# DEVELOPMENT OF MANAGEMENT INFORMATION SYSTEM (MIS) FOR A MEDIUM SIZE CERAMIC PRODUCTS MANUFACTURING ENTERPRISE

A Project Thesis submitted to the Department of Industrial and Production Engineering, Bangladesh University of Engineering and Technology, Dhaka, in partial fulfilment of the requirement for the degree of MASTER OF ENGINEERING (IP)


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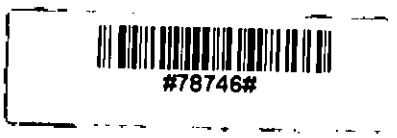


March, 1990

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Dhaka

# CERTIFICATE

This is to certify that this work has been done by me and it has not been submitted elsewhere for the award of any degree or diploma.

Supervisor

Signature of the Candidate

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A Project Thesis

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# ACKNOWLEDGEMENT

The author wishes to facilitate his sincere gratitude and honour to project supervisor Dr. Md. Mizanur Rahman, Professor, Department of Industrial and Production Engineering, Bangladesh University of Engineering and Technology, Dhaka for his prolonged guidance and patience in giving valuable suggestions for the preparation of the thesis.

The author also express his appreciation for the encouragement and kind help to Dr. AFM Anwarul Haque, Professor & Head of the department of Industrial and Production Engineering, BUET, Dhaka.

The author wishes to thank Dr. M. Anwarul Azim who time to time enquired about the work and gave his valuable suggestions throughout the thesis work.

Finally the author expresses his sincere thanks to all those who either directly or indirectly helped the author in various ways to complete this thesis work.

March, 1990

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# ABSTRACT

In Bangladesh either in an industrial unit or in any business enterprise economic growth is not yet very prominant as management desciplines are not being followed. Real situation prevailing in industrial units or business fields are rarely examined and for the decisions based on assumptions or wrong informations, the industrial or business sector faces financial losses. A way to analyse the real situation is to store every information of the organisation and to take decision as per the report of the analysis.

With the objective of developing Management Information System (MIS) in an enterprise where none has any experience on the MIS, a methodological approach had been followed in the present work. In step-by-step phases to develop a MIS, at first a general system analysis has been conducted where existing information system, manufacturing system, organisation structure, product flow system, key problems of the management etc. were studied. In the second phase a general design of proposed system was done, where a brief idea has been given how the proposed system would work. In the 3rd phase, an evaluation of the proposed system was conducted by a cost-benefit analysis. In the 4th phase detail formats of input data and reports for various sub-system was prepared. Finally an implementation plan was given.

To show the application of MIS, ABC analysis and EOQ analysis was carried for the inventory sub-system of an industrial unit. data (for yearly materials consumed in quantity and their values) was taken for four consecutive years. This data was processed in

computer to get percentage contribution of individual item and to arrange the data in descending orders. From the report it would be shown that on the top of the report the items have come whose contribution by value are greater and they are listed in descending order. It would be further noticed that about 80 - 90% of money had been spent to procure on 10 - 15% even less percentage of total items. So their control should be restricted. Next a group of item has come, their contribution by value is less and next a group of item has come having negligible contribution.

# Chapter-1

# INTRODUCTION

In the past three decades, Management theory and practice have undergone dramatic changes in the business world. It has become more complex, uncertainty has been prevailing althrough. To manage and operate a business system effectively and successfully it is becoming increasingly essential that information management be given high level of importance. It is imperative that a manager should know about system approaches, system design and utilization. Thus an information system has to be adapted which would be easy to operate, efficient and appropriate.

Complexity of information flows in any modern industrial and business organisation is so much prominent that without an efficient information system an organisation might be placed at a high risk of disbenefit and loss at their extremes. With the use of changing technology, changes in the business premises are also being occured more rapidly. Changes in the industrial production system, physical distribution, data processing or the engineering development and test system are being happend in industrially developed countries where Management Information system (MIS) has become a integral part of the management, and has in fact replaced the conventional information system. MIS is no longer a concept but "with the advent of the computer .... that the computer would become the basic tool for developing management

information systems which would in turn cut across the organization and provide managers at all levels with the knowledge and data necessary to make decisions about their jobs" (Huse & Bowditch).

In Bangladesh context, implementation of MIS has been slower in general. For the losses in some situations at bigh levels may possibly have been contributed to lack of application of MIS. This may be a single most influential factor. Present Management system prevailing in enterprises/businesses is mostly based on presumptions, intuitition and gross assumptions. Thus these are highly inefficient slow and remarkably unsatisfactory. Time has long been ripe and for the growth, in real term, of the enterprises and industries leading to take its (MIS) place forcefully and effectively.

But management information system help the management in taking right decisions in right time and it it true that right decisions would lead to profit and wrong decisions to financial losses. The impact of right or wrong decisions which would be originated from information available could not be seen but soon its importance would be realised. It would be obvious that there would be a tremendous scope of scientific management through organised information system. It would ensure the best allocation of available resources. Any sort of information which could be treated as intangible have some cost and benefit associated with it.

## 1.1 Role of MIS in Industries of Bangladesh

The use of proper management in the industries of the country is just marginal. Among many of the reasons, management problem is predominant. If the matter is investigated very carefully, it would be found that lack of proper information system is the cause. It is a matter of concern that most of the managements of the industries are not giving effort for the growth of the information in their daily decision making activities. Thus strategic planning (in the making) process in such situations is suffering. The associated problems are outlined below:

*i) No production being scheduled as per market demand,*

*ii) No purchases are made according to inventory reports,*

*iii) A high inventory is found, and*

*iv) Prices of products are found abnormally high for reason of unjustified charging of variable costs.*

What a proper information system could do is that appropriate decisions could be taken at appropriate time in isolation or integratedly. For example, market demand would no more be a guessing rather forecasting would be more and more nearer to actual demand, co-ordination among the sub-systems of a total system could be established, none could by-pass other as everyone is obliged to the central Information System.

## 1.2 The Scope and Objective of the Present Work

The scope of the present work is to investigate the possibility of introducing MIS with a view to replace the existing information system in a medium size production plant, namely, Bangladesh Insulator and Sanitaryware Factory (BISF). With the present information system the information flows amongst the departments are very slow and sometimes stagnant. Lack of proper information leads to guess and assumptions. It is believed that by introducing MIS in the enterprise, it would bring benefits. However, in an enterprise where experience of such a system is absent, a systematic phasewise development of MIS would be very useful.

The aims and objective of the present work are:

*i) Exploratory study of feasibility of adapting MIS*

*ii) Design of MIS compatible to BISF*

*iii) Detailed design and implementation of MIS*

*iv) Preparation of detailed formats and input data and output (report) for the unit*

*v) To show the application of data processing in a sub-system of proposed system.*

# Chapter-2
# LITERATURE SURVEY AND BACKGROUND STUDY

The evaluation of MIS has been started from the complexity of modern business organization. In a business organisation of to-day, information and their flows are so numerous and complex that without the system it has increasingly becoming difficult and in the some extreme cases unmanageable to carryout organisational activities.

Murdick and Ross[1] defines MIS as a group of people, a set of manuals and data processing equipments (a set of elements) select, store, process and retrieve data to reduce the uncertainty in decision making (seek a common goal) by yielding information for managers at the time they can most effectively use it.

Leavitt and Whisler[2] provided a difinition of Information technology. It is composed of several related parts. One includes techniques for processing large amounts of information rapidly, and it is epitomised by the high speed computer. A second parts centres around the application of statistical and mathematical methods to decision making problems, it is represented by techniques like mathematical programming and by methodologies like operations research. A third part is in the offing, though its applications have not emerged very clearly, it consists of the simulation of high order thinking through computer programs.

Dickson[3] defined Management Information Decision system as 'MIS deals with all informational and decision making activity associated with operating an organisation. It is the desire of those working in the MIS area to encourage better organisational efficiency and effectiveness through facilitating information provision and decision support to management.

Lucas H.C.[4] defines information system is a set of organised procedures that when executed, provides information to support decision making and control in the organisation. He defines information a tangible or intangible entity that serves to reduce uncertainity about some state or event. These above definitions are all the formal definitions of MIS and carry identical concepts. But Wysong[5] reported that many managers were unsuccessful in implementing MIS in the past, because they viewed the MIS as a product (thing). MIS is not a product it is a concept.

Kenevant[6] stated 'A management information system is an organised method of providing past, present and projected information related to internal operations and external intelligence. It supports the planning, control and operational of an organisation by furnishing uniform information in the proper time frame to assist the decision making process'.

Diagramatically the above definitions can be integrated with the conceptual view point (Fig. 2.1). the MIS is depicted as a wheel

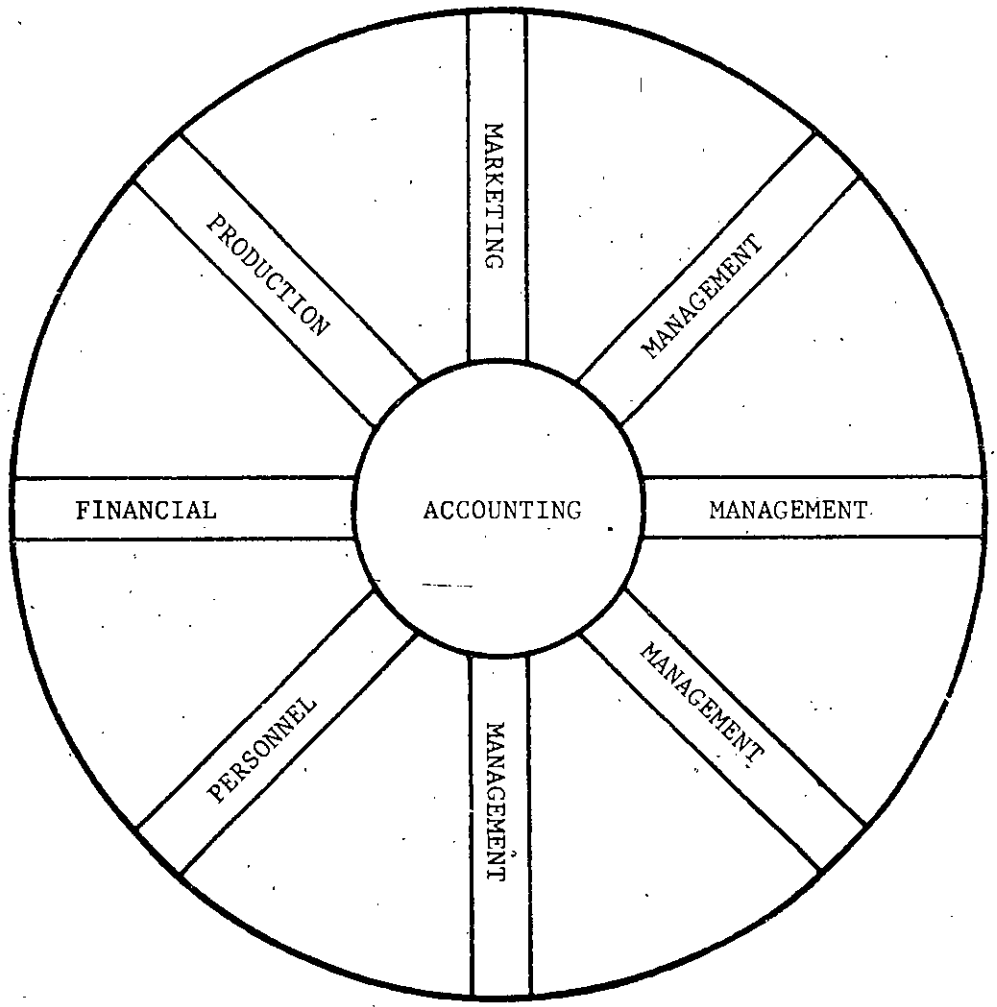



Fig. 2.1 : MIS depicted as a wheel

that encompasses the various functional information systems with decision support system (DSS) interacting with the invironment. The hub of the MIS is the Financial Management for two basic reasons:

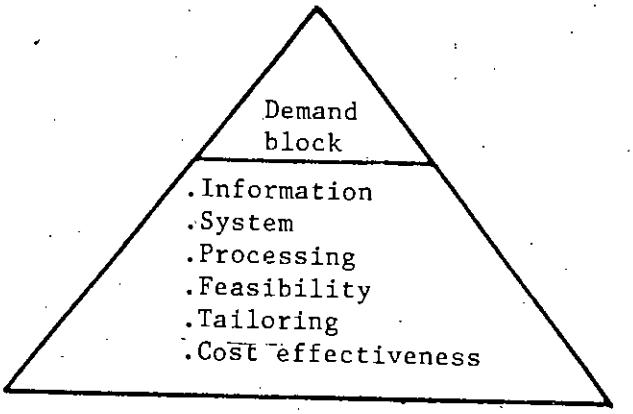
- It interacts closely with all other information systems
- It drives the organisation to maintain and improve its financial position.

In a Management Information System information from various sub-systems of an organisations are stored in a data base. Data is processed in a central processing unit with the help of industrial engineering techniques. The outputs are called reports. The reports are used by different level managers in taking their every day decisions. The users also collect necessary information/data from the data bank.

Information is one of the several valuable reasources found in an organisation. Information is an intangible resources similar to a process, trade mark, patent or the skill level of the work force, Grudnitski[7], any resources either tangible or intangible have value and cost associated with them. It is preferred not to incur costs greater than the value when resources are acquired or used. Management scientist express this as minimising cost and maximising value.

Murdick and Ross mentioned that 'the application of management science to MIS represents a tremendous advance over the disorganised collection of information and management based on feel. Management science requires the manager to define his problem and assumptions carefully, usually in terms that may be quantified and measured, so that he may achieve better problem definition. When it is applied to design of organisational and operating system for problem solving, Management science utilises a considerable volume of man's knowledge of many related sciences'.

In case of big business organisation, the system approach for managing is designed for 1) developing and managing operating system (money flows, manpower system); 2) designing information system for decision making. The link between those two processes is obvious, the reason for information systems design is to assist the organisation in making decisions regarding the decisions of operating systems. The fundamental concept of systems aproach to management and organisation is the enter-relationship of the parts or sub-system of organisation. Organisational and information systems are designed to achieve the simultaneous action of separate but interrelated parts producing a total effect greater than the sum of the effects taken independently.




| | System analysis | General System design | System evaluation & justification | Detail system design | Systems implementation |
|---|---|---|---|---|---|
| | .Defn. of user problem & need<br>.System scope<br>.Gathering of study facts<br>.Analysing study facts | .Broad design of design block<br>.Presentation of design alternatives | .Employee Impact<br>.Cost effectiveness analysis | .Detail specification of design blocks | .Training & educating users<br>.System testing<br>.System conversion<br>.System followup |
| | .Proposal to conduct system analysis report<br>.System analysis completion report | .General system design proposal report | .Final general systems design report | .Final detail design report | .Final implementation report |

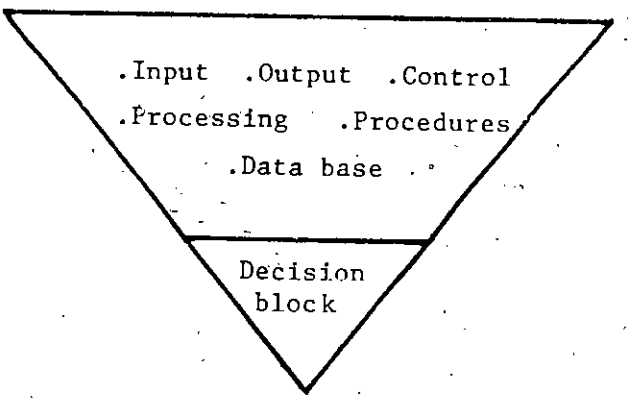



Fig. 2.2 : The system development methodology and its relationship to the information systems building blocks

The development of an information system, no matter what its size and complexity, requires many coordinated activities. In the present work, it has been tried to organise and co-ordinate these activities for a medium sized manufacturing unit through systems development methodology. In Fig. 2.2 the MIS development methodology has been represented, where it is shown that the development is proceeded in five phases. The phases and the activities during each of the phases are mentioned in the figure.

In the present work the above procedure of introduction of MIS for BISF was adopted. this procedure is complete and logically sequenced.

# Chapter-3

# THE SYSTEM DEVELOPMENT METHODOLOGY

## 3.1 System Analysis

It has been introduced in chapter-1 about the objective of the present work. If it is reiterated, it would be evident that the present work consists of development of a procedure for adapting MIS in a medium-size manufacturing organisation. Bangladesh Insulator and Sanitaryware Factory (BISF) has product lines mainly Insulators, Sanitarywares and Tiles. The existing information system was studied. It has been observed during the study that the efficiency of the present information system in the organisation, like many other manufacturing organisations in the country, is not upto a satisfactory level. There exists lack of co-ordination among the sub-systems of the total organisation system of the enterprise. The information systems, which are now operating in organisation were designed and implemented in the past and currently used information are also traditional. Information system while efficiently operated would be capable for achieving the following:

- reduced the cost of production
- increased customer service
- directed the organisation towards economic growth
- insured the accuracy of management decisions like forecasting for production target, sales, inventory control, product schedule, product mix etc.

Defining the Systems goal: The aims of MIS would enable the management to take better decisions through

- determining strategic objective for the factory
- identifying areas where important decision could be made
- specifying assential information needed for decision making
- providing the resources to achieve future objective.

### 3.1.1 Company Background

Bangladesh Insulator & Sanitaryware Factory Ltd. was established with the primary objective of utilising the indegenous natural resources like Feldspar Stone, Quartz Stone, Bijoypur White Clay etc. to manufacture ceramic products as import substitute for sanitaryware and electrical insulators needed for Bangladesh. Commercial production of sanitaryware started from December, 1981 and insulators from May, 1983. Originally, the factory was supposed to produce sanitaryware and insulators only but later a Tiles Plant was also included with the project to have greater utilization of the production facilities, commercial production has been started on June, 1986. Therefore the Factory has three production lines having capacities as follows:

| | | |
|---|---|---|
| Sanitaryware | - | 4000 MT/Year |
| Insulators | - | 2400 MT/Year |
| Tiles | - | 110,000 Sq.M/Year |

BISF is the only manufacturer of electrical insulators, sanitarywares and ceramic tiles in the country. As a lone manufacturer of quality products, this unit is expected to flourish having a protected market. But this has not proved true. During the first four years of operation it could hardly achieve only 25% to 35% of its productions capacity. Although import of sanitaryware has been banned since 1983, sales has not so far been marked any substantial increase. However situation is gradually improving.

Since going into production, one of the great achievments is the gradual elimination of the imported raw materials with local substitutes. Although in the original scheme it was envisaged to consume local raw materials at about 60:40 ratio, but during guarantee test foreign experts used only 30% to 40% of local materials on the basis that local raw materials was not suitable for use. This situation has now been completely reversed. Another big problem encountered by the organisation was 'Hair Crack' and 'Crazing' an inherent defects in sanitaryware products. The problem has been solved fully. Slowly but surely technological progresses are remarkable for the organisation.

Following is the brief picture for target, production and sales of BISF products:

| Product | Year | Target | Production | Sales | Export Sales |
|---|---|---|---|---|---|
| Sanitaryware | 1981-82 | - | 558 | 191 | - |
| | 1982-83 | 1200 | 1317 | 802 | - |
| | 1983-84 | 900 | 955 | 1035 | 12 |
| | 1984-85 | 1200 | 1206 | 1351 | 13 |
| | 1985-86 | 1200 | 1430 | 1467 | - |
| | 1986-87 | 1400 | 1545 | | |
| | 1987-88 | 1900 | 1946 | | |
| | 1988-89 | 2200 | 2210 | | |
| Insulator | 1981-82 | - | 86 | - | |
| | 1982-83 | - | 341 | 49 | |
| | 1983-84 | 600 | 601 | 451 | 25 |
| | 1984-85 | 750 | 751 | 715 | 38 |
| | 1985-86 | 750 | 785 | 732 | - |
| | 1986-87 | 600 | 663 | | |
| | 1987-88 | 400 | 501 | | |
| | 1988-89 | 600 | 635 | | |
| Tiles | 1986-87 | 20,000 Sq.M | 20,000 Sq.M | | |
| | 1987-88 | 23,000 " | 23,741 " | | |
| | 1988-89 | 31,000 " | 31,000 " | | |

How far the existing information system is capable to provide information in achieving the above ? To answer this, the company background was studied and systematic analysis of the existing system was done. From the study of the existing system a first hand observation is that the system is complex. Information flows are not systematic, rather chaotic in nature. No system has been developed for the tactical and strategic decision. To study the existing system following areas were considered:

i) Organisation Structure
ii) Information System and
iii) Manufacturing System of the BISF

### 3.1.2 Organisation System of BISF

From the Fig. 3.1 it is shown that a line-staff type organisation structure is followed in BISF.

General Manager, head of the enterprise takes all the strategic and financial decisions. He has the sole responsibility for the smooth functioning of the enterprise.

Chief Accountant has the responsibility for financial transaction, accounts, pay & bills, costing and budgeting, audits & funds. He is assited by Dy. Chief Accountants, Accounts and Junior Officers. Accounts Department control all money payable and receivable.

There are three Dy. General Managers who are the heads of respective departments. They are DGM (Marketing), DGM (Material Procurement & Inventory Control) & DGM (Production). Dy. General Manager (Marketing) controls sales. He has the responsibility for sales promotion, distribution of products to the sales centre, demand forecasts. He is assisted by Sectional Officers.

Dy. General Manager (MPIC) controls all inventories, ordering of raw materials Store purchase requisitions, all supplies coming to the factory, scraps, recording of materials. He also controls the delivery of goods to the customers. He is assisted by Junior Officers.

Dy. General Manager (Production) controls entire production system of the factory. He is the head of the production department. He is the head of the production department. He controls daily production of Sanitaryware, Tiles and Insulators. He reviews the production performances for the different sections under him and takes necessary action. He maintains contact with General Manager for everydays production performances. He is assisted by three Managers for Sanitaryware, Insulators & Tiles and other sectional officers.

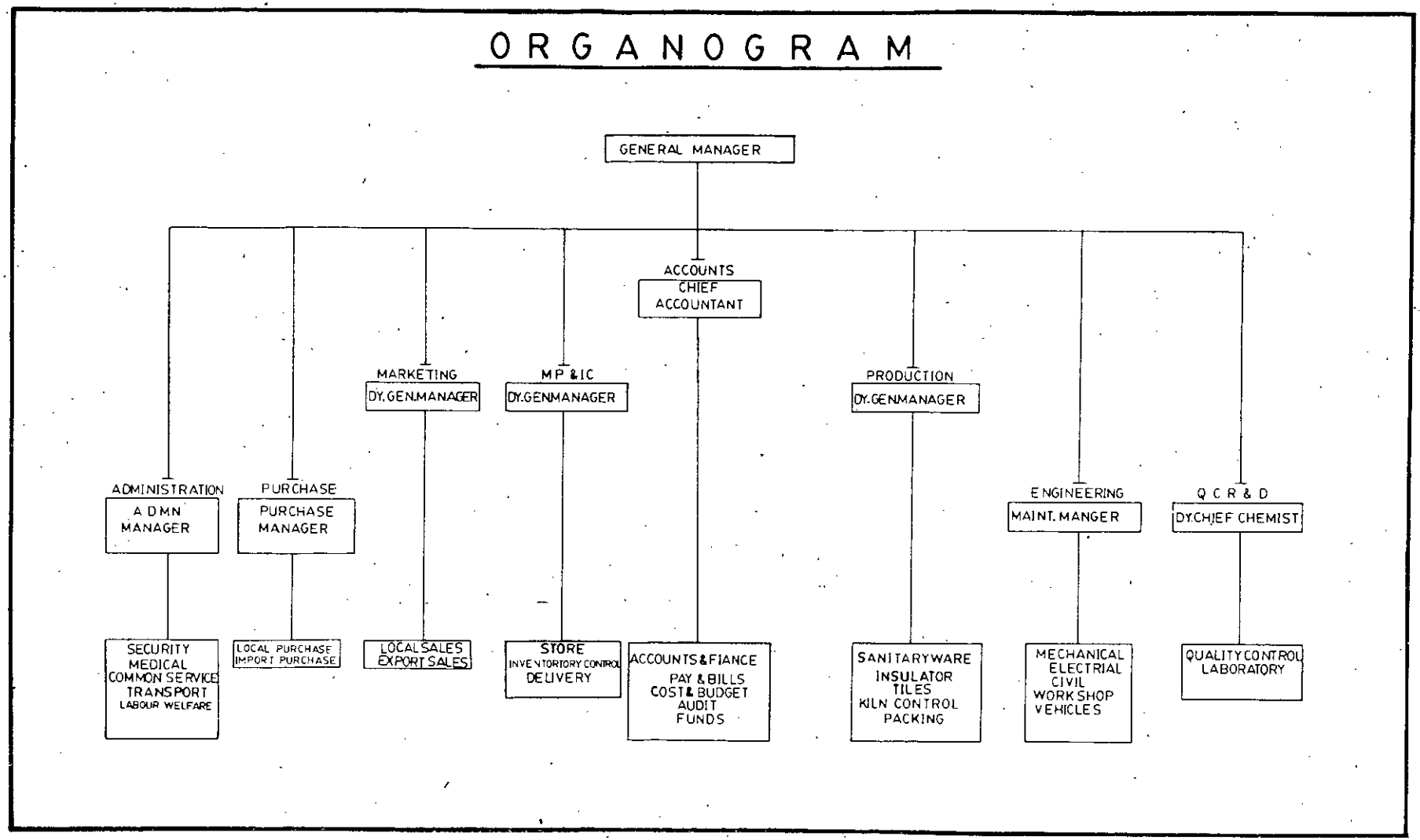



Fig. 3.1 : Organogram for the organisation

Rest departments namely Administration, Purchase, engineering and Quality Control, Research & Development (QCR&D) are headed by Managers.

Manager Administration is responsible for administration of the organisation. He is responsible for personnel matters of workers & staff, labour welfare, manpower recruitments and training, medical, security, transport. He maintains personnel files for the officers working in the factory.

Purchase Manager controls all purchases for both local and foreign items. He is responsible for tendering, purchase ordering. He is assisted by a purchase officers and junior officers.

Maintenance Manager is the head of Engineering Department. He controls all civil, electrical, mechanical job requests. He takes necessary steps for annual overhauling and responsible for smooth functioning of all types of machineries. He is assisted by sectional heads and junior officers.

Dy. Chief Chemist is the head of Quality Control, Research and Development Department. He controls all the raw materials preparation needed for the production of Sanitaryware, Insulators and Tiles. He is responsible for

quality at every types of production. He controls a laboratory where tests for body compositions, glazes and quality checks are done.

From the organisation chart it is found that there exists no place for information executive. This is rather a prevailing situation in the industrial environment of the country. However, recently a coordinator in the rank of a Deputy General Manager has been placed to coordinate the information and communication of the enterprise. He is responsible to the General Manager. It is expected that from the outcome of the present work and recommendations from it would help the management to make decision that the position of the coordinator would be made permanent to head the MIS division.

### 3.1.3 EXISTING INFORMATION SYSTEM OF BISF

Departments/Sections of BISF presently maintain many record forms to communicate to each other for all necessary information. Those may be production performances for any item, store purchase requisition, work request, daily attendance, customer orders etc. Every departmental heads maintain direct contact with General Manager for any strategic decisions and financial matters. Every day notes/reports from various departments come to GM's section for his information and approval.

Administration Department receives daily attendance report, accident report and security report. They issue notices/circulars for workers and staffs. All notes/letters from workers, staff and officers relating personnel matters are sent to administration.

Customer orders are received in the marketing department. Allotment orders are prepared in 4 (four) numbers of duplicating vouchers. First copy is kept in the Accounts Department's cash receivable section, the second copy in the delivery section, the third copy goes to the customer and the fourth copy is kept in the marketing department. No sincere attention is paid to individual customer needs from traditional point of view and no specific demand forecast is prepared based on customer needs. This latter short coming is rather a serious defect of the present system.

Production Department itself like other departments maintain its own information system decentrally with its various sections for every days' casting, forming, pressing, testings productions and also for production of finished goods. Reports for every days' production against schedule/target are sent to GM's section.

Quality Control Department prepares raw materials list. It receives daily demand of processed raw material from various sections of production department.

Engineering department receives work requests from different department for various types of jobs mainly for repairing, installation of machines, mechanical, civil and electrical works.

Accounts department is responsible for any account payable or receivable. It receives information from all departments relating to financial matters. It prepares monthly pay roles, receives monthly attendance reports from every department. The role of the accounting information is very important since accounting information in output/report form describes enterprises performance and maintains control.

There has no effective system been developed in MPIC Department. For most of procurement individual consuming department raises requests for purchase of certain items through store purchase requisitions forms. Activities such as reordering, replenishment, etc. are performed rather poorly. After receiving Store Purchase REquisition (SPR) from any department or sections, MPIC department requests purchase department for the procurement of any item. It takes the initiative to procure different items through local tender, foreign tender or cash purchase. All incoming materials/goods are received by MPIC department this department asks Q.C. Department or consuming department for its quality check.

From the study of the existing it is found that the present system is functioning rather unscientific it is time consuming in giving decisions. Existing information system is not data based. The overall management efficiency is very poor due to lack of co-ordination and information gap. There are very limited scopes for retrieval of information. More importantly it is found that the top management, is fed with transactional information which only serve the purpose of the top management getting informed. But it does not in anyway help the top management to make strategic decisions in line with the enterprises objectives. These are the inherent defects of the present operating information system.

Existing system could be more elaborated but due to time and space constraint and moreover considering the objective of present work, only a brief study is carried out for inventory control and materials procurement department. Study of existing inventory system in the organisation is of much interest where inventory planning and control follows the conventional systems:

### 3.1.4 MANUFACTURING SYSRTEM

The QCRD Department has the sole responsibility of preparing raw materials for three production lines namely Insulator (Fig. 3.2), Sanitaryware and Tiles. If the existing system is considered on the basis of input and output one can start

from the Mass Body Section. Mass Body Section of QCRD Department takes raw material from MPIC Department. The initial stages of raw material processing are the same though different batch compositions are used different group of products. Initial stages are crushing of harden materials, grounding them with added water in Ball Mills into desired fine state. They are sieved and any foreign particles are magnetically separated. Now the solution called slip is kept in under ground reservoirs.

For insulator line, the slip is taken to filter press and soft cakes produced. The cakes are fed to auger machine to produce rolls. the rolls are taken to edging room and are kept there in elevated temperature for several hours. The rolls are taken out and charged in auger machine again to produce rolls of different diameters. The rólls are cut to sizes, formed in forming machines to produce insulators of different varieties. After forming products are dried in driers, surface finished and glazed. After glazing products are charged to tunnel kilns. Where they are fired at 1350°C. After firing products are sorted by QC people and accepted insulator are taken to testing laboratories where they are tested in high voltage, pressure, load etc. to reject or accept accordingly.

For sanitaryware line, the slip is sent to casting shop where elevated temperature and humidity is controlled. Different sanitarywares of various kinds are casted in

moulds. After casting they are taken to drier and kept there for several hours. They are taken out from drier, surface finished, glazed and are charged them into the Sanitaryware Kilns. They are fired. After firing products are sorted and checked by QC people. They grade them. Under sanitaryware section there is a section namely plaster and moulds section where moulds are produced.

For tiles line, the slip is taken to Filter Press to extract water and to produce soft cakes. The sort cakes are taken to driers. The cakes are dried upto 7-8% water content and then powdered in mills. The powder is kept in overhead tanks. The powder is taken into hoppers to fed into tiles press. In the tile press tiles are produced of different sizes and kinds. Floor Tiles, after pressing taken to drier and then to the kilns for firing. But for wall tiles, after biscuit firing tiles are glazed in glazing line and taken to Kiln No. 2 for glost firing. Tiles after firing are sorted and checked by QC people.

All the products after manufacturing processes are kept in finished products yards and time to time MPIC People received them for sales' delivery.

Existing Manufacturing System

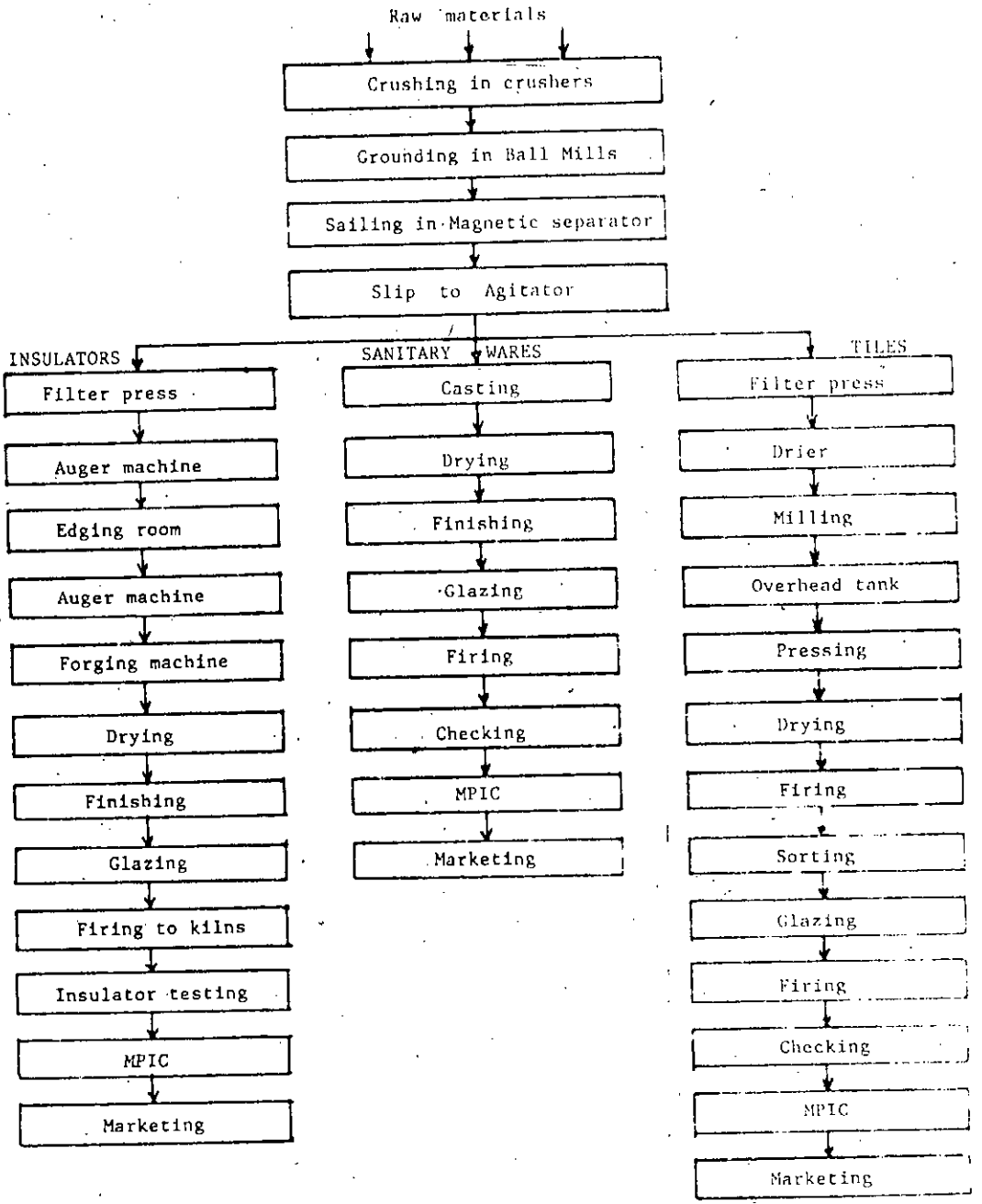



Fig.3.2 : Product flow system

### 3.1.5 KEY PROBLEMS OF THE MANAGEMENT

Like any other industrial enterprises in Bangladesh BISF also facing so many management problems. It would not be possible to mention about all the problems but key management problems of BISF can be mentioned as follows:

i) Under utilisation of installed capacity heads to high production costs as at present 25% to 35% of installed capacity is utilised

ii) Selling problems of insulators
Insulators selling obstructed for high price

iii) Excessive overtime for production people. Workers go slow during the normal working period and to continue the production rate excessive overtime is given.

iv) Significant process loss in insulator production

v) Quality for production need further improvements

vi) Fringe benefits for factory people is not adequate

vii) Poor financial controls in purchasing, inventories and in many other sub-systems

viii) Loose administration

ix) Unscientific management decisions

x) Lack of co-rodination among sub-system as no information systems exists.

## 3.2 GENERAL SYSTEM DESIGN

The necessary information from various sources/sub-systems would enter into common Data-base which would be the core of the MIS. Fig. 3.3 which show a systematic integrated Management Information System composed of basic sub-systems. All departments as Production, MPIC, QCRD, Purchase, Accounts, Marketing, Engineering and Administration would maintain their own link with MIS. Each sub-system would collect routine information in prescribed MIS Formats and would send the information to the Central MIS Division for processing the data. The data would enter to respective files in data base. In Data base, there would be different individual files for different sub-systems which would be maintained in an organized manner. This organization is done using data-base management softwares.

MIS would prepare higher level information files for management decisions. Top level decisions would feed back to MIS for circulation to the respective departments for implementation or necessary action. Any deviation of decisions must be communicated to decision maker through MIS. Management may review the decision for better interest of the unit and again would send it to respective department for implimentation. Thus the central MIS Division would help management in taking decisions.

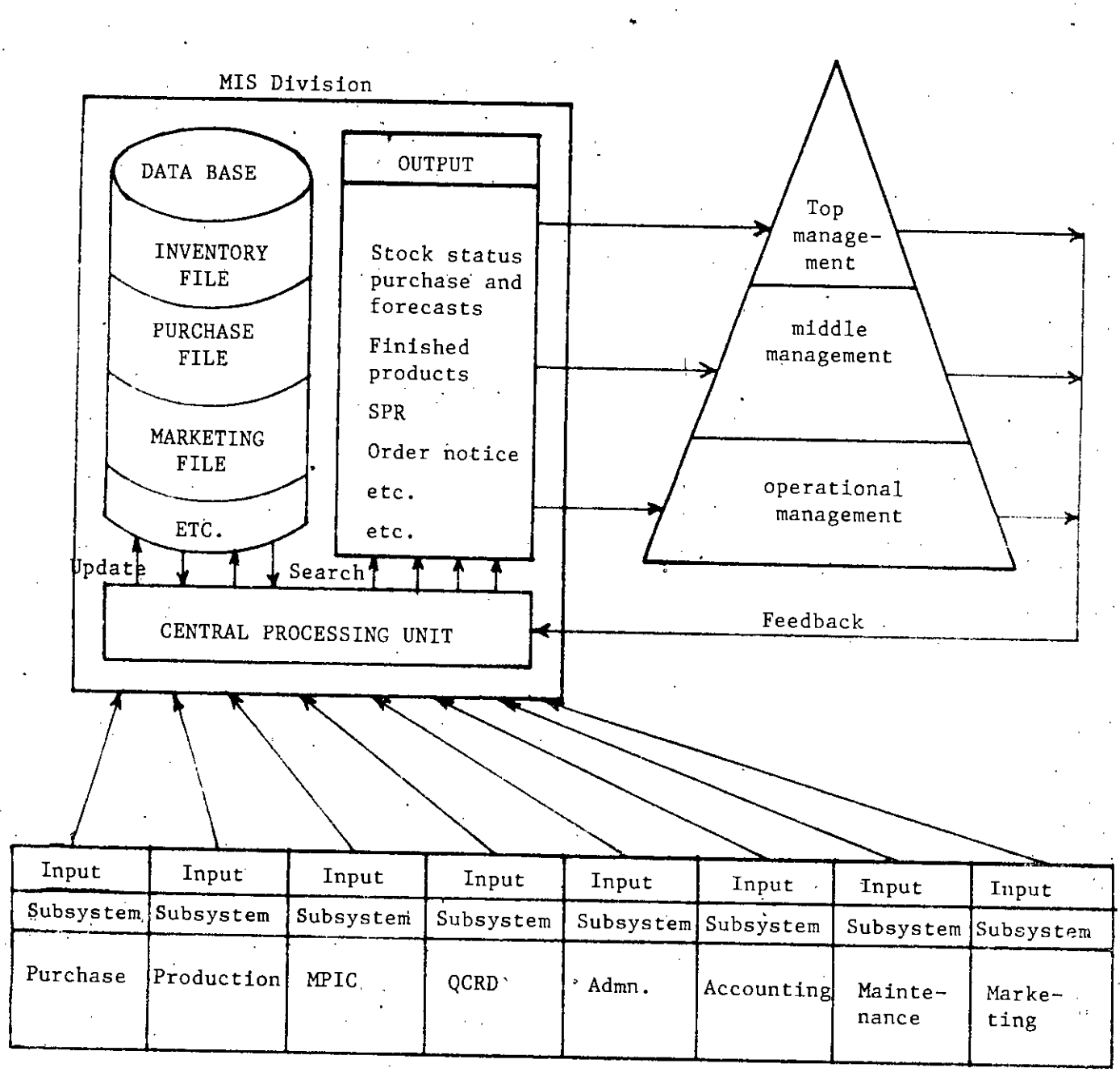



Fig. 3.3 : Centralised MIS Division for the unit

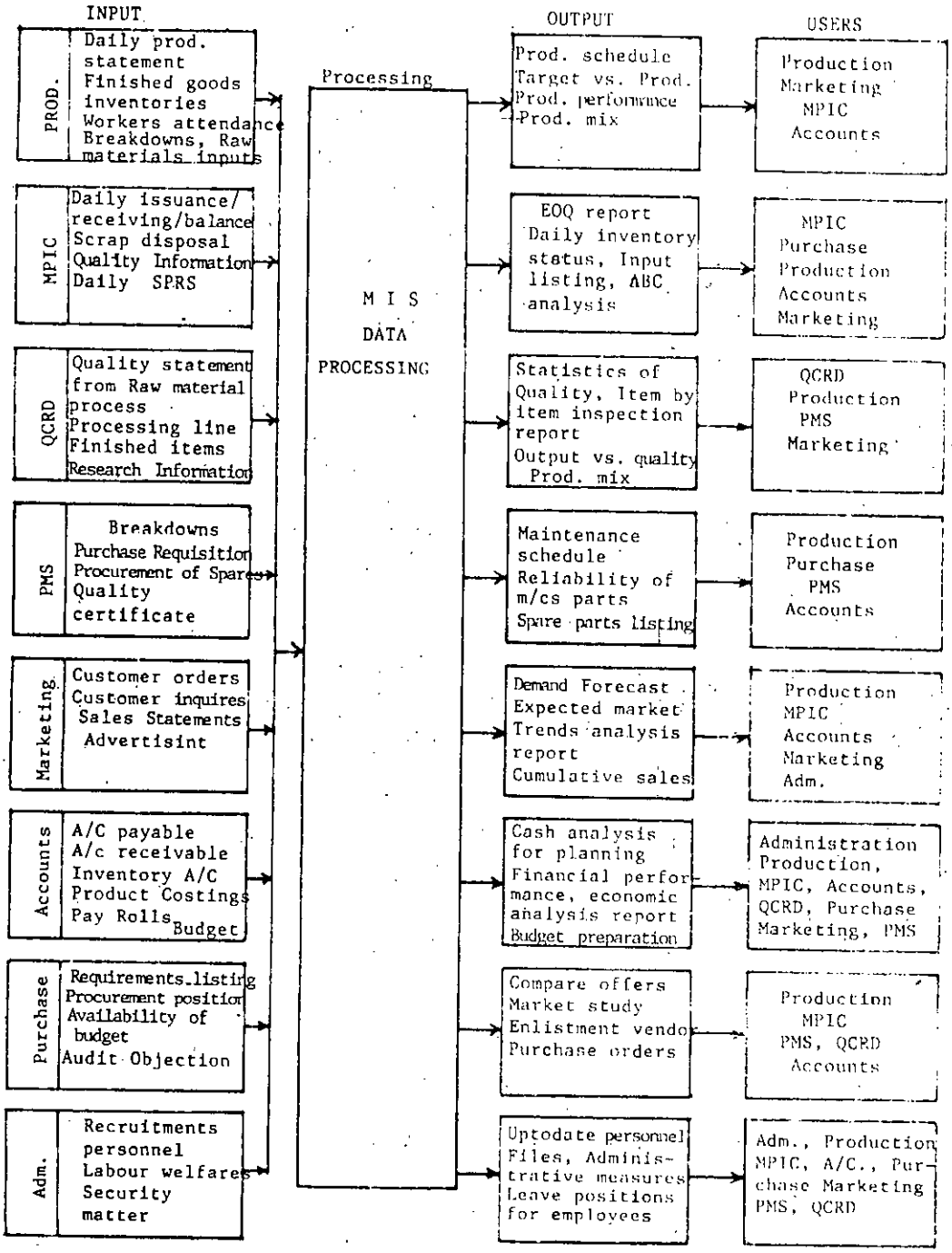



Fig.3.4 : Input from the sub-systems and output after data processing

In Fig. 3.4 possible inputs from the sub-system and outputs after processing them in the MIS data processing unit followed by list of users are shown.

***System Performance requirements:*** If improved performance would be expected from the system the following requirements should be obtained in the enterprise level:

i) Devoted enthusiasm, cooperation and sincere effort in record keeping and information flow to MIS

ii) Improve financial controls

iii) Improve allocation of costs

iv) Provide managers with MIS reports regularly that would help them to plan, control and make decisions concerning their respective requirement

To achieve the above objectives following are the functions which are to be performed effectively:

1. All transactional data would be gathered from sub-systems namely, MPIC, Production, Purchase, QCRD, Marketing, Accounts, Engineering and Administration Departments through prescribed formats and entered into data processing unit with an on-line/off access to the Data Base.

2. Processing Unit where data would be processed to be transformed to information requires mathematical models, techniques, and other softwares.

3. The Data base is stored on DASD (Direct Access Storage Divices) with all files organised for direct access. Any change to the data base is entered and immediately updates the master and pending files.

4. Data processing unit would produce outputs. So information relating to any sub-system can be reviewed at any time by management and authorised users for status and analytical information. All exceptions are reported immediately to appropriate managers of the sub-system for corrective action.

5. Appropriate Administrative, operational, documentation and security controls would be implemented to ensure smooth functioning of the proposed system.

The information flows from the sub-systems, their processing, storing and output may be designed as follows:

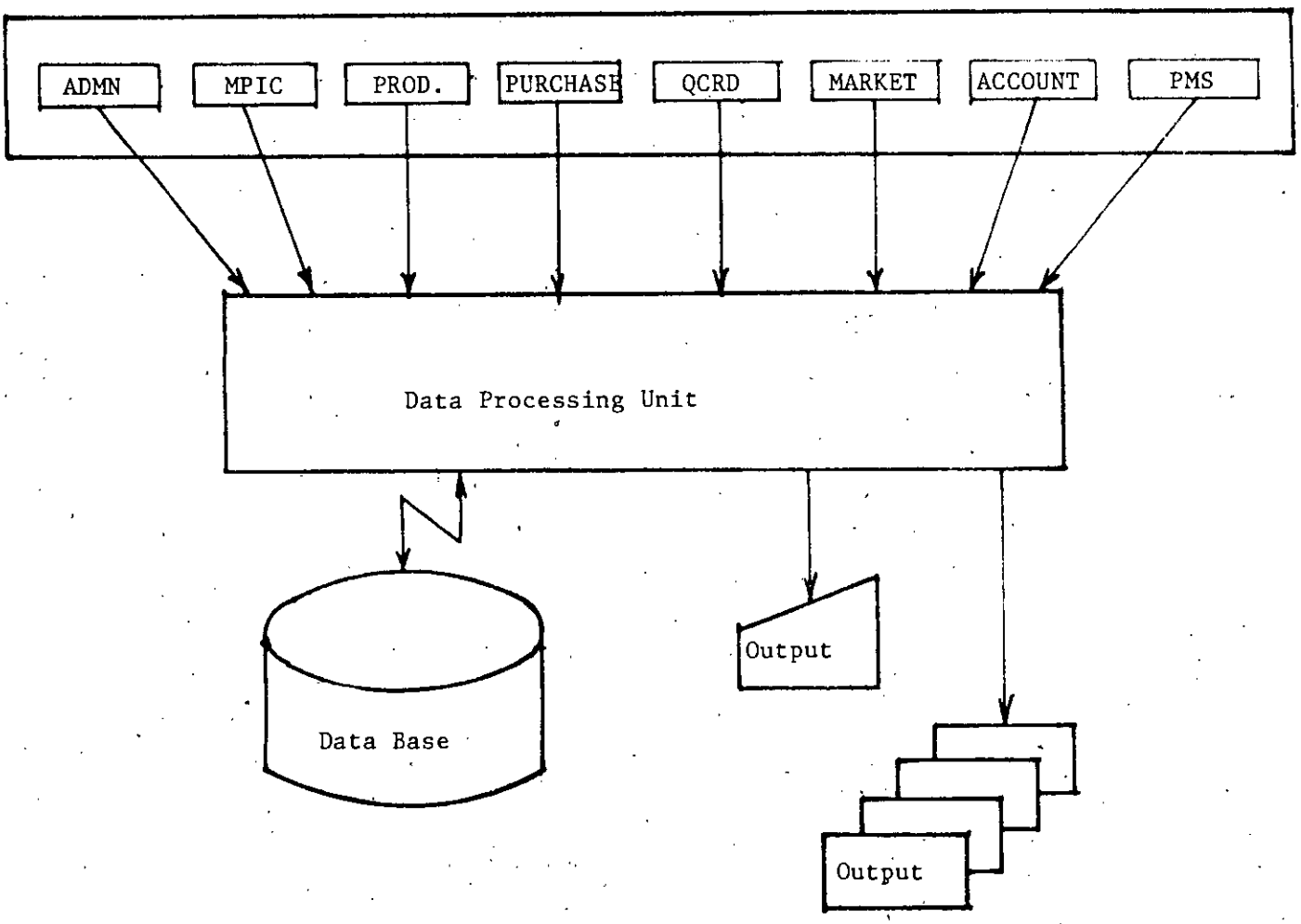



Fig.3.5 : Information flows from the sub-systems and data base

## 3.3 SYSTEMS EVALUATION AND JUSTIFICATION

To evaluate or to justify a new system for the organisation is a very tricky area and needs very careful consideration. For justification of a system the primary considerations are given to estimation of the ~~cost~~ cost and benefit from the system. In this context the so called marginal concept of the economic theory is in most cases, brought into. In the present work where as MIS is to be suggested for the enterprise, therefore, the measurement of the change or difference of these elements between the old system and the new system could be assesed.

In suggesting MIS Hayel viewed that "Cost effectiveness must be an important consideration in the design of the system. High quality data, large quantities of data and rapidly available data involve higher costs for the management information system, however the cost of the information must be balanced against the resulting reduction of uncertainity, increased predictability of events and more responsive managerial decision making".

In the present context, the cost involved for establishing the MIS and probable benefits out of the new system, the following list is prepared.

I. Costs:

i) Initial costs for

a. System analysis
b. General design
c. Detail design

d. Implimentation
e. Training

ii) Capital costs for

a. Precurement of Computer and Hardware
b. Facilities development

iii) Operating costs for

a. Salary and wages
b. Operation and maintenances

II Benefits

i) Direct benefits

a. Increasing system effectivensss and better house keeping - Reduction of inventory costs for example

b. Better capacity utilisation
c. Better strategic decisions

ii) Indirect benefits

a. Better customer services
b. Release of managerial time for exceptional managerial activities

Considering these elements of costs and benefits a case has been forwarded for the BISF and is presented below. The following table (Table - 3) provides a summary statement of the costs and benefits followed by a diagramatic presentation (Fig.3.6) and detailed calculations.

Table 3.--
COST AND BENEFIT FOR THE ENTERPRISE

MIS PROJECT NAME - BANGLADESH INSULATOR AND SANITARYWARE FACTORY, MIRPUR, DHAKA

DATE: 30 MARCH, 1989

| Initial cost, Tk. | 1989 | 1990 | 1991 | 1992 | 1993 |
|---|---|---|---|---|---|
| 1. System analysis<br>2. General design<br>3. detail design<br>4. Implementation<br>5. Training | 55400 | 57915 | 60360 | 62865 | 65340 |
| Total of Initial costs, Tk. | 55400 | 57915 | 60360 | 62865 | 65340 |
| Capital costs, Tk. | | | | | |
| 6. Computer & Hardware | - | 51400 | 51400 | 51400 | 51400 |
| 7. Facilities | - | 10000 | 10000 | 12000 | 14000 |
| | | 61400 | 61400 | 63400 | 63400 |
| Operating Costs, Tk. | | | | | |
| 8. Salary & wages | - | 58800 | 60900 | 63000 | 65100 |
| 9. Operation | - | 24000 | 24000 | 30000 | 30000 |
| 10. Maintenance | - | 5000 | 5000 | 6000 | 6000 |
| Total operation cost Tk. | - | 87800 | 89900 | 99000 | 101100 |
| Grand total of costs | 55400 | 207115 | 211690 | 225265 | 231840 |
| Direct benefit | | | | | |
| 11. Reduction of inventory costs | - | 70000 | 200000 | 225000 | 225000 |
| 12. Benefit from capacity utilisation | - | 50000 | 125000 | 150000 | 200000 |
| 13. Better strategic decision | - | 50000 | 75000 | 100000 | 150000 |
| Total direct benefit | - | 170000 | 400000 | 475000 | 575000 |
| Indirect benefits | | | | | |
| 14. Better customer service (estimated) | - | 20000 | 50000 | 75000 | 80000 |
| 15. Release of managerial time for exceptional managerial activities | - | 25000 | 60000 | 80000 | 100000 |
| Total of indirect benefits | | 45000 | 110000 | 155000 | 180000 |
| Grand total of Benefits, Tk. | | 215,000 | 510,000 | 630,000 | 755,000 |
| Net benefit | (-)55,400 | (+)7885 | 298310 | 404735 | 523160 |

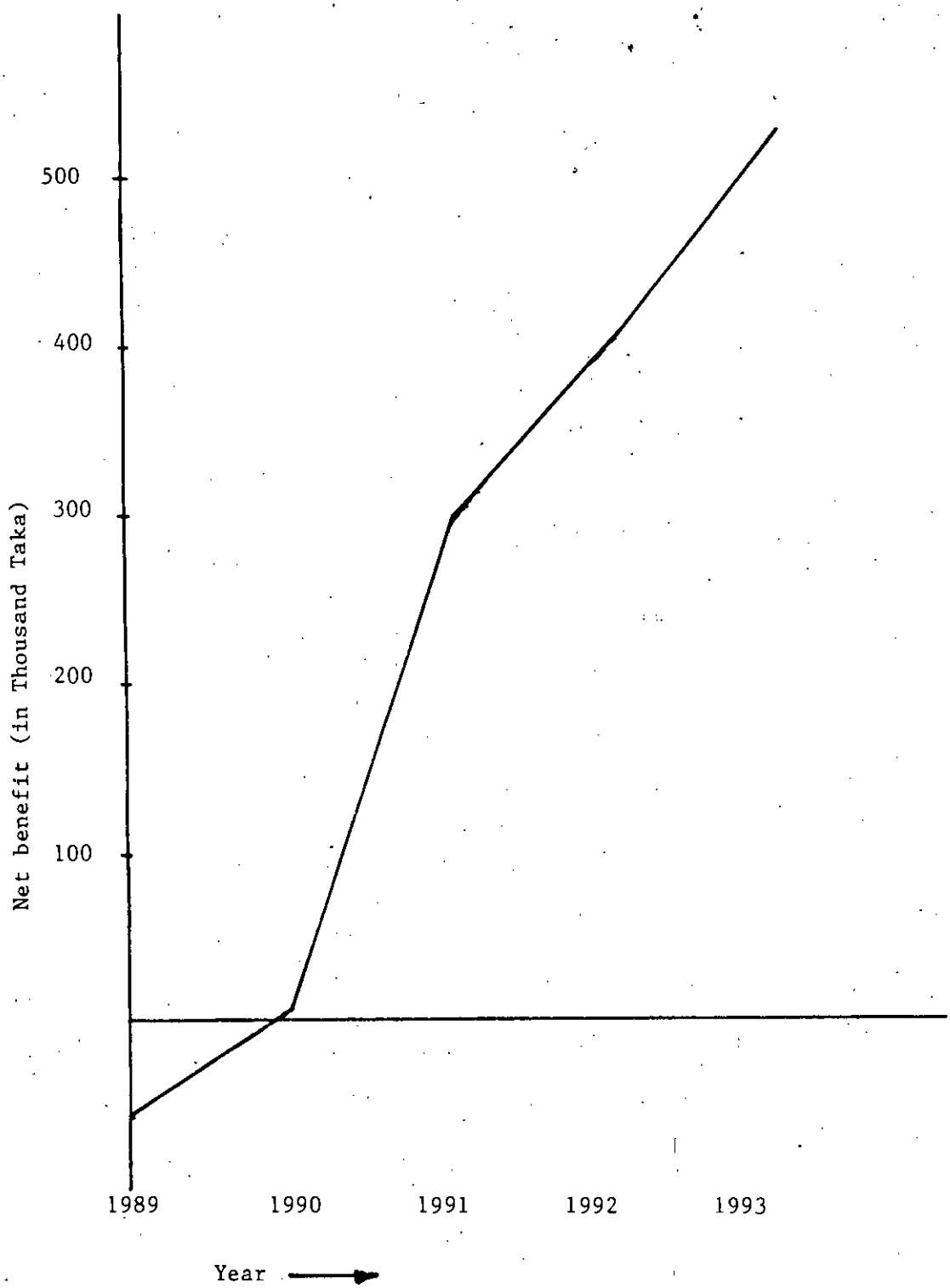



Fig.

Fig. 3.6 : Diagramatic presentation for net benefit

### 3.3.1 Detailed Calculations of Cost and Benefits

i) Initial Cost:

It has been suggested that for the enterprise it would not be necessary to engage a management consulting firm for the system design and implementation rather the enterprise may employ a full-time system analyst.He would work in a team formed by the enterprise from its own personnel resources. He would be able to analyse, plan, design, implement the system for the enterprise and also be able to train people for operating the system. It is expected that he would work for five years in the MIS-Project when his salary was considered as initial cost; but after the project period he would be absorbed in the MIS-division as a manager. the salary & allowances of the system analyst for the five year project period is given below:

| Item \ Year | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| Annual Salary | 33600 | 35100 | 36600 | 38100 | 39600 |
| House rent 40% of salary | 13340 | 14040 | 14640 | 15240 | 15840 |
| Bonus | 8400 | 8775 | 9150 | 9525 | 9900 |
| Total | 55400 | 57915 | 59390 | 62865 | 63340 |

ii) Capital Cost

For the proposed system for the unit, a PC computer and peripheral hardwares would perhaps be appropriate and the prices for the hardwares are as follows:

Item-6: Computer and Hardwares:

| | | | |
|---|---|---|---|
| a. | PC with 256 KB RAM with two 360 KB Floppy Drives diskette drive adaptor 4 key board | 1 No. | Tk.1,20;000 |
| b. | Monochrome Monitor with Monochrome chard | 1 No. | Tk. 18,000 |
| c. | Printer: | 1 No. | Tk. 40,000 |
| d. | Printer Cable | 1 No. | Tk. 2,500 |
| e. | Floppy Diskette | 100 pcs. | Tk. 15,000 |
| | Furniture | | |
| a. | Full Secretariate Table | 1 No. | Tk. 9,000 |
| b. | Chair with arms and cushion | 4 Nos. | Tk. 4,000 |
| c. | Operator Chair | 3 Nos. | Tk. 2,400 |
| d. | Table half-secretariate | 1 No. | Tk. 3,000 |
| e. | Ordinary Table | 2 Nos. | Tk. 1,500 |
| f. | diskette Deck | 2 Nos. | Tk. 2,600 |
| g. | File cabinet | 2 Nos. | Tk. 4,000 |
| h. | Almirah | 2 Nos. | Tk. 5,000 |
| i. | Room office arrangements & Misc. | | 21,000 |
| | Grand total of Capital costs | | Tk.2,48,000.00 |
| | So at 16% interest rate, a bank loan for a down payment in 10 years, annual installment | | Tk. 51,400.00 |

9. Operation Cost:

In operation cost power bills, cost of stationeries (computer paper, ink, pen, pins etc.) cost of diskettes etc. have been estimated 2000.00 per month for upto 3rd year and from 4th year to 5th year operation cost have been increased as information transactions would be speed up during this time.

10. Maintenance Cost:

Maintenance cost have been estimated Tk.5000.00 annually during 2nd and 3rd year and for 4th and 5th year at Tk.6000.00.

11. Reduction of inventory Costs:

Some of the observation's of annual financial reports of BISF for the years from 1982-83 to 85-86 are as follows:

(Amount in lac)

| Description of items | 1982 - 1983 | | 1983 - 1984 | | 1984 - 1985 | | 1985 - 1986 | |
|---|---|---|---|---|---|---|---|---|
| | Stock as on 30th June | Total consumption | Stock as on 30th June | Total consumption | Stock as on 30th June | Total consumption | Stock as on 30th June | Total consumption |
| Raw materials & Chem. | 92.58 | 182.87 | 175.17 | 200.27 | 86.18 | 156 | 105.84 | 170.00 |
| Stores and spares | 200.41 | 5.60 | 204.13 | 7.07 | 216.58 | 71 | 168.77 | 138.00 |

It is observed from the above table that value of annual unused raw materials and chemicals much more than what it should be in comparison to total materials consumed. It is obvious that establishment of proposed system would reduce the cost of inventories to a great extent. In the beginning years, reduction would be slower but following years it would be much higher as envisaged. Reduction of inventory cost would be from reduction of capitals for unused inventories and from economic order quantities.

12. Benefit from Capacity Utilisation

Many of the machines and plants do not produce at their full capacities total production is affected. Presently it is very difficult to achieve the production targets but if the machineries and plants could be run as per their rated capccity, daily production could have been achieved easily. From the information of various machines and plants for their rated capacity management could take action by integrated approach of information system and computerized production planning, scheduling and central approach.

13. Better strategic decision

As the top management could take decisions through MIS and hypothetical decisions would be eliminated, impact of better strategic decisions would be realised.

Indirect benefits:

All indirect benefits were estimated and could not be calculated so long as real operational data could not be available yet.

14. Better Customer service

Order enquiries of the customers could be more easily categorised, market demand could be assesed more precisely and better customer service would be ensured through increased sales.

15. Release of managerial time for exceptional managerial activities. Managers would be releaved as data processing activities would be done by computer.

3.4 Detailed Information Flow System

The detailed design of an MIS is closely related to the design of operating system. In the context of the present work for detailed system design, formats for various sub-systems have been designed, ref. appendix I. As discussed earlier in the general system design, various sub-systems would send this formats to the MIS division after duly filling them up.

Thus day-to-day data would be stored in the files of various sub-systems and finally a data bank would be formed. the data would be processed to get various reports for the users.

## 3.5 System Implementation

### Selection of Hardwares

The existing data handling capacity requirement and considering the anticipated growth of data handling a micro computer has been proposed. It has been assumed that the proposed computer would be appropriate to handle the transactions for next 5 years. If by this time, the organisation shows upward growth trend interms of sales, revenues activities and profit a second micro computer may be added to the system.

Considering the volume of characters to be transacted in the processing unit following hardwares have been selected.

| | | |
|---|---|---|
| i) | Micro computer with 256 KB RAM with two 360 K floppy drives, diskette drive adaptor 4 keyboard | 1 set |
| ii) | Monochrome Monitor with chord | 1 set |
| iii) | Printer | 1 set |
| iv) | Floppy diskette | |
| v) | Printer cable | |

Proposed MIS Division and its Organisation

Manpower requirement would be as follows:

| | |
|---|---|
| MIS Officer | 1 |
| DATA input technician | 1 |
| Programmer | 1 |
| | --- |
| | 3 |

MIS Officer - Responsible for MIS Division and its overall effective functioning. He would have sufficient knowledge about MIS Planning, design, development and implementation. He is co-ordinator between top Management and MIS Division.

Programmer - the main task of programmer to open files, their maintenance. He would design new formats. He would be responsible for management of automation of logic, communication and display. Data processing and publication of outputs is to be accomplished under his control. He should have sufficient knowledge about the programming and the operation of the machine itself.

Input Technician - The input technician would control the input formats. He is the person to enter the data to respective files. He will help the programmer time to time

in addition to his own duty of data feeding.

In the implementation phase, among schedule of programs to be performed, following tasks are to be accomplished.

i) Training and educating the Users

A program should be developed to impress upon the management and support personnel the nature and goals of the MIS and train operating personnel in their new duties.

In case of Management, (heads of the departments) two seminars would be adequate. But particular attention should be paid to the training of sectional managers and Asstt. Managers. They must have thorough understanding of what the new MIS is like, what it supposed to do.

Finally longer and more formal training should be established for staffs of different departments' sections, input technicians. They should be trained in detail about how to write format, how to read formats etc.

ii) Completing System's Softwares:

All programs needed for data processing should be done accordingly. The management of automation of logic, communication and display is important as a basis for system design and as a factor in systems implementation.

iii) Designing forms for data Collection:

Already some formats have been developed and more form for data to cover all information are to be developed.

iv) Developing Files:

Developing files, master file, data bases are the tasks to be completed in implementation stage. For the purpose actual data must be obtained and recorded for initial testing and operation of the system. A check list of data, format of data, storage form and formats would be required. Updating of daily data would create master file.

# Chapter-4

## MANAGEMENT INFORMATION - An Application, Case Study

It is not realistic that a component of the total system of an enterprise is brought under MIS. Thus MIS is not to be designed for a component rather MIS should integrated all the components to a totality and as an integrated whole. This is the whole purpose of MIS and its success depends on achieving this purpose. Material Procurement and Inventory Control (MPIC) department of the enterprise has been taken as a possible area where effective application of the MIS could show a significant change in its over all functioning. In figure 4.1, it shows the place of the MPIC sub-system in the total system of the enterprise. Mention has been made that design and implementation processes of MIS for an existing enterprise is different then that of a new enterprise. In the existing one, the components are integrated to the central MIS. Keeping this in mind and considering the time constraint of the present work an effort has been made to study the possible application of MIS for a particular component (a sub-system) of the enterprise.

## 4.1 DETAIL SYSTEM ANALYSIS FOR THE MPIC SUB-SYSTEM

MPIC department as its name implies responsible for the procurement of the raw materials and consumable/non-consumable items. It also controls the inventories of raw materials, consumable/non-consumable items and all the finished goods.

All the relevant information necessary to operate the sub-system and their record keeping are as follows:

i. Store code numbers are maintained for individual group of materials

ii. A Kardex similar to other Kardex used in similar situations is maintained for individual item having the following format:

Bangladesh Insulator and Sanitaryware Factory Ltc.
(An enterprise of BCIC)
Mirpur, dhaka

KARDEX FOR STORE

Receipts & Issue Card

| Date | MRR/SR No | Received | Issued | Balance | Date | MRR/SR No | Received | Issued | Balance |
|---|---|---|---|---|---|---|---|---|---|

Max[m]

Description Unit Code No.

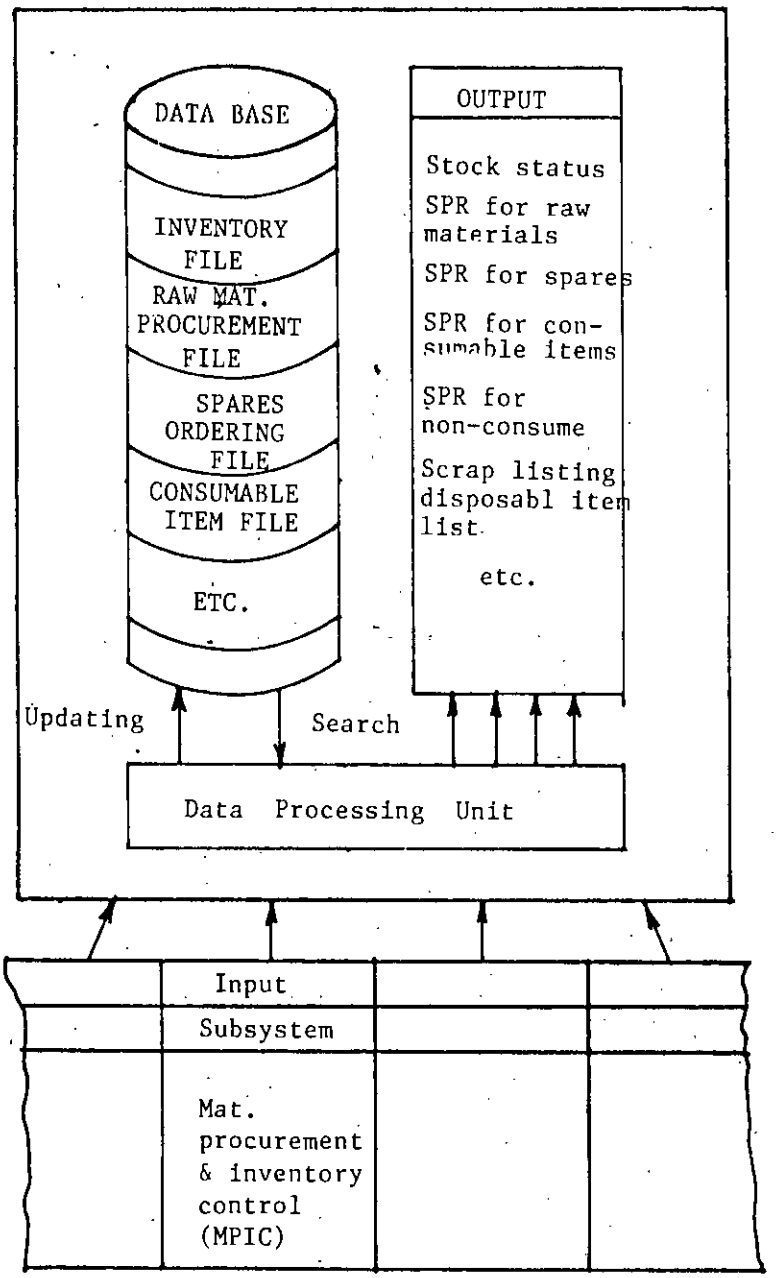



Fig. 4.1 : Place of the MPIC sub-system in the total system

iii. Every department raise purchase requisitions (SPR) of following format SPR ultimately goes to purchase

BISF

Store Purchase Requisition

Purchase department :

Please arrange to procure the following items required for ... ... ... ... ... ... ... ... ... ...

| Sl. No. | Description | Store Code No. | Unit | Present requirement | Stock available including ..... | Quantity to be procured | Last purchase ref. | Approx. financial involvement | Remarks |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |

Budget provision available/not available

Approved/ Not approved

Store keeper/ Store Officer

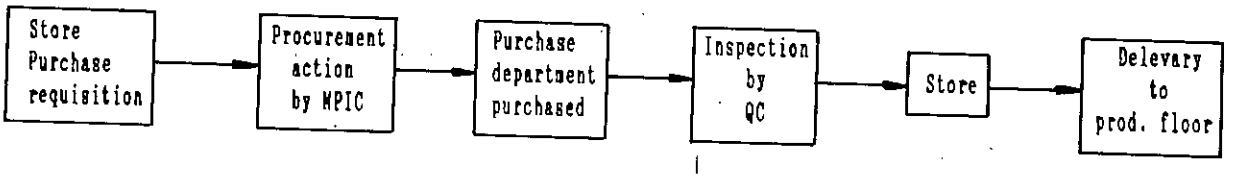
Head of MP&K Dept.

Chief Accountant

General Manager

iv. Lead time considered for local items is normally three months and for imported items none months.

v. A procurement proccdure for raw material is shown in a chain as follows:




Major problems identified with the existing sub-system are as follows:

i. Management control or directives to the sub-system is weak

ii. Poor cost allocation

iii. Poor descipline in the total inventory system

   a. descripancies in physical Kardex figures
   b. No measures are taken for stocks reaching alarming levels.

iv. No reordering point or safety inventory level is maintained

v. Huge blockade of capital from unnecessary inventories.

On the other hand, following are the performance requirements from the sub-system. These are categorized into two,

A. For General and raw material inventories,

a. Improve financial controls

b. Improve allocation of costs

c. Stop abnormal process loss

d. Verify SPR and ensure that reordering point, safey level, EOQ etc. are followed.

e. Procurement should be as per real need not as budget permits

f. control over the use of raw materials.

B. For Finished Goods inventories,

a. Daily receiving statement to be prepared

b. Weekly/monthly marketing statement on customer needs

c. Improve financial controls

d. Improve allocation of costs.

## 4.2 DATABASE FOR MPIC SUB-SYSTEM

dBASE could be developed as mentioned earlier in general system design whose main function would be to organize data, so that it could be retrieved modified or updated at will. It would be the link between the user and the data, giving access to the data required for the systems and their applciation programs.

In the file processing system data would be read directly from the data files for various sub-systems thus any structural changes to the contents of the data files must be accomodated by the program changes to the system.

To show the application of Database, materials consumed in the organisation for 4 consecutive years, 205 items were randomly taken. It was an approach how data would be stored in the files for various sub-systems. This data could be processed to get different output which can be used as decision making tools for various subsystems. Considering the limited scope for the work, ABC analysis and EOQ analysis was carried out. To get percentage contribution of individual items and were arranged in descending order.

From the report (Appendix -II) it was shown that the top of the report those items have come whose contribution by value greater and they are listed in descending order. It was further noticed that about 80-90% of money have been spent to procure 10-15% even less percentage of total items. So their control should be restricted. Next a group of item has come and their contribution by value is less and at the last a group of item has come having negligible contribution. A graph (Fig. ) have been plotted showing percentage of items to percentage of cumulative value.

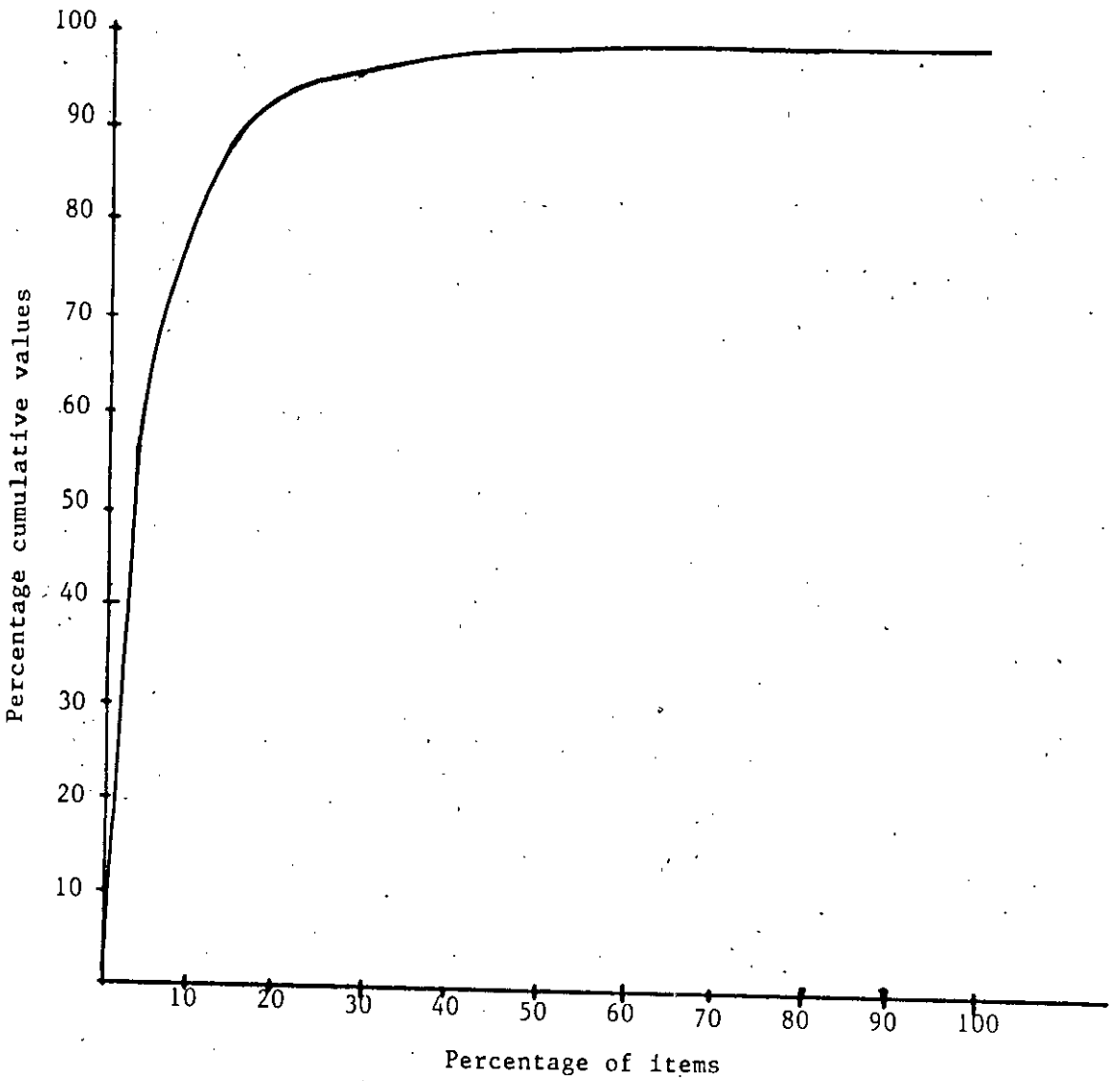



Fig. 4.2 : Curve showing percentage of items to percentage of cumulative value

## 4.3 EOQ ANALYSIS MODEL

In industry, an economic ordering quantity formula is used which calculates the EOQ for any item in one step.

$$EOQ = \frac{2AS}{I} \quad \ldots \quad (1)$$

where,
A = the annual usage, in Taka
S = the setup or ordering cost, in Taka
I = the inventory carrying cost, as a decimal fraction per taka of average inventory

But when costs are not known precisely, improvements over intuitive lot sizes can be made. The standard EOQ formula expressed in the formula above contained two cost factors.

S = set up or ordering cost, in Taka

I = inventory carrying cost fraction

For a family of items the inventory carrying cost is generally assumed to be the same for all items and the setup or ordering cost for the group is often practically the same. If this is true, formula above can be written as,

$$EOQ = \frac{2S}{I} \times A$$

Once the calculation for the cost constants has been made, the formula becomes

$$EOQ = K \times A \quad \ldots \quad (2)$$

where, $K = \frac{2S}{I}$ ... (3)

Formula (2) points out a very useful relationship which states that the most economic lot-sizes are a function of the square root of the annual usages of the items espressed in Taka.

where, $K = \frac{A}{N}$

EOQ for Some of the major raw materials and material for the unit

| Sl. No. | Code No. of items | Description of items | Annual Consumption, A Tk. | $\sqrt{A}$ | Present order per/yr. | Present ordering quantity Tk. | Calculated order per yr. | Calculated E.O.Q's Tk. |
|---|---|---|---|---|---|---|---|---|
| 1 | 608003 | Ball clay | 3065600 | 1750 | 6 | 535400 | 6.95 | 440264 |
| 2 | 608010 | Chaina clay | 4642800 | 2154 | 5 | 820300 | 8.56 | 541900 |
| 3 | 608052 | Plaster of paris | 1669000 | 1291 | 3 | 556806 | 5.13 | 324790 |
| 4 | 608005 | Bijoypur Clay | 125700 | 1121 | 12 | 108332 | 4.45 | 282020 |
| 5 | 608021 | Glaze | 100000 | 1000 | 2 | 600000 | | |
| 6 | 608014 | Feldsparlump | 180000 | 424 | 1 | 145000 | 1.68 | 106670 |
| 7 | 608017 | Feldsparstone | 876000 | 936 | 5 | 177800 | 3.72 | 235480 |
| 8 | 608065 | Zircononium Silicate | 426000 | 653 | 3 | 120000 | 2.59 | 164280 |
| 9 | 173101 | Filter Cloth | 99000 | 315 | 1 | 300000 | 1.25 | 79250 |
| 10 | 608064 | Zinc oxide | 126000 | 355 | 2 | 121750 | 1.41 | 89319 |
| 11 | 608018 | Flint pebbles | 99600 | 316 | 1 | 155940 | 1.26 | 79500 |
| | | | | 10315 | 41 | 3641328 | 41 | Tk.2595044 |
| Average lot-size inventory | | | | | | Tk.1820664 | | Tk.1297522 |

# Chapter-5

## CONCLUSION, RECOMMENDATION AND SCOPE FOR FUTURE WORK

The objective of the present work was to develop a MIS in a medium size manufacturing unit and to show the application of the MIS. Accordingly analysis on the existing information system was made and a MIS has been developed for the enterprise.

During the analysis, it has been observed that financial controls in the production, MPIC, Material processing and the Engineering department were very poor. Management has yet to formulate a system to alleviate the existing situation of those departments. It was further noticed during the study that as the lower management could not involved with middle and top management, theme of strategic decisions were not reflected at lower levels as a result growth of overall productivity in some of the sub-systems were poor.

It was revealed from the analysis that existing information system was unscientific and based on assumptions. A sub-system, MPIC was taken as a possible area to show the application of MIS softwares. Randomly taken data for 205 items which have been consumed in 4 consecutive years were computed in the computer to get an ABC analysis and EOQ analysis.

The objective of the application was to show that in the proposed MIS, data kept in the data bank could be used to compute different types of reports as per requirement of the users. Thus

the outcome of the computation in the form of reports/analysis. help the management in taking right decisions in right time.

It was not possible to develop a MIS covering all the sub-systems due to time constraints. There is lot of scope for the future work which can be listed as follows:

i. Softwares for the computer of porposed MIS could be developed. Formats already prepared could be helpful for developing softwares to be used for the computation of different analysis for the sub-systems.

ii. Development of a databank for the proposed MIS.

iii. IE techniques can be used to find out reports/analysis taking data from the the data bank of the proposed MIS.

iv. MIS for the sub-systems like Accounts dept., purchase department, production department etc. can be developed.

# APPENDIX

FINAL DETAIL SYSTEM DESIGN

Information from various sub-systems would be sent to data processing unit centre through the formats as prescribed on the following

1. Daily production statement for sanitaryware

   From : Casting/FinishingGlazing Section of sanitaryware

   To : MIS Divn.

Format code :
Sub Code No. :
Date :

| Item Code No. | Daily Prod. Target, PC | Actual Prod.,PC | Defects | | |
|---|---|---|---|---|---|
| | | | Loss | Casting | Finishing | Glazing |
| | | | | | | |

2. Daily Production statement of sanitaryware after firing

   From : Sorting section

   To : MIS Div.

| Item Code No. | Super (a) | Standard (B) | 'P' grade (C) | Reject | Casting defect | Finishing defect | Glazing defect | Carload defect | Transport defect | Total Prod. A+B+C |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | |

3. Production of sanitaryware, pcs/worker report

From : Casting/Finishing/Glazing/Plaster shop
To : MIS Division

Format Code :
Sub Code No.:
Date :

| Item No. | Worker No. | Min. Work load Pcs. | Daily Prod. | Accepted Qty. |
|---|---|---|---|---|
| | | | | |

4. Attendence report

From : Section :

To : MIS Division

Format Code :
Sub Code No :
Date :

| Actual strength of permanent workers | Daily rated workers (Casual workers) | No. of workers present | | Total present |
|---|---|---|---|---|
| | | Permanent | Casual | |
| | | | | |

5. Daily production statement (Insulator)

From : Forming of Insulator (03)/Glazing of Insulator (05)
To : MIS Division

Format Code :
Sub-Code No.:
Date :

| Type of Insulator | Code No. | Prod. Target Pc | Actual Prod. Pc | Loss in Prod. Pc | Defects in forming | | | Defects after drying | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Soft body | Deformat | Crakes/ broken | Worn | Drying | Handling loss | Others |
| | | | | | | | | | | | |

6. From : Forming and shaping of Insulator

To : MIS Division, BISF

Format Code :
Sub-Code No.:
Date :

| Code No | Name of Insulator | Rolls received Pcs | Insulator formed Pcs | Pressing Loss Pcs | Body defects Pcs | Total Loss |
|---|---|---|---|---|---|---|
| | | | | | | |

7. Daily Production of Insulator forming
(For formed Insulator)

From : Forming/Glazing/sorting after firing of Insulator

To : MIS

Format Code :
Sub-Code No.:
Date :

| Name of product | Code No. | Unit weight Kg. | Target | | Actual Prod. | | Rejection | |
|---|---|---|---|---|---|---|---|---|
| | | | Pcs. | Kg. | Pcs | Kg. | Pcs. | Kg. |
| | | | | | | | | |

8. Daily defect report for Insulator
After sorting defects informations

From : Insulator sorting
To : MIS Division, BISF

Format Code :
Sub-Code No.:
Date :

| Name of item | Item Code No. | Kiln Car Pcs | Loaded Pcs | Accepted Pcs | Rejects Pcs | Mass defects in Rolls | | | | Forming | | | Drying | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Vacuum | Crack | Iron | Others | Cracks | Deform | Others | Cracks | Moisture |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |

| Unglazed | In-proper cleaning | Iron spot | Cracks | Bubbles | Packs/Ash | Under firing | Others | Tech. defects |
|---|---|---|---|---|---|---|---|---|
| 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |

9. Attendence report

From : Insulator Section
To : MIS Division

Format Code :
Sub-Code No.:
Date :

| Actual strength of permanent worker | Daily rated casual worker | No. of worker present | | Total present |
|---|---|---|---|---|
| | | Permanent | Casual | |

10. Daily production statement (Tiles)
Daily Tiles (Forming/Drying) Production

From : Tiles Forming and drying (Glazed/unglazed)
To : MIS Division

Format code :
Sub-code No.:
Date :

| Type of tiles | Code No. | Prod. Target | Actual Prod. | Loss in Prod. |
|---|---|---|---|---|
| | | | | |

11. Daily production of Tiles (after firing)

From : Sorting secting
To : MIS Division

Format Code :
Sub-Code No.:
Date :

| Name of item | Kiln car No. | Loaded Pcs | Accepted (Pcs) | | | Rejected | Defect analysis | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Super | Std. | 'P' | | Cracks | Deformation | Dimenssional | Under firing | Under glazing |
| | | | | | | | | | | | |

12. Worker attendences of Tiles Section.

From :
To :

Fromat Code :
Sub-Code No.:
Date :

| Actual strength of permanent worker | Actual strength of daily casual worker | No. of workers present | | Total present |
|---|---|---|---|---|
| | | Permanent | Casual | |
| | | | | |

13. Daily consolidated Tiles production

From :
To :

Format Code :
Sub-Code No.:
Date :

| Namew of item | Code No. | Super | Std. | 'P' | Total |
|---|---|---|---|---|---|
| | | | | | |

14. Input formats for material procurement & Inventory control Department (Daily store Transaction

From : Store
To : MIS Division

Format Code :
Sub-Code No.:
Date :

| Code No | Name of Item | Unit | Received | Issued | Balance |
|---|---|---|---|---|---|
| | | | | | |

15. Daily store purchase requisition

From : MPIC
To : MIS Division

Format Code :
Sub-Code No.:
Date :

| Description | Store Code No. | Unit | Present requirement | Stock available | Qty. to be procure | Approx. financial involvement |
|---|---|---|---|---|---|---|
| | | | | | | |

16. Daily purchase requisition for Non-stock Material (Local)

From :
To :

Format Code :
Sub-Code No :
Date :

| Description of stores | Code No. | Unit | Quantity required | Average monthly requirement | Stock as on date | Approx. financial involvement | Delivery required within cash/tender |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

17. Acceptance or rejection of receiving items after quality check report

From : MPIC
To : MIS

Format Code :
Sub-Code No. :
Date :

| Name of item | Code no. | Unit | Quantity | Total Value | Quantity accepted | Value | Quantity Rejected V | Value |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |

18. Finished Goods stock

From :
To :

Format code :
Sub-Code No. :
Date :

| Product Description | Code No. | Grade | Unit | Quantity | Unit wt. kg. | Total |
|---|---|---|---|---|---|---|
| | | | | | | |

19. Attendence report

From :
To :

Format Code :
Sub-code No.:
Date :

| Total strength of permanent worker/staff | Total casual worker | Worker presented | | |
|---|---|---|---|---|
| | | Permanent | Casual | Total |
| | | | | |

20. Input formats for QCRD department
Daily mass body preparation report

From : QCRD
To : MIS

Code No.:
Date :

| Description of raw materials | Code No. | Unit | Quantity received from store | Quantity crushed Kg. | Charged in ball mills Kg. | Materials sent to |
|---|---|---|---|---|---|---|
| | | | | | | |

21. Format for plant maintenance section
Daily mechanical maintenance work

From : PMS
To : MIS

Code No.:
Date :

| Name of machine | Department worked code no. | Machine code no. | Repair/ maintenance | Replaced parts | | Lab. used | | Man Hr. input | Total |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Name, Code No. | Qty. | Lab. Code No. | Qty. | | |
| | | | | | | | | | |

22. Daily workshop repairwork

From : Mech. workshop
To : MIS

Format Code :
Sub-Code No.:
Date :

| Name of the job | Requested section code no. | Man-Hr. input | | Machine-Hr. input | | Material used | | | | Total Cost |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Hr. | Cost | Hr. | Cost | Mat. used | Unit | Qty. | Cost | |
| | | | | | | | | | | |

23. Daily Civil Maintenance

From : Civil Engineering
To : MIS

Format Code :
Sub-Code No.:
Date :

| Name of the job | Requested section code no. | Man-Hr. input | | Material used | | | | Total Cost |
|---|---|---|---|---|---|---|---|---|
| | | Hr. | Cost | Material code | Unit | Qty. | Cost | |
| | | | | | | | | |

24. Daily Electrical Maintenance report

From : Electrical Engineering
To : MIS Division

Sub-code No.:
Date :
Format Code :

| Name of machine | Requested department and code no. | Machine or item code no. | Repair/ maintenance/ replaced | Replaced parts/items | | | Man Hr. Used | Cost | Total cost |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Name, Code No. | Qty. | Cost | | | |
| | | | | | | | | | |

25. Input formats from marketting department
Daily orders received

From : Marketting
To : MIS Division

Format Code :
Sub-code No.:
Date :

| Dealer Name | Bank | A/C No. | Product ordered code no. | Qty. | Unit price | Total value |
|---|---|---|---|---|---|---|
| | | | | | | |

26. Daily sales

From : Marketting
To : MIS

Format Code :
Sub-code no.:
Date :

| Name of item | Code No. | Unit | Unit Price | Qty. | Value |
|---|---|---|---|---|---|
| | | | | | |

27. Customer enquiries

From : Marketting
To : MIS

Format Code :
Sub-code No.:
Date :

| Enquiries For | Product | | Total customer attended |
|---|---|---|---|
| | Name | Code | |
| | | | |

28. Input format from Accounts department
Daily Accounts receivable

From :
To :

Format Code:
Date :
Sub-Code no:

| Particulars | Code No. | Amount |
|---|---|---|
| Daily sales of products | | |
| Received of checks against orders | | |
| Scrap sales | | |
| Bank overdraft | | |
| BCIC grant | | |

29. Daily Accounts payable

From :
To :

Format Code :
Sub-Code No.:
Date :

| Particulars | Cost centres | Amount | Total Amount |
|---|---|---|---|
| | | | |

30. Daily inventory Accounts for main raw materials

From : Inventory Accounts
To : MIS

Format code :
Sub-code No.:
Date :

| Code No. | Description of raw materials | Unit | Received | | Issued | | Balance stock | |
|---|---|---|---|---|---|---|---|---|
| | | | Qty. | Value | Qty. | Value | Qty. | Value |
| | | | | | | | | |

31. Input for Purchase department
Daily procurement statement

From : Purchase Department
To : MIS

Format code:
Sub-code No.:
Date :

| Code No | Description of item | Unit | Qty | Value | Date of tender opening | Date of delivery |
|---|---|---|---|---|---|---|
| | | | | | | |

32. Daily requirement listings

From : Purchase
To :

Format Code :
Depart code :
Date :

| Code No. | Description of item | Unit | Balance on date | Reordering point | Critical point | Safety stock |
|---|---|---|---|---|---|---|
| | | | | | | |

33. Input formats from Administration

From : Administration
To : MIS

Format No.:
Code No. :
Date :

| Name of worker | Worker code no. | Permanent/ casual | Date of appointment | Department | Cost centre | Overtime Hrs. | Hrly. rate | Total pay |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |

34. Daily Leaves

From :
To :

Format No.:
Code No. :
Date :

| Name of worker | Code No. | Date of appointment | Due C/L | Due E/L | Leave taken | From To | Balance C/L | Balance E/L | Date of joining |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | |

35. Daily Leave & other information officers

From :
To :

Format No.:
Code No. :
Date :

| Name of officer | Code No. | Date of joining | Due E/L | Due C/L | Leave taken | From To | Balance C/L or E/L |
|---|---|---|---|---|---|---|---|
| | | | | | | | |