spare parts and although 90% of the invoice they send out are for such items, the other 10% of the invoices present about 90% of the value of the sales of the divisions as a whole.

In the case of large contracts (especially with respect to the customized contracts in first three divisions), invoicing is often delayed until the end of the contract, although part payments are made as the project progresses. The trend of the past shows that in more than 70% of the projects more than 50% of the payment is released in the last phase of the project. The cosmetics, apparel and footwear and food and confectionery divisions basically sell the standard products either imported or domestic brands. The question of customization does not arise in these divisions. Sales in these three divisions are made for stock and the invoice is generated and dispatched latest by the next day. The warehouse stocking policy of these divisions consider the demands of the market it covers. The stocking levels are decided based on the demand and the lead times of supply.

Each division may have a number of distributorships and each distributorship may handle a number of products. The divisional manager is always concerned with the profitability of individual products but the most important information that he/she is concerned with is the profitability of the distributorship as a whole. This piece of information helps in better negotiations and planning. If a whole distributorship becomes unprofitable, the management may decide to drop entire range of that particular manufacturer or may substitute with a better range.

The present numbers of distributorships/products handled by the different divisions are:

Divisions	Distributorship	Possible no. of Products
• White Goods Division	20	500
• Electrical Engineering Division	30	1000
• Electronics Division	25	2000
• Cosmetics Division	40	4000
• Apparel & Footwear Division	5	1500
• Foods & Confectionery Division	10	1000

Each divisional manager has the specialized salesmen in each regional sales office that is attached to it and/or reporting through it. The number of salesmen specializing in the products of any particular division in any particular region largely depends on how successful the division has been in that region. Regional sales manager serve all divisions and although the salesmen are responsible for discipline and 'on the spot' decisions, they have technical responsibility to the divisional managers.

The distribution system followed by Pole Star Distributors Ltd. is as follows: Each city is divided into sales regions and is assigned to a travelling salesman. Pole Star Distributors Ltd. has coded the complete details of each store/shop on various routes within city. These details include the name of the store/shop, its address, turnover, locality, population statistics of the area in which the said store/shop is situated, the income group, etc. Each salesman is assigned to a particular predefined route and complete details of each shop/store on that route are handed over to the salesmen. He is provided with a van to carry the stocks for delivery to the shops on his route for previous orders and also to collect new orders. He is expected to visit each shop at least once a week to fulfil pending orders and to collect new orders, all items marketed by the company have also been coded into the products database with the information on price, size, weight, variety, brand name and manufacturer, etc. All enquiries/orders pass through and are recorded at head office. Quotations are issued from the head office and followed up by the regional sales staff that report back to head office about their success (for the delivery of the order) or failure and the reasons. A large number of products are sold as per the standard price list. This constitutes to about 80% of the total range of products that Pole Star Distributors Ltd. deals with. Only 20% of the products that are customised and/or meant for special customers do not follow the standard price list. The standard price-lists are issued directly by head office and passed on through regional offices. A couple of years back, the Pole Star Distributors Ltd. got an order processing software to manage its orders and invoicing process. The system was installed at the head office. The software is a menu driven one, which allows the user to capture the order and the invoice details. The salesman visits the shops and collects orders in a standard format, which are processed by the computer department of the company under the order processing system. The order processing system processes the order for the availability of the item and allocates the stock to the orders received from the salesman. Once the allocation is made, the supplicate issue slips are printed- one for the van and other for the store to draw the items and out them in containers. The company sells the good against cash or cheque payment. The salesmen return the issue slip plays the role of withdrawal, delivery and billing.

The loyalty and the repeat visits of the customers depend on the availability of the products and the service being provided by the shopkeeper. In order to maintain a higher level of customer satisfaction, the shopkeeper needs to optimally utilize the space in the shop and also needs to stock the complete variety of products. The empty shelf space means a loss of revenue for the shop and loss of business for the Pole Star Distributors Ltd. Hence, the salesman has to visit the shops more frequently to collect the orders, which in turn helps in ensuring the optimal level of space/shelf utilization in the shop with company's products. The data that is captured by the order processing system includes: Division, Region code, Salesmen details, Distributorship, Product details, Invoice value, Cost and Gross profit. The orders are processed by the computer system. Order processing systems generate issue slips (in duplicate) after checking the inventory levels. The system also helps in updating the inventory. After delivering the products as per the shop order, acknowledgment is obtained from the shopkeeper and it is used for the billing and accounting purpose by the system. The data captured through the issue slip includes: Shop code, Shop name, Order No., Route No., Issue Slip No., Product details, Ordered Quantity, Issued Quality, Amount and Date.

After analyzing the past trends obtained from the order processing system, the management of Pole Star Distributors Ltd has observed that 20 percent of orders are partially delivered. The order processing system does not have provision of monitoring the partially fulfilled orders, because of which the shops do not get the complete delivery, which leads to lost sales, the ordering procedure is faulty, as every time a fresh order is booked, old orders are not referred back to. As a result the shopkeeper diverts the space to competitor's products. Cost are always known at the time of invoicing for most of the products listed in cosmetics, apparel and footwear and food and confectionery divisions, as all items are brought-out. Whereas, in case of products under white goods division, electrical engineering division and electronics division, some additional price needs to be added for the customization. The customization quotes are provided by the workshop based in Mumbai. Order processing system also helps in doing some limited amount of sales analysis as per the given parameters as: Division wise sales analysis, Distribution wise sales analysis, Region wise sales analysis, Product wise sales analysis and Salesmen wise sales analysis. The sales analysis can be carried out only on the current data. The software does not support any level of comparison with past data. Some level of forecasting is also possible with this software. Forecasting is based on the current data only. Managers can also compare the actual performance with the forecasted sales. Annual budgets are prepared at the regional sales managers, divisional managers and head office levels to manage expenses and profits. Actual expenses are compared with those budgeted on monthly basis and the monthly expense statement is prepared and sent to the head office. On the basis of this statement the accounts department prepares the expense control statements. Profit and loss statements are prepared at the divisional levels on the basis of the monthly sales reports and monthly expenses statements. These profits and loss statements are consolidated at the head office to produce the final profit and loss statement. With increase in competition and advancement in technological options, the management of the company wants to review its information requirement and to develop an efficient and effective information system. Challenges being faced by the company may include product selection, inventory management, customer satisfaction, transportation and logistics, etc.

- 5A** Identify the key decision managers in the organization. Evaluate the systems to find whether their key managers get the right kind of information to support their decisions. If not, suggest the information each manager would need to function effectively. **03**
- 5B** Study the present structure of the above mentioned organization and depending on the information needs of the company; identify the main modules (components) of the information system by proposing a conceptual design. **04**
- 5C** Suggest the detailed design requirements by giving testing and implementation guidelines for the proposed integrated information system that the company needs to address its problems. **03**