

Management:

Management is a set of activities that direct at an organization's resources, with the aim of achieving organizational goals in an efficient and effective manner.

Efficiency:

By efficient, we mean using resources wisely and in a cost efficient way.

Effectiveness:

By effective we mean making the right decisions and successfully implementing them.

Ex- Give an example of decision situation that is

1. Efficient but not Effective?
2. Effective but not Efficient?
3. Both Effective and Efficient?
4. Neither?

For example, to select a product out of all the

options, the best element from the list with

A good quality and low price will be

The elements have been given in the following table

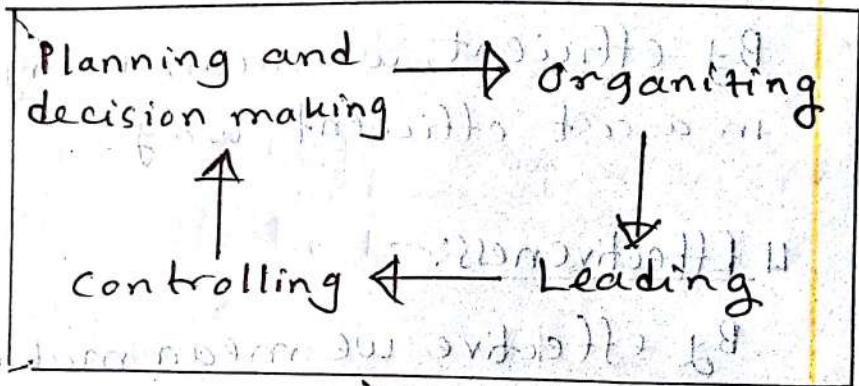
(clubbing both values together)

product of has most priority

Functions of Management:

Inputs from Environment:

- Human resources
- Financial resources
- Physical resources
- Information resources



Goals attained:
- Efficiency
- Effectiveness

(1) Planning:

- ~ Planning is deciding in advance what is to be done
- ~ It is the future course of action
- ~ It is the first and foremost task of management
- ~ It includes:
 - Establishing goals and standards
 - Developing rules and procedures
 - Developing plans and forecasting.

Decision making: A ~~function~~ (iii)

Act of choosing one alternative from among a set of alternatives.

Decision making process: A ~~function~~ (iii)

on basis of play factors with 2 main stages

Recognizing and defining the nature of decision situation

Identifying alternatives

Evaluating alternatives

Choosing the best alternative

Putting it to practice

Follow up

for example type of book according to his wife

Decision making conditions (i) Risk: - A condition in which all potential

play offs and costs are all associated with probability estimates

(ii) Uncertainty:- A condition in which the decision maker does not know the potential payoffs and costs.

(iii) Certainty:- A condition in which the decision maker knows the potential payoffs and costs.

(2) Organizing:-

- Determining how activities and resources are to be grouped effectively.
- Basic elements:-
 - job design
 - departmentalization
 - authority relationships
 - span of control
 - line and staff roles

(3) Leading:-

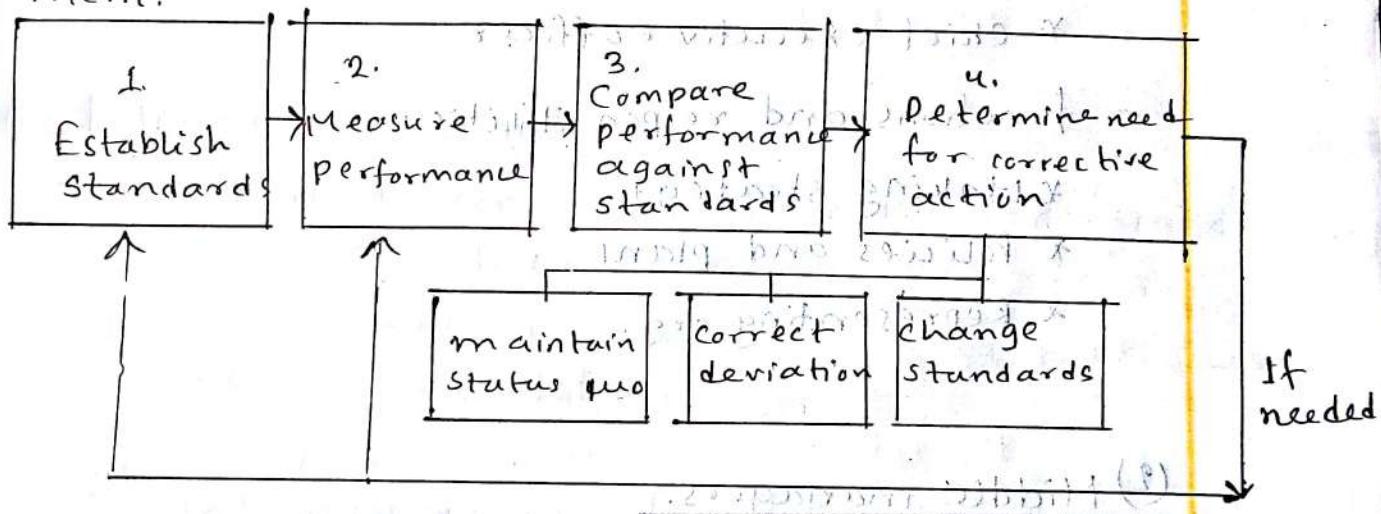
- The set of processes used to get members of the organization to work together to further the interest of the organization.
- Activities and processes:-
 - Motivating employees
 - Influencing others

- managing interpersonal relations and communication

- managing work groups and teams

(4) Controlling:

Monitoring organizational progress toward goal attainment.

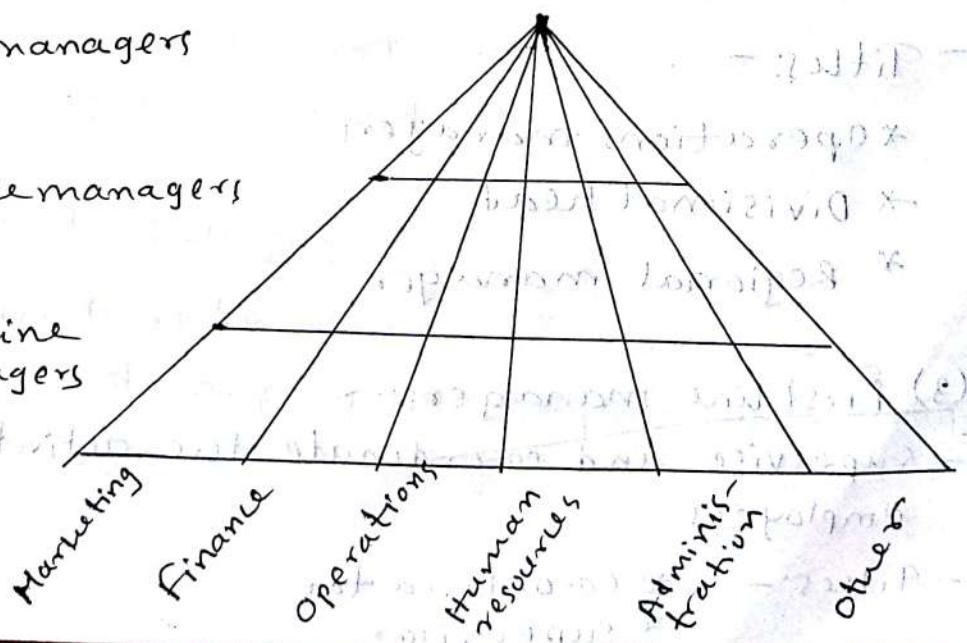


□ Levels and area of managers:

1. Top managers

2. Middle managers

3. First line managers



(1) Top managers:-

- A small group of executives who manage the overall organization, the strategic level.
- Title:-
 - * President
 - * Vice president
 - * Chief executive officer
- functions and responsibilities:
 - * Making strategy
 - * Policies and plan
 - * Representing org.

(2) Middle managers:-

- The largest group that implements the strategies developed at the top and co-ordinates and supervises the activities of the first line managers.

Titles:-

- * Operations manager
- * Divisional head
- * Regional manager

(3) first line managers:-

- Supervise and co-ordinate the activities of operating employees
- Titles:-
 - * co-ordinator
 - * supervisor

□ Fundamental management skills:-

(1) Technical skill:-

- ~ Necessary to accomplish or understand the specific kind of work being done
- ~ These skills are especially important for the first line managers.

(2) Interpersonal skill:-

- ~ The ability to communicate with, understand and motivate both individuals and groups.
- ~ Be able to get along with: Subordinates, Peers, and those are at higher levels.

(3) Conceptual skills:

- ~ Ability to think in the abstract,
- ~ Understand organizational goals and its environment
- ~ How the organization is structured.
- ~ Viewing the organization as system.

(4) Diagnostic skills:-

- ~ Skills that enable a manager to visualize the most appropriate response to a situation.

(5) Communication skills:

- Abilities both to effectively convey ideas and information to others and to effectively receive ideas and information from others.

(6) Decision making skills:-

- Ability to correctly recognize and define problems and opportunities and to then select an appropriate course of action to solve problems and capitalize on opportunities.

(7) Time management skills:-

- Ability to prioritize work, to work efficiently and to delegate appropriately.

(8)

— Problem solving skills (P)

Principles of administrative management:-

1. Division of labour
2. Authority and Accountability
3. Discipline
4. Unity of command
5. Unity of direction
6. Superiority of general interest over individual interest
7. Remuneration
8. Centralization
9. Scalar chain
10. Order
11. Equity
12. Stability and security
13. Initiative
14. Esprit de corps

Principles of scientific management:-

1. Develop a science for each element of a worker's job that replaces rules of thumb.
2. Use scientific method rather than intuition and experience to determine the work methods and tools.
3. Lay down standard time, standard methods, tools and working conditions for each task.

4. Functional specialization should be a part of every job.
5. Scientific selection, training and development of works.
6. Planning and scheduling of the work to ensure every availability of materials and other resources at right place, right time and in proper condition.
7. Wage incentives should be an integral part of each job.
8. Close cooperation between management and workers to accomplish work in accordance with scientific method.
9. Planning should be separated from doing.

Motivation

□ Motivation:-

The processes that account for an individual's intensity, direction and persistence of effort towards attaining a goal.

Intensity:

How hard a person tries

Direction:

Toward beneficial goal

Persistence:

How long a person tries

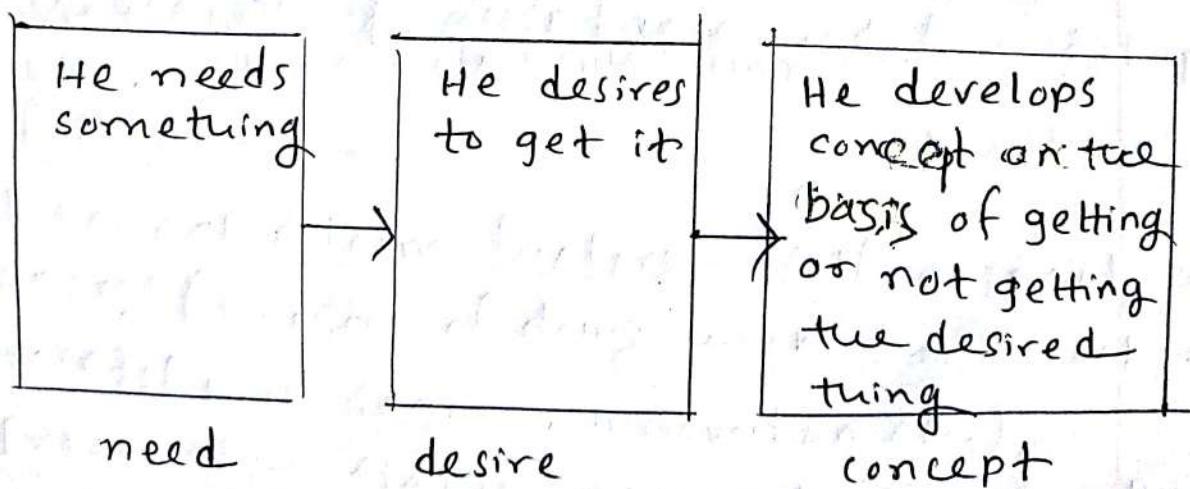
According to Hellman and Horm Stein -

"Motivation is individual's desire to work."

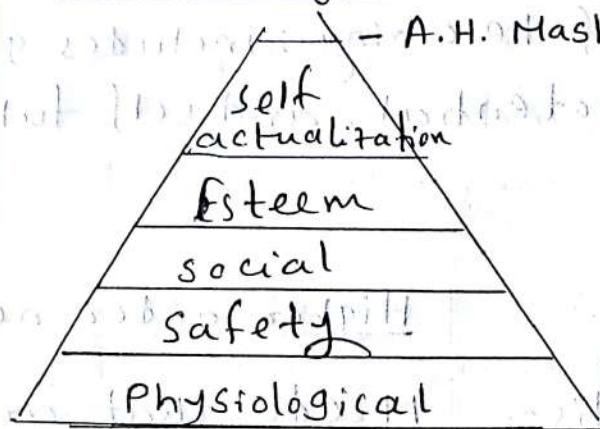
Motivation means an individual's needs, desires and concepts

that cause him or her to act in a particular matter.

II Motivation process:-



Hierarchy of needs theory:



- A. H. Maslow There is a hierarchy of five needs - physiological, safety, social, esteem and self actualization; as each need is substantially satisfied the next need becomes dominant.

(1) Physiological: - Basic needs to sustain human body. Ex - Hunger, thirst, shelter, and other bodily needs.

(2) Safety: - Includes security and protection from physical and emotional harm.

(3) Social: - Includes affection, belongingness (having possessions), acceptance and friendship.

(4) Esteem:

Internal esteem factors: - Self respect, autonomy (freedom of doing work), and achievements (high degree, innovation etc.)

External: - Status, recognition and attention

(5) Self actualization: The drive to become what one is capable of becoming; includes growth, achieving one's potential, and self fulfillment.

Lower order needs

Needs that are satisfied externally;
physiological and safety needs

Higher order needs

Needs that are satisfied internally; social esteem and self-actualization needs.

How to apply?

If you want to motivate someone according to Maslow, you need to understand what level of hierarchy that person is currently on and focus on satisfying the needs or above that level.

Assumptions:-

Assumption-I: People cannot move to next higher order until the current need is fulfilled.

Assumption-II: If you want to apply this theory in practical, you have to understand the person's position in need and fulfill the present and higher order needs.

Theory X and Theory Y:-

- Douglas McGregor

Theory X:- Assumes that employees dislike work, lack ambition, avoid responsibility, and must be directed and forced to perform.

Theory Y:- Assumes that employees like work, seek responsibility, are capable of making decisions, and exercise self-direction and self-control when committed to a goal.

II Two factor theory:-

- Frederick Herzberg

Intrinsic factors are related to job satisfaction, while extrinsic factors are associated with dissatisfaction.

(1) Hygiene factors:-

Factors such as company policy and administration, supervision, and salary - that, when adequate in a job, placate workers. When factors are adequate, people will not be dissatisfied.

These factors are directly related with job dissatisfaction. If all present, employees would not be dissatisfied.

(2) Motivation factors:-

Achievement, recognition, responsibility and advancement.

Motivation factors	satisfied	- If hygiene factors are absent, people will be dis-satisfied.
Hygiene factors	not dissatisfied, not satisfied	- If all hygiene factors are present people will not be dissatisfied and nor will be satisfied.
	dissatisfied	- If all motivation factors are present, people will be satisfied.

Job design theory:-

Job characteristics model:-

Identifies five job characteristics and their relationship to personal and work outcomes.

(1) Skill variety:- Extent to which work allows employee to use variety of skills. (কাজের গভীর সম্পর্ক
শিল্প ব্যবস্থার ক্ষেত্রগুলি)

(2) Task identity:- Extent to which work allows employee to complete whole or identifiable piece of work. (কাজের মাধ্যমে স্থানীয় কর্তৃতা এবং অবস্থা
ক্ষেত্রগুলি)

(3) Task significance:— Extent to which employee perceives that work is important and meaningful to those inside or outside organization.
(ಕ್ರಾಟಿಕಲ್ ಮಾರ್ಪಳಗಳ ಮೂಲಕ ಕ್ರಾಟಿಕಲ್ ವಿನ್ಯಾಸಗಳನ್ನು ಸಹಿತ ಕೊಂಡಿರುವ ಗ್ರಂಥಿಗಳ ಅಭಿವೃದ್ಧಿ)

(4) Autonomy:— Extent to which employee is able to work and determine work procedure at own discretion. (ಆಂತಿಕ ಆಧಿಕ್ಯ ದ್ವಾರಾ ನಿಯಂತ್ರಿತ ಕ್ರಾಟಿಕಲ್ ಏಜನ್ಸಿಗಳ ಮತ್ತು ಉದ್ದೇಶಗಳ ಮೂಲಕ ಕ್ರಾಟಿಕಲ್ ವಿನ್ಯಾಸಗಳನ್ನು ಸಹಿತ ಕೊಂಡಿರುವ ಗ್ರಂಥಿಗಳ ಅಭಿವೃದ್ಧಿ)

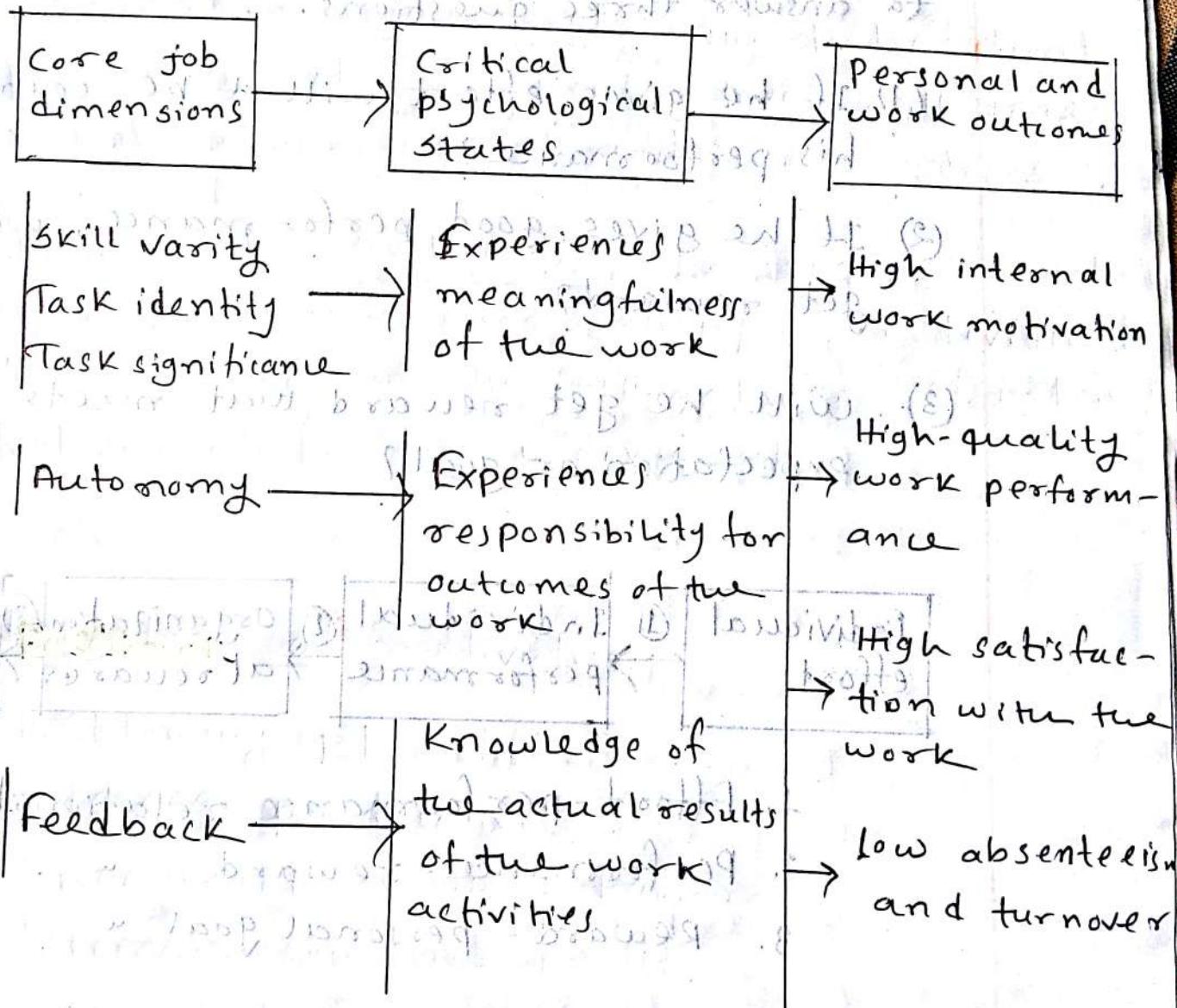
(5) Feedback:— Extent to which work allows employee to gain sense of how well job responsibilities are met. (ಕ್ರಾಟಿಕಲ್ ವಿನ್ಯಾಸಗಳ ಮೂಲಕ ಕ್ರಾಟಿಕಲ್ ಏಜನ್ಸಿಗಳ ಮತ್ತು ಉದ್ದೇಶಗಳ ಮೂಲಕ ಕ್ರಾಟಿಕಲ್ ವಿನ್ಯಾಸಗಳನ್ನು ಸಹಿತ ಕೊಂಡಿರುವ ಗ್ರಂಥಿಗಳ ಅಭಿವೃದ್ಧಿ)

How its effects?

Jobs with skill variety, task identity, task significance, autonomy and for which feedback is given, directly affect three psychological states of employees —

1. Knowledge of results
2. Meaningfulness of work
3. Personal feelings and responsibility for results.

Increases in these psychological states result in increased motivation, performance and job satisfaction.

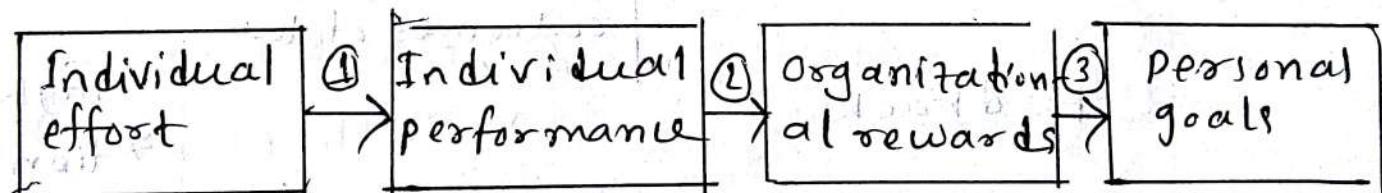


Expectancy Theory:-

- Victor Vroom

If you want to please your employee, you have to answer three questions.

- (1) If he gives effort, will it be counted as his performance?
- (2) If he gives good performance, will he get reward?
- (3) Will he get reward that meets his expectation or goal?



1. Effort-performance relationship
2. Performance-reward
3. Reward-personal goal

(1) Effort-performance rel.: - The probability that exerting a given amount of effort will lead to performance.

(2) Performance-reward rel.: - The belief that performing at a particular level will lead to the attainment of a desired outcome.

(3) Rewards-Personal goals rel.: - The degree to which organizational rewards satisfy an individual's goals or needs and the attractiveness of potential rewards for the individual.

Importance of motivation:-

1. Obtaining job satisfaction.
2. Increase productivity.
3. Favourable group behaviour.
4. Increase sales and profit.
5. Change becomes possible.
6. Maximum efficiency and success are attained.
7. It increases team spirit.
8. Reduce strike, boycott, go slow, lockout.
9. Reduce labour turnover and absenteeism.

Sources of motivation:

Financial sources:-

1. Fair wage
2. Bonuses
3. Promotion
4. Accommodation facil.
5. Transportation facil.
6. Medical facilities
7. Education
8. Insurance
9. Participation in profit.

Non-financial sources:-

1. Job security.
2. Praise, recognition and reward
3. Feedback
4. Participation in management
5. Opportunity for promotion
6. Good will
7. Training facilities
8. Comfortable and attractive working conditions
9. Co-worker with same mind and sense
10. Good supervision
11. Good relationship among workers
12. Sound management
13. Treating personnel problems with sympathy

Inventory control:

Cost of holding high inventory

(1) Interest/Opportunity cost

- କାନ୍ଦିତ ମାର୍ଜନ ଉପରେ ବଳ୍ଯ ହେବାର
ଅନୁଭିକ୍ଷା କରି ଭାବୁଟି
- କାନ୍ଦିତ ମାର୍ଜନ ଉପରେ ଆଜି
ମୁଣ୍ଡର କାର୍ଯ୍ୟ କରିବାରେ
ଖର୍ଚ୍ଚ ରୀଳେ ଭାବୁଟି ଅର୍ଥ କରିବାରେ

(2) Storage and handling cost.

- ଶ୍ରୀଦ ମାର୍ଜନ ଉପରେ
ଖର୍ଚ୍ଚ କରି କରିବାରେ
- ଅବଶ୍ୟକ କରିବାରେ କରିବାରେ
କିମ୍ବା କରିବାରେ କରିବାରେ
ଆମ୍ବଦାରିର କରିବାରେ

(3) Taxes, insurance and shrinkage.

- ଶ୍ରୀଦ ମାର୍ଜନ କରିବାରେ tax,
insurance କରିବାରେ Premium
କରିବାରେ କରିବାରେ
- Shrinkage: କାର୍ଯ୍ୟ କରିବାରେ,
କାର୍ଯ୍ୟ କରିବାରେ କରିବାରେ, କରିବାରେ
କରିବାରେ

Cost of holding low inventory

(1) Customer service cost.

- Stockout: କାନ୍ଦିତ ମାର୍ଜନ
କାର୍ଯ୍ୟ କରିବାରେ କରିବାରେ
କରିବାରେ କରିବାରେ କରିବାରେ କରିବାରେ
- Backorder: କାନ୍ଦିତ
order କରିବାରେ, ଏବଂ କାନ୍ଦିତ
କରିବାରେ କରିବାରେ, କରିବାରେ
କରିବାରେ କରିବାରେ, କରିବାରେ
କରିବାରେ କରିବାରେ, କରିବାରେ

(2) Ordinary cost:

- ସମ୍ବନ୍ଧୀୟ Order, କରିବାରେ କରିବାରେ
କରିବାରେ - Legal cost କରିବାରେ
କରିବାରେ କରିବାରେ

(3) Setup cost.

- କରିବାରେ କରିବାରେ, କରିବାରେ,
company କରିବାରେ
କରିବାରେ କରିବାରେ କରିବାରେ,
କରିବାରେ କରିବାରେ କରିବାରେ
କରିବାରେ - G cost, କରିବାରେ,
କରିବାରେ

(4) Labour and equipment cost.

ମୂଲ୍ୟ କାର୍ଯ୍ୟର କାମରେ
ଦେଇବ କୌଣସି ପାଇବାକାଳୀ ଅମର ରୁଷ
ମାତ୍ରା କାମ କରିବାକାଳୀ ଏବଂ କାମରେ
କାମରେ କାମ କରିବାକାଳୀ ଏବଂ କାମରେ
କାମରେ କାମ କରିବାକାଳୀ ଏବଂ କାମରେ

(5) Transportation cost.

କାମରେ କାମ କରିବାକାଳୀ ଏବଂ କାମରେ
କାମରେ କାମ କରିବାକାଳୀ ଏବଂ କାମରେ

Economic order quantity: (EOQ)

The lot size that minimizes total annual
inventory holding and ordering/setup cost.

Economic production lot size: (EPLS)

The lot size that minimizes total annual inv-
entory holding and setup cost.

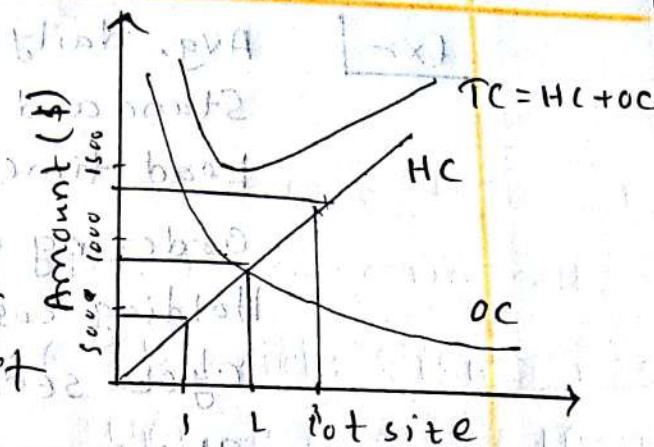
EOQ:

(1) Demand rate constant

(2)

(3) Inventory holding cost

(4) Inventory ordering cost



IP = Inventory position

BO = Back order

SR = Scheduled Receipt

OH = On Hand Inventory

TBO = Time Between Orders

EOQ = Economic order quantity

ELS = Economic production Lot Size

σ = standard deviation

P = Production rate

d = Demand rate

t = time

z = value of probability

s = setup/ordinary cost

Per order per year

D = Annual demand

$$(1) EOQ = \sqrt{\frac{2DS}{H}}$$

(2) ROP = Average Demand during lead time + Safety stock

$$(3) IP = OH + SR - BO$$

$$(4) TBO = \frac{EOQ}{D} \times \text{Time}$$

$$(5) \text{Holding cost} = \frac{EOQ}{2} \times H$$

$$(6) \text{Ordering cost} = \frac{P}{EOQ} \times S$$

$$(7) ELS = \sqrt{\frac{2DS}{H}} \times \sqrt{\frac{P}{P-d}}$$

$$(8) \text{Production time of each cycle} = \frac{ELS}{P}$$

MROP = Reorder point
H = Holding cost per order per unit per year

Ex-

Avg. daily demand = 100 units

Standard deviation of daily demand = 30 units

Lead time = 3 days

Ordering cost = \$35/order/year

Holding cost = \$9.40/unit/year

Cycle service level = 92%

The company operates 5 days/week and 52 weeks/year

$$1. EOQ = ?$$

$$2. ROP = ?$$

3. If on-hand inventory is 40 units. There is a one open order to ship by an EOQ and there are no back orders

Lead time for delivery = 5

Soln:-

$$(1). EOQ = \sqrt{\frac{2DS}{H}}$$

$$D = (5 \times 52 \times 100) \text{ units/yr} \\ = 26000 \text{ units/yr}$$

$$H = 9.40 \text{ $/unit/yr}$$

$$S = 35$$

$$= 26000 \times 35 \times 35 = 24400 (f)$$

(2) ~~ROP = ADDL + safety stock~~

~~2 Lead time \times Demand $+ Z \sigma_L$~~

$$[D : \sigma_L = 6 + \sqrt{3}]$$

$$(3) ROP = ADDLT + \text{Safety Stock}$$

$\text{ADDLT} = \text{Lead time} \times \text{Demand}$

$$= 3 \times 100$$

$$= 300$$

Safety stock = $Z_{\alpha} \sigma_L$

$$= Z_{\alpha} \sigma_L$$

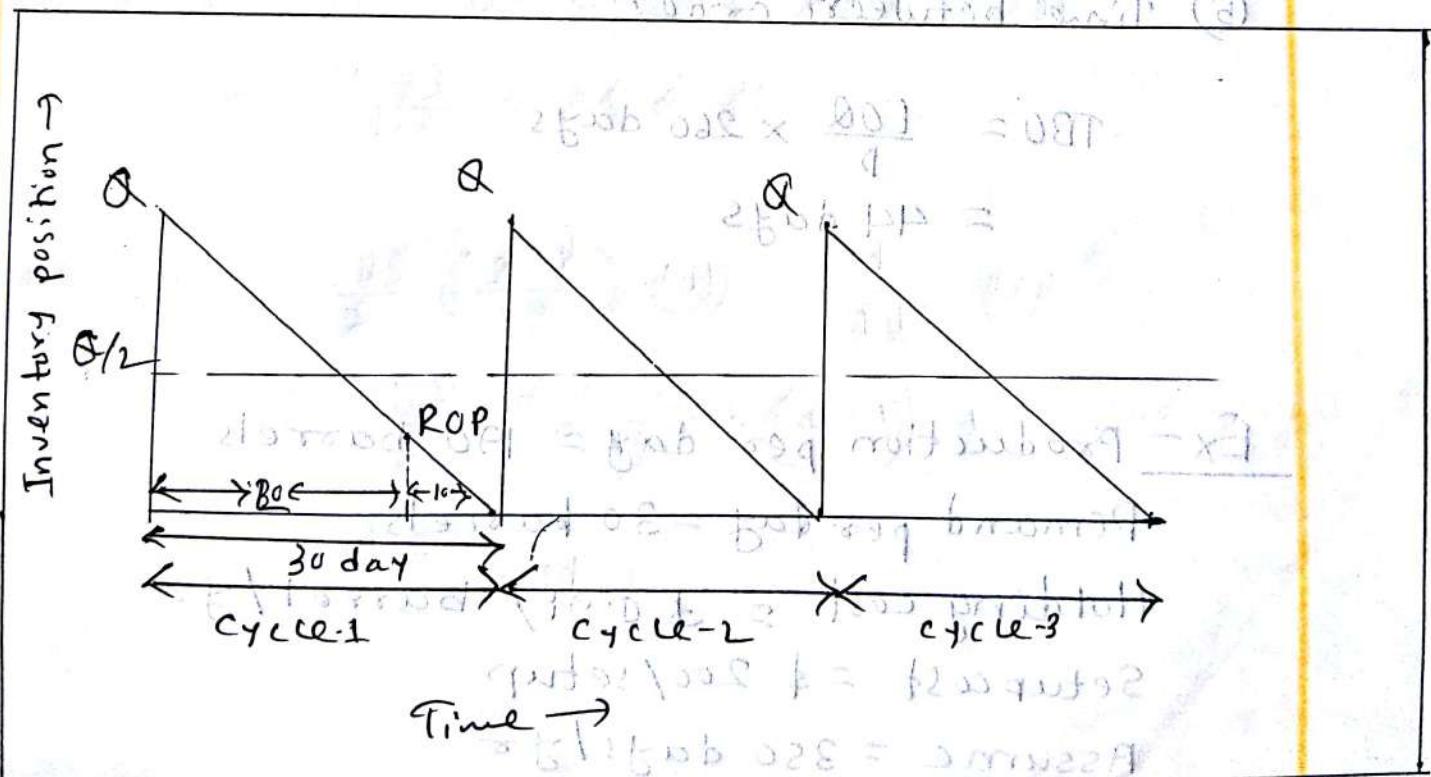
$$= 1.42 \times 30 \times \sqrt{3} \text{ units}$$

$$= 73 \text{ unit}$$

Value of
Z from table
in book

At 92% demand level (Z) value corresponds to 1.42 (As per normal distribution table)

$$\therefore ROP = 300 + 73 = 373 \text{ (Ans)}$$



$$(3) \text{IP} = D + SR - BO \approx 573 \text{ units} > ROP = 400 \text{ units}$$

$$= 400 + 440 - 0$$

$$= 440 \text{ units}$$

(480u.)

Since, IP exceeds ROP (373 units), so, do not place a new order.

(4) Total cost of holding and ordering -

$$C = \frac{EOQ(H)}{2} + \frac{D}{EOQ}(S)$$

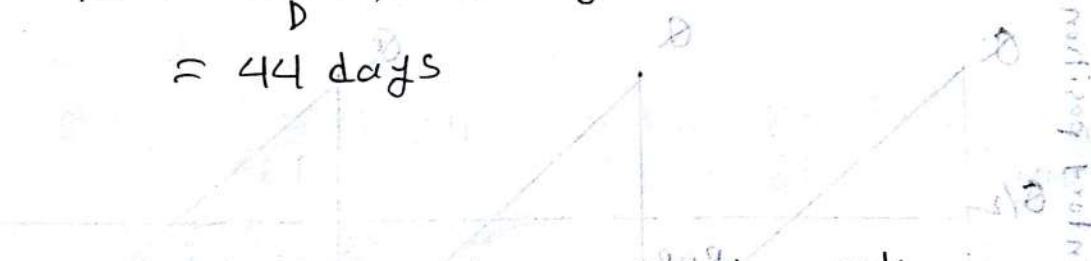
$$= \frac{440}{2}(9.60) + \frac{26000}{440}(35)$$

$$= \$4138$$

(5) Time between order

$$TBO = \frac{EOQ}{D} \times 260 \text{ days}$$

$$= 44 \text{ days}$$



Ex- Production per day = 190 barrels

-Demand per day = 30 barrels

Holding cost = \$0.21/barrel/day

Setup cost = \$200/setup

Assume = 350 days/yr

Annual demand = 10,500 barrels

Calculate - 1. ELS 2. TBO 3. Production time during

each cycle U.TC

Soln:-

$$(1) ELS = \sqrt{\frac{2DS}{H}} \cdot \sqrt{\frac{P}{P-d}}$$
$$= \left(\frac{2 \times 10,500 \times 200}{0.21} \right)^{1/2} \left(\frac{190}{190-30} \right)^{1/2}$$
$$= 4873.4 \text{ barrels}$$

$$(2) TBO = \frac{ELS}{D} \times 350 \text{ days}$$
$$= \frac{4873.4}{10,500} \times 350 \text{ days}$$
$$= 162 \text{ days}$$

$$(3) \text{ Production time during each cycle}$$
$$= \frac{4873}{190} = 26 \text{ days.}$$

$$(4) T_C = \frac{ELS}{2} \left(\frac{P-d}{P} \right) \cdot (H) + \frac{D}{ELS} (S)$$
$$= \frac{4873}{2} \left(\frac{190-30}{190} \right) (0.21) + \frac{10,500}{4873} (200)$$
$$= \$ 861 \quad (\text{Ans})$$

Plant layout (क्षेत्रीय वितरण) :-

contentious issue

* What is a layout planning?

- A layout planning involves decisions about the physical arrangement of economic activity centers needed by the factory's various processes.

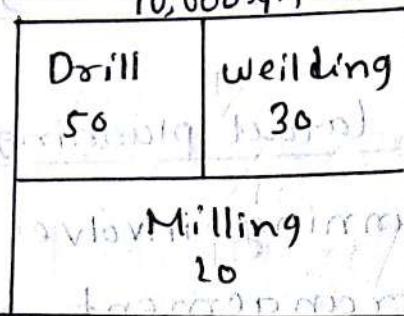
* Four questions to answer before planning ?

- (1) What centers should the layout include?
- (2) How much space and capacity does each center need?
- (3) How should each center's space be configured?
- (4) Where should each center be located?

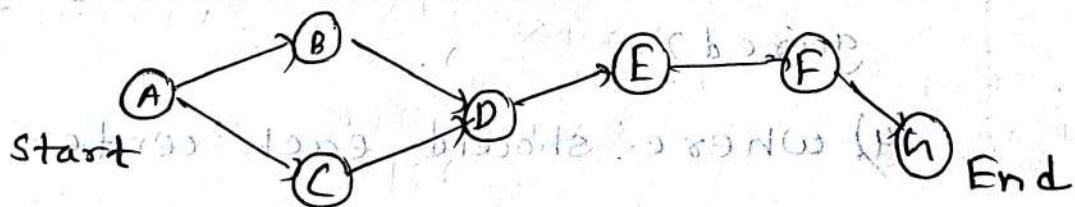
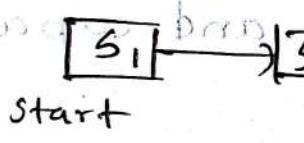
* Types of layout ?

(1) Flexible flow layout: A layout in which resources are arranged by functions.

(सी एफ्सी फॉल लेयट)



(2) Line flow layout: A layout in which work stations are arranged in a linear path.



(3) Hybrid Layout: Combination of FFL and LFL. When both manufacturing and assembling is done in same factory.

(4) Fixed position layout:- A layout in which manufacturing site is fixed in a place, employees along with their machine come to the

site to do their job. Ex- Ship yard.

Ex-1 A company is setting up an assembly line to produce 192 units per eight hour shift.

Work element	Time (sec)	Immediate predecessors
A	60	None
B	80	A
C	30	D, E, F
D	45	B
E	20	B
F	15	B
G	120	A, D, E, F
H	145	G, I
I	130	H
J	115	C, I

$$\sum t = 720$$

1. What is cycle time?
2. What is the minimum number of work station?
3. Use the largest element time rule to workout a solution and show your solution on a precedence diagram.
4. Efficiency?
5. Balance delay?

Soln: - ~~method~~ - ~~optimal~~ output of 192

(1) Cycle time (c) = $\frac{1}{r}$

$= \frac{1}{192} \times 3600$

$= 150 \text{ sec/station}$

$r = \text{desired output rate per hour in unit.}$

(2) No. of work station (n)

$$= \frac{It}{c}$$
$$= \frac{720}{150}$$
$$= 4.8 \text{ or } 5$$

$It = \text{total time required to produce one unit.}$

(4) Efficiency = $\frac{It}{n.c} \times 100\%$

$$= \frac{720}{5 \times 150} \times 100\%$$
$$= 96\%$$

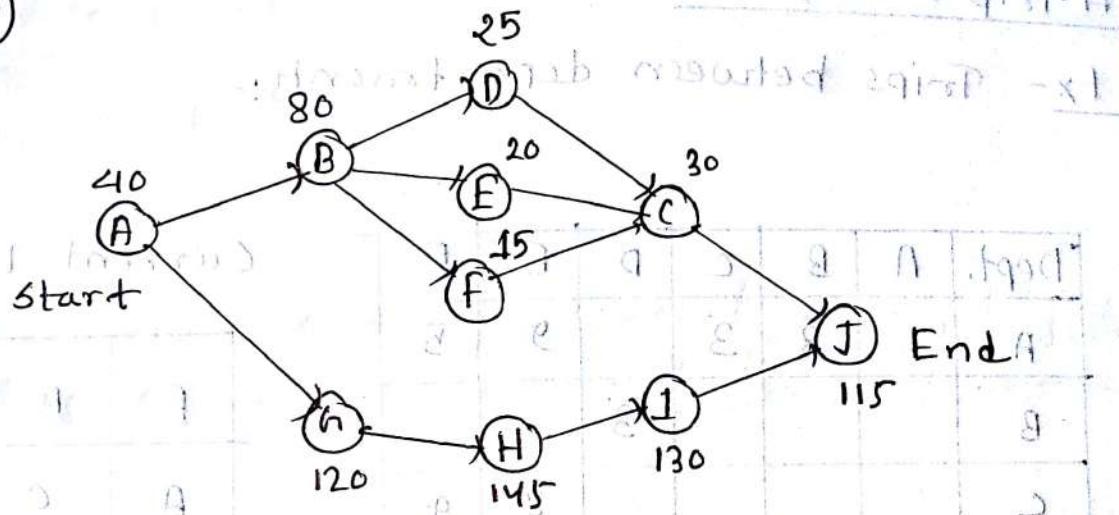
$n = \text{no. of work stations}$

(5) Balance delay = $100 - \text{Efficiency}$

$$= 100 - 96$$

$$= 4\%$$

(3)



Line Balancing

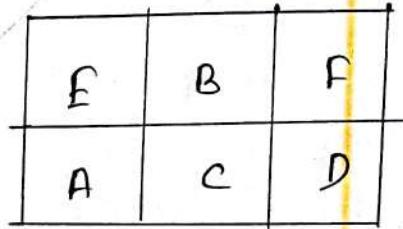
Station	Candidate(s)	Choice	Time (sec)	Cumulative time (sec)	Idle time (sec)
S ₁	A, B, D, E, F	A	40	40	110
		B	80	120	30
		D	25	145	05
S ₂	E, F, H	H	120	120	0
	E, F	E	80	140	10
S ₃	F, H	H	145	145	05
S ₄	F, I	I	130	130	20
	F	F	15	145	05
S ₅	C, J	C	30	30	120
	J	J	115	145	05

A Trip matrix:-

Ex- Trips between departments:-

Dept.	A	B	C	D	E	F
A	1	8	3		9	5
B		1	3		11	
C				8	9	
D					3	
E					3	
F						

Current layout:-



(1) Use trial and error to find a better layout.

(Assume that E and F to remain at their current pos.)

(2) How much better is your proposed layout than current layout in terms of wd score? (wd = weighted dist.)

Soln:- (1)

Dept.	No. of pair trips(w)	Current plan Distance(d)	Proposed plan 1 wd	Proposed plan 2 wd	Proposed plan 3 wd
A,B	8	12	16	1	8
A,C	3	11	13	2	6
A,E	9	1	9	1	9
A,F	5	3	15	3	15
B,D	3	12	86	1	3
C,E	8	12	16	11	8
C,F	9	2	18	1	9
D,F	3	11	3	1	3
F,F	3	2	6	2	6
$\Sigma wd = 92$		$\Sigma wd = 67$			

Proposed plan 1

E	C	F
A	B	D

$$A, E = 9$$

$$E, F = 9$$

$$E, D = 8$$

$$A, B = 8$$

(2) Weighted distance score of current layout dropped from 92 to 67, a 27% reduction.

Performance criteria (before layout planning) :-

1. Level of capital investment
2. Requirements for materials handling
3. Ease of stock picking
4. Work environment
5. Ease of equipment maintenance
6. Employee attitude
7. Amount of flexibility needed
8. Customer satisfaction, convenience and level of sales.