Unit-1

system= is a set of initerrelated components , work together to achieve goal
subsystem=it is a managable part of system
MRP=Material Resource Planning
ERP=Enterprice Resource Planning
SAP=System Application Product
CRM=Customer Relationship Management
SCM=Supply Chain Management

Operation system= Reffered as function base system

- use in manufacturing and transformation system

difference between information and knowledge

- information is processed data whereas knowledge is information that is modeled to be useful
- you need information to be able to get knowledge
- information deals with the way data is related while knowledge examins patterns within a given set of information
- to get knowledge you need some cognitive and analytical ability while for information you do not need cognitive ability

General model of system

- Input -> process -> output

value added function

- secondary function
- transformig product into money that is Value Added Function

Technology

- technology can be defined as different ways of using resources

For management 3 things are there

- planning
- organizing
- controlling

Intersection of these 3 basically result is management
Planning
- course of action to be perform that is planning
- preparing layout or schedule that is planning
- it is like an algorithm
- flowchart is also plan
- it is not only actual system, bt it is hypothetical system also

Organizing
- if we provide some instructions and steps to the algorithm that is organization
- will have some structured view that is organizing

Controlling
- it should refer outcome and analyze whether actual outcome is abstract with desired output or not

Intersection of planning + controlling outcome is = Model
Intersection of organizing + controlling outcome is = Behavior
Model = is nothing but hypothetical form of actual system which is not tested

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Types of Model
1 verbal model
- it exists virtually
- e.g face to face discussion
- part of conceptual system also
- we don't have any evidence

2 Texual Model or written model
- writing solution on paper i.e. written model

3 architectural model
- getting some tiny house type model

4 graphical model
- some symbol, images, special shape
- creating image

5 Iconic model

- using individual signs for individual operation
- e g : sign like, school ahead, bump ahead

6 Mathematical / arithmatic/ statistical Model

- for solving some problem get some form of expression

Operation function in organization(INTERNAL)

1 Operation system

- the part of an organization that produces the organization physical goods or services

2 Conversion process

- the process of changing inputs of labour, capital, land and management into outputs of goods and services

3 Value added

- when blending input into product or service, increase value of output compared to the sum of values of inputs
- basically work for conversion process

4 Random Fluctuation

- Unplanned or uncontrollable environmental influences like strikes, flood etc
- that cost planned and actual output to differ

5 Feedback

- information in the control process that allow management to decide whether organizational activity need any adjustment

6. Technology

- the level of scientific sophisticated in plant, equipment and skills in the conversion process

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Points	Manufacturing	Service Operation
	Tangible	Intangible
Nature of work	Supervising, monitoring	Just operators
Degree of customer contect	Very less	High
Customer particiation in conversion	Rare case	High

Measurement of performance Better Not perfect like simulation

Throughputs= "Items going through the conversion process contrasted with output coming out of the conversion process"

System

- collection of object related by regular interaction and interdependence
- ex: government portfolio, subject wise diff. department of university

Subsystem

- manageable component of system
- e.g.=subject wise diff. dept of university

Operations Management (Imp) (INTERNAL)

- management of the conversion process which converts land, labour, capital and management input into desired output of goods and services
- the operation manager 's job is is to manage process of converting input into desired outputs

1 classical management

- 1. 1 scientific mgt(management)
- Productivity & efficiency (in %)
- (output/input)*100

- 1.2 process mgt
- focus is on 3 things, planning, organization, controlling

2 Behavioral management

- 2.1 Human Relations
- basically include behavior of employees , their communication nature, teamwork

- 2.2 Behavioral science

- we need to learn about communication their requirements , facilities

3 Modeling mgt

- hypothetical form of actual system
- decision making system & arithmatic modeling

Framework for managing operation

- planning, organizing, controlling

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problem faced by operational manager

- funding for expantion
- funding for survival
- IT infrastructure related problems
- problems regarding quality

Stratagic roles of operations

1st step

- industry perspective: for same kind of business market analysis is required

2nd step

- organizational strategy:from analysis now we have knowledge about competiotion, so design some structure for services to gain some profit

3rd step

- Operations policy : main focus on design of conversion process
- Delivery capability : giving dealership,retailership,provide SCM
- location of facilities : how it is easy to provide services to customer, provide CRM

- processing technology : basically works for managing technology for customer

4th step
- Managing conversion operations
- 1. quality=level of sophistication to design product
- 2.efficiency=capabilities of people involve in SCM
- 3.scheduling=efficiency & scheduling is work together

5th step
- some form of outcome
- will have assesment of remark
- feedback

General Characteristics
- quality
- cost efficiency
- dependability
- flexibility

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operations objectives(INTERNAL)
1 product or service characteristics
2 process characteristics
3 product or service quality
4 efficiency
4.1 effective employee relationships & cost control of labour
4.2 cost control of material
4.3 cost control in facility utilization
5 customer service
5.1 producing quantities to meet expected demand
5.2 meeting the required delivery date for goods or services
6 adaptability for future survival

Strategic planning (INTERNAL)

- the process of thinking through the organizations current mission and environment and then setting forth a guide for tomorrow’s decision and result

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Planning for operation

- establishing a program of action for converting resources into goods or services

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Planning the conversion system

- establishing a program of acquiring the necessary physical facility to be used in the conversion process

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Strategic planning approaches for productions or operations

- 1 commercial approach
- 2 planning mode
- 3 adoptive approach

Strategic planning model

2 operations model

- efficiency
- dependability
- quality
- flexibility

Facility mission

1 process

- whatever process are going to perform is it possible to done in single component or multiple component

2 capacities

- of production unit depends on possible demand pattern

3. Facilities

- facilities to customer
- related to SCM also

4 vertical integration

- identified interdependencies
- higher level to bottom level

5 infrastructure

- matter of planning

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market based criteria for success(imp) (INTERNAL)

- efficiency
- effectiveness
- quality
- flexibility

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application of data warehouse

- lack of long-term vision in industry
- not all files are up to date
- struggle between dept of company
- poor cooperation from electronic data processing dept
- legal and privacy restriction
- files are hard to connect for technical reasons
- timing problems
- interpretation problem

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diff.between forcast & prediction

Forcast Prediction

Report,record,analysis,related assesment, then have some judgements Not have any history

Purely objective base, planning related to cost, manufacture

Totally subjective base, no any formulas

Will have some predetermine object,like we refer algo before writing program No any predetermine way

Plan of next coming period Not for planning just guess and openion without reference

It is any estimate of future event achieve by systematically combining and casting forword using historical data It is an estimates of future event achieve through individual consideration other than using past data

It is based an objective computation It is based on subjective consideration
There is a predetermine way to get conclusional decision It is not following any predertermine way
It is for generating conclusion based on references It is based on guesses, ideas, thoughts, heuristics etc

forcasting requirements in production operation management

- industry working for short term, medium term, long term depends on industry
- everything is based on production cycle
- shortterm plan= max. 2 year
- medium term=2 to 4 year
- long term=4 to 5 year

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forcasting an operation subsystem(INTERNAL)

1 planning the system

- product design
- process design
- capital design
- capacity of manufacturing unit

2 scheduling the system

- scheduling operational processes
- based on demand pattern
- how to apply scheduling & optimizing them

3 controlling the system

- production, inventory,labour,overall cost
- based on inventory we have to manage row material also

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time series analysis(INTERNAL)

- for forcasting purpose
- specifically for demand pattern
- part of statistical
- put time span on x axes on graph, starting from some level

- demand pattern
- constant demand
- trend wise demand
- seasonal demand

- in forcasting problem analysis of demand data plotted on a time scale to reveal patterns of demand

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demand pattern(INTERNAL)

- general shape of a time series, usually constant trend, seasonal or some combination of this shapes

demand stability

- tendency of time series to retain same general pattern over time

Noise

- Desperation of demand about demand pattern
- 1) low noise= means all or most of the points lie very close to the pattern
- 2) high noise=means many of the point lie relatively far away from the pattern

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product lifecycle(IMP) (INTERNAL)

- pattern of demand through the product's life, similar pattern & stages can be identified for the useful life of the product

Characteristics of product lifecycyle(IMP)

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reserach & development(IMP) (INTERNAL)

- "Organizational efforts directed toward product and process innovation, which includes stages of basic research applied research, development and implementation"

components of innovation

1 basic reserach

- reserach for the advancement of scientific knowledge i.e. not intended for specific commercial user

2 applied reserach

- research for the advancement of scientific knowledge that has specific commercial uses

3 development

- technical activities concerned with translating basic, applied research result into product or processes

4 implementaion

- it is activity concerned with designing and building pilot lodels, quipment and facilities and initiating the marketing channels for product or services emerging from reserach nd debelopment

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Organization of R & D(IMP)

1 centralized R & D

2 Decentralized R & D

3 combination of centralized & decentralized R & D(combine)

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product development process

1 needs identification

2 advance product planning

3 advance design

4 detailed engineering design

5 production process design

6 product evolution & improvement

7 product use & support

Modular design & standardization(IMP) (INTERNAL)

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process technology(IMP)

- using equipment,machinery,knowledge of human being

types of process technology

- 1 project technology
- 2 job shop technology
- 3 batch technology
- 4 assembly line technology
- 5 continuous technology

CIM(Computer integrated manufacturing) IMP

- we are not integrated directly computer tech. to manufacturing
- manufacturing and computer are separate thing
- CAD for perform arithmatic+geomatric
- CAM(computer aided manufacturing)

Robot & robotics

- robot is some form of machinary which contan instructions
- robotics is scientific approach
- work fro domain specific activities

CIM components

1 engineering design
2 manufacturing design
3 factory production
4 information mgt

Layout planning (INTERNAL)

Layout= some form of configuration or location that we fix to carry out conversion process

eg: assigning lab to diff batch

1 process oriented layout
2 product oriented layout
3 fixed position layout
4 combination layout