Kanak Garg
Shift II
BBA Gen

Assignment-2 - MPOB

A

→ Management By Objectives [MBO]

• It is a modern approach to management introduced by Peter F. Drucker in the 1950s. It is a process where managers and employees work together to set, record, and monitor goals for a specific period of time. The main focus of MBO is to align individual objectives with the overall goals of the organization.

Features of MBO

1) Goal Orientation- MBO focuses on achieving specific and measurable goals rather than vague tasks.

2) Participation- Both managers and employees are involved in setting objectives, which increases motivation.

3) Clarity- Objectives are clearly defined, so everyone knows what they want to achieve.

Steps in MBO

① Setting Organisational Goals →
Top management sets the overall goals for the organization.

② Setting Individual Goals
Goals are divided among departments & individuals

③ Action Plan
employees decide how to achieve their objectives.

④ Monitoring Process
Regular Reviews are conducted to track performance

⑤ Evaluation
In the end, actual performance is compared with goals, and feedback is given.

Advantages of MPOB

- Improves clarity and communication in the organizatio
- Encourages teamwork between managers and employees
- Increases Efficiency and motivation.
- Provides a clear method for performance evaluation

Limitations of MBO

- Time-Consuming process.
- Not suitable where goals are difficult to quantify.
- Too much focus on short-term objectives may ignore long-term vision.

In conclusion,

MBO is systematic and participative approach that connects individual goals with organization success.

Business

Business Process Re
technique that fo
business to achiev
ectiveness.

It became popular in
and James Champ
changes in how w
improvements.

Meaning

BPR means rethink
organization's work
achieve dramatic im
cost, speed, service a

Features of

1. Fundamental Re
Focuses on how pr
they're currently
2. Use of Technology
Heavy use of IT
3. Custome
The main is to

Business Process Re-engineering

Business Process Reengineering (BPR) is a management technique that focuses on redesigning and improving business to achieve better efficiency, quality, competitiveness.

It became popular in 1990s through Michael Hammer and James Champy. The idea is to make radical changes in how work is done, instead of making small improvements.

Meaning

BPR means rethinking and redesigning the way an organization's work is carried out in order to achieve dramatic improvement in performance such as cost, speed, service and quality.

Features of BPR

Fundamental Rethinking

Focuses on how process <u>should</u> be done, not <u>how</u> they're currently done.

Use of Technology

Heavy use of IT and modern tools to improve processes.

Customer Focus

The main aim is to provide better value to customers.

Steps in BPR

1. Identify Processes for Re-engineering:
   Select critical process that need improvement.
2. Analyse existing processes:
   Understand current problems and inefficiencies.
3. Redesign the process:
   Develop a new way of working.
4. Implement Changes:
   Apply the redesigned process using tech and training.
5. Continuous Improvement:
   Keep monitoring and improving.

Advantages

- faster and more efficient process.
- Improves customer satisfaction.
- Reduces cost by eliminating unnecessary steps.

Limitations

- very expensive and time-consuming.
- Employees may resist big changes.
- High risk of failure if not implemented properly.

In conclusion,

BPR is about making radical improvements in business processes to increase efficiency and customer satisfaction.

While it is challenging and risky, if applied correctly, it can give organizations a strong competitive advantage.

NIKITA
BBA (G) Shift 2 III - B
104212017223

TOPIC HRM DATE

Assignment - 2

1) Why is HR planning important in an organization? How job description and job specification helps in planning man power effectively?

Ans:) Human Resource planning is the continuous process of systematic planning to achieve optimum use of an organization's most valuable asset - quality employee.

HR planning is a crucial process for businesses as it helps align the company's workforce with the strategic goals and objectives.

- Strategic decision making - HR planning provides valuable insights into the workforce and can inform strategic decision making. For example, understanding the current workforce and anticipating their future needs helps businesses make informed decisions about organizational structure.

- Proactive Management - HR planning allows companies to anticipate staffing needs, skill gaps, and workforce challenges. This helps in preparing for future changes such as expansion, technological advancements.

- Cost Management - Effective HR planning reduces costs by ensuring that recruitment, training, compensation align with actual business needs. It prevents overstaffing, understaffing, and unnecessary expenditures.

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- Adaption to change - In a dynamic business environment, HR planning enables organizations to responds efficiently to changes like market trends, economic fluctuations and technological innovations.

- Succession Planning By identifying critical roles and the competencies required for them, HR planning can help organizations also, develop potential successors. Two in one and

Job description is a details information about the vacant position that states the job title, job location, duties, job role etc. The main job of job description is to collected 'job-related' data in order to advertise for a particular job.

Job specification is a document that outlines the specific duties and requirements of a particular job. It can be used to help identify candidates who are a good fit for the job, and to help the recruitment process.

Job description and specification both help in manpower planning in Human Resource management.
By detailing the specific tasks and duties associated with each role, HR can accurately assess how many employees are required to meet organizational needs.

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This helps in avoiding both overstaffing and understaffing.
On the other hand, job specification helps assists in identifying the current and future skills and expertise required within the organisation. HR can use this information to anticipate skill shortages or surpluses and adjust hiring plans or employee development.

Ques 2) Indicate the steps in recruitment of the employee. What different precautions HR manager has to take at the time of management.

Ans) Recruitment can be defined as the process of identifying, selecting and hiring the most suitable candidates available for available roles within an organization, either externally or internally in a timely manner. Recruitment is an initial stage in an organization's capacity to expand its resources, as qualified personnel are indispensable for meeting organizational objectives and achieving profitability.

There are basic steps that are followed by most organisations

Step 1) Preparing – once the job opening is approved internally, the recruiter contacts the hiring manager, This step is about gathering details about the open position.

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Step 2 Next step after job description is Sourcing. It refers to identifying and contacting qualified candidates rather than waiting for the candidate to apply for the position. The primary goal is to find qualified candidates. A recruiter uses a variety of job portals to find the resumes.

Step 3 Screening → Screening of a candidate can take place in many ways. If the resume meets the criteria required for the job opening, next step in this is phone screening.

Step 4 Selecting - This process is about the sending assignments, psychometric tests and scheduling interviews, participating in the interviewing process, and also keeping the hiring manager in the loop for the whole process.

Step 5.) Hiring - This step includes the final discussion with the candidate about salary, joining date etc. Once the joining date is confirmed, the offer letter is released.

• Here are some precautions that HR managers should take

1) Legal compliance - Ensuring the adherence of labor laws, including non-discrimination and equal opportunity regulations.

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) Non - discrimination - Bias should be avoide on race, gender, age or other characteristics focus should rather be on skills & qu

) Clear job description - Accurate job description that outline expectations and qualifications be provided.

4) Standardized selection process - Use consistent evaluation criteria to assess all candidates fa Avoid subjective methods by implementing structured Interviews, skill assessments and cl rating system.

5) Background checks - Conduct thorough and confi background checks, only with the candidate's consent.

6) Confidentiality - Protection of candidate's privacy securing personal information and limiting acce authorized personnel only.

Ques 3) Elaborate the need for effective training in an organisation. Also explain on the job training methods.

Ans) " Training is the act of increasing the knowledge and skills of an employee for doing a particular job " — Edwin B. Flippo.

Training is an organised activity for increasing the

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technical skills of the employees to enable to do particular jobs efficiently. Training equally important for the existing as well new employees. It enables the new employees to get acquainted with the jobs and also increase the job related knowledge and skills.

Effective training in HRM is crucial for organizational success, employee development as well.

- <u>Skill development</u> - Training provides employees with necessary skills and knowledge to perform their jobs effectively.

- <u>Employee Engagement</u> - Increases job satisfaction and motivation by demonstrating the organisation commitment to employee growth.

- <u>Retention</u> - Reduces turnover rates by investing in employee's professional development, fostering loyalty and reducing recruitment costs.

- Moreover, effective training ensures compliance with legal and regulatory requirements, minimizing legal risks for the organisation. It prepares the workforce to adapt to technological advancements and industry changes too.

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Methods of Training

Various methods used for training employees are classified into 2 categories

1.) On the Job Training → refers to method of teaching employees skill & knowledge that typically takes place in actual work.

a) Coaching - In this, supervisor instructs & guides the trainee. This method improves relationship b/w worker & supervisor. This method can be effective only when supervisor is competent.

b) Understudy - Under this, trainee is imparted training by a senior and experienced employee. The trainee is designated as a successor to trainer & learn by observation and imitation

c.) Assistant To: - In this, trainee is placed as an assistant to a senior executive of the firm. Initially, the senior executive entrusts him with the routine work and guides him to perform a job.

d.) Job Rotation - In this method, trainee is periodically rotated from job to job. The purpose is to broaden his outlook and give a general background of different jobs. The trainee learns a variety of tasks & develops a better view of the organisation

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Off The job Training

1) Intenship training - This a joint programme training in which busines should collaborate technical institutions. Intenship Training involve balance between theory & practice. The traine given theoritical Instructions in technical insti This method is used in medical, accountan and legal professions.

2.) Vestibule Training - It is the most common off the job training method. vestibule means a room betwee the outer door and interior of a building. Worker are trained in a classroom or hall. A lar no of workers are trained under guidance of expert. Trainees get accustomed to the work routine and can overcome initial nervousness before working on actual job.

c) Apprenticeship Training - This method is used in technical trade & crafts in which a long period is required to become proficient. The worker is attached to an experienced senior employee. The purpose is to prepare employees for skilled occupations like plumbing, electrician, carpentry etc. It combines classroom instruction and on the job training. The trainee learns the intricacies of the job under the direct supervision of his master.

d) Classroom Training - Under this method, training is provided in company classrooms or in educational instructions.

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lectures, case studies, group discussions, audio visual aids are used to explain knowledge and skills to the trainees. Classrooms training is suitable for teaching concepts & problem solving skills. It is also useful for orientation and safety training programmes. Some companies maintain their own training Institutes or schools. Special courses are designed eg - management course for foremen, computer course for typists etc.

Conclusion

NAME → AKHIL AGARWAL
CLASS → IV-C (BBA-G)
12021201723

A+

FINANCIAL MANAGEMENT.

Assignment - 1

Q-1 write short note on :-
(i) Financial management ? Define its scope.
(ii) Role of financial manager.
(iii) Time Value of money - significance.
(iv) Annuity and perpetuity.

Ans-1 (i) Financial management refers to the strategic planning, organising, directing and controlling of financial activities within an organization. It involves making decisions about procurement, allocation and utilization of financial resources to achieve business objectives efficiently.

Proper financial management ensures optimal fund utilization, balancing risk and profitability while maintaining liquidity for smooth operations. It also plays a key role in strategic planning, organising, budgeting and financial forecasting helping businesses sustain growth and stability by managing financial risk and ensuring proper capital allocation, financial management enhances efficiency, maximizes shareholders value and supports long term business success.

* Scopes

(1) Investment decision (capital budgeting) - Evaluating long term investment opportunities, analyzing risks and returns, and allocating funds to fixed and working capital.

(2) Financing decisions
Determining the right mix of debt and equity, selecting suitable sources of financing and managing capital structure to minimize cost & maximize profitability.

(3) Dividend decisions.
Deciding the distribution of profits between dividends to shareholders and retained earnings for future growth.

(4) Working capital management.
Managing short term assets and liabilities, ensuring liquidity and optimizing cash flow, inventory and receivable / payables.

(5) Risk Management.
Identifying and mitigating financial risks such as market, credit and liquidity risks through strategies like hedging and diversification.

(6) Financial planning and strategy
Setting financial goals, budgeting, forecasting, sales and analyzing financial policies with business objectives.

(ii) Role of a financial managers

A financial managers plays a crucial role in an organization by overseeing financial planning, controlling resources and making strategic decisions to ensure financial stability & growth.

(1) Financial planning & strategy - Developing financial strategies

, setting budgets and forecasting future financial performances.

(2) Investment decisions- Assessing investment opportunities, allocating funds efficiently and managing risk to ensure maximum returns.

(3) Financing decisions :- Determining the optimal mix of debt and equity securing funding and managing the company's capital structure.

(4) Risk management :- Identifying financial risk & implementing strategies to mitigate them and ensuring financial stability as and securing through insurance and hedging.

(5) Working capital management - managing cashflow, inventory, receivable and payable to ensure liquidity for smooth operations.

(iii) Time Value of money - significance.

The Time Value of money (TVM) is a fundamental concept in finance that states that money available today is worth more than same amount in the future due to its potential earning capacity.

(1) Investment decisions - TVM helps investors compare different option by considering the future value of their money ensuring better financial planning.

(2) Capital budgeting - Businesses uses TVM to evaluate profitability of long term projects, helping in capital allocation.

(3) Loan and debt management - TVM is used to determine loan payments, interest rates and repayment schedules ensuring efficient debt management.

(4) Retirement and savings planning - Individuals uses TVM to calculate how much they need to save today to meet future financial goals.

(5) Inflation adjustment - TVM accounts for inflation ensuring that financial decisions reflect the real purchasing power of money over time.

(6) Annuity and Perpetuity

- An annuity is a series of equal payments made at regular intervals over a specified period. It is commonly used in investments, retirement plans and insurance payouts.

Annuities can be classified into -

① Ordinary annuity - Payments are made at the end of each period (e.g. bond, interest payments).

② Annuity due - Payments are made at the beginning of each period (e.g. rent payments).

The value of an annuity is calc... formula ...

to assess the worth of these payments over time.

- A perpetuity is a type of annuity where payment continue indefinitely since the payments never stop. The present value of perpetuity is calculated using the formula.

$$PV = \frac{C}{r}$$

where
C = fixed periodic payment.
r = discount rate.

Perpetuities are commonly seen in financial instruments, preferred stocks, where dividends are paid indefinitely.

Q-2 Wealth maximization is a better criteria than profit maximi-zation "do you agree? Explain.

Ans-2 Financial management aims to ensure the success and sustaina-bility of a business. Two primary objectives often debated are profit maximization and wealth maximization. While profit maximization focuses on increasing short term earning, wealth maximization focuses on financial health and shareholders value.

Wealth maximization is better than profit maximization :-

(1) Long term perspective :-
Profit maximization emphasizes short term gains often leading to decisions that may not be sustainable in the

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2) Risk and Uncertainity consideration:
Profit maximization ignores risk and uncertainities often leading to reckless decisions.

(3) Shareholders Value enhancement:-
Profit maximisation benefits only the businesses in the short term.

(4) Focus on cash flows rather than profits
• Profit maximization considers only accounting profits which can be manipulated.
• Wealth maximization focuses on cash flows, ensuring that real earnings and financial health are considered in decision making.

(5) Ethical and social responsibility
A profit driven approach may lead to unethical practices like cost cutting at the expense of employee welfare or environmental harm.

(6) Balanced decision making
Profit maximization may lead to cost cutting in crucial areas like research and development leading to stagnation.

(7) • Better market reputation.
• Companies focusing only on profits may lose customers trust due to ...
• Firms that prioritize ...
reputation

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Q-3 Solve the following problems:-

a) A deposit ₹5000 at end of each year for 4 years @ 6% interest. How much the deposit will grow at the end of 4 years?
Formula for future value of annuity (FVA)

Ans-3
$$FV = \frac{P \times (1+r)^n - 1}{r}$$

where $P = ₹5000$, $r = 6\%$, $n = 4$

$$FV = 5000 \times \frac{(1.06)^4 - 1}{0.06}$$

$$= 5000 \times \frac{0.2625}{0.06}$$

$$= 5000 \times 4.3733$$

$FV = ₹21866.64$

So at the end of 4 years the Interest will grow to ₹21866.64

(Q-3 b) Find the present value of ₹1000 receivable after 6 years @ 10%.

Ans-3b) The present value (PV) of a future amount can be calculated using the formula:

$$PV = \frac{FV}{(1+r)^n}$$

$FV = 1000₹$, $r = 10\%$ or 0.10, $n = 6$ years

$$PV = \frac{1000}{(1+10)^6}$$

₹564.73

... receivable after 6 years @ 10%.

Vedaant Anand (JAN-July 2025)

Topic: BBA (G), II-B. 06221201724. Date

A1

DTB Assignment - 1

Ques.1 When the variance equals to the Standard Deviation, under what circumstance can variance be less? Explain.

Ans Variance can only be equal to the S.D when it is 1, because the S.D is the square root of the variance. It means if variance will be 1, square root will also be 1.

Variance can only be less than S.D if it is in a decimal value less than 1.

$$\text{Standard Deviation} = \sqrt{\text{variance}}$$

$$(\text{Standard Deviation})^2 = \text{Variance}.$$

Ques.2 Calculate the values of Q_1, Q_3, D_7 & P65 from the data:

X	10	5	7	11	8
F	15	20	15	18	12

Ans

X	F	C.F
5	20	20
7	15	35
8	12	47
10	15	62
11	18	80
		N = 80

$\Rightarrow Q_1 = \frac{N}{4} = \frac{80}{4} \Rightarrow Q_1 = 20$

$\Rightarrow L + \left(\frac{N/4 - CF}{F}\right) \times h$

$\Rightarrow 5 + \left(\frac{20-0}{20}\right) \times h = 5 + 1$

$\Rightarrow Q_1 = 6$

$Q_3 = \frac{3N}{4} = \frac{3(80)}{4} \Rightarrow Q_3 = 60.$

$\Rightarrow L + \left(\frac{3N/4 - CF}{F}\right) \times h = 10 + \left(\frac{60-47}{15}\right) \times 1$

$\Rightarrow 10 + 0.87 = 10.87$

$\Rightarrow D_7 = \frac{7N}{10} = \frac{7(80)}{10} \Rightarrow D_7 = 56.$

$\Rightarrow L + \left(\frac{7N/10 - CF}{F}\right) \times h = 10 + \left(\frac{56-47}{15}\right) \times 1$

$\Rightarrow D_7 = 10 + 0.6 = 10.6$

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Ques. 9 When is mode preferred over other form of averages ?

Ans Mode is preferred over other averages when dealing with categorical data (nominal scale) as it is the only measure of central tendency that can be used for such data types, where values cannot be ordered numerically.

Ques. 10 "Statistics is a bundle of lies". Comment.

Ans "Stats is a bundle of lies", means that statistical data can be easily manipulated or misrepresented to support a particular agenda often by selectively choosing data using misleading graphs, or omitting crucial context, essentially allowing people to "lie" with stats to fit their desired narrative.

Ques. 11 Find the class interval if the A.M of the following is 33 & assumed mean (A) is 35.

(u)	Step-deviation	-3	-2	-1	0	1	2
(f)	Frequency	5	10	25	30	20	10

Ans $\Sigma fu = (-3\times5)+(-2\times10)+(-25)+0+20+20$

$\Rightarrow \Sigma fu = -20$

$\Sigma f = 5+10+25+30+20+10$

$\Rightarrow \Sigma f = 100$

$$\bar{x} = A + \frac{\Sigma fu}{\Sigma f} \times h$$

$$\Rightarrow 33 = 35 - \frac{20}{100} \times h$$

$\Rightarrow -2 = -0.2h$

$$\Rightarrow h = \frac{2\times10}{2}$$

$\boxed{h=10}$

So, Class interval (h) = 10.

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Ques. 12 Find the median wage :

4% earn below ₹60 ⟶ 40 people.

15% earn below ₹ 62.5 ⟶ 150 people

15% earn below ₹100 & over ₹95 ⟶ 150 people

5% earn ₹ 100 & above ⟶ 50 people

Range	% of earner	cumulative %	c.f
below 60	4%	4%	40
below 62.5	15%	15%	150
Median		Median class	
Above 95	15%	85%	850
Above 100	5%	95%	950

Median class $\Rightarrow \frac{1000}{2} = 500^{th}$ person

$$\text{Median} = L + \left(\frac{N/2 - cf}{f}\right) \times h$$

$$\Rightarrow 62.5 + \left(\frac{500-150}{700}\right) \times 32.5 = 62.5 + 16.25$$

Median wage = ₹ 78.75.

Ques. 13 Find the combined mean & S.D.

Ans

$$\text{Combined mean} = \bar{X} = \frac{\bar{X}_1 . n_1 + \bar{X}_2 . n_2}{n_1 + n_2}$$

$$\Rightarrow \frac{(54.4 \times 50) + (50.3 \times 100)}{100 + 50} = \frac{2720 + 5030}{150}$$

$$\Rightarrow \bar{X} = \frac{7750}{150} = 51.67$$

Combined standard deviation =

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es.14 Find the median wage graphically from the following table :

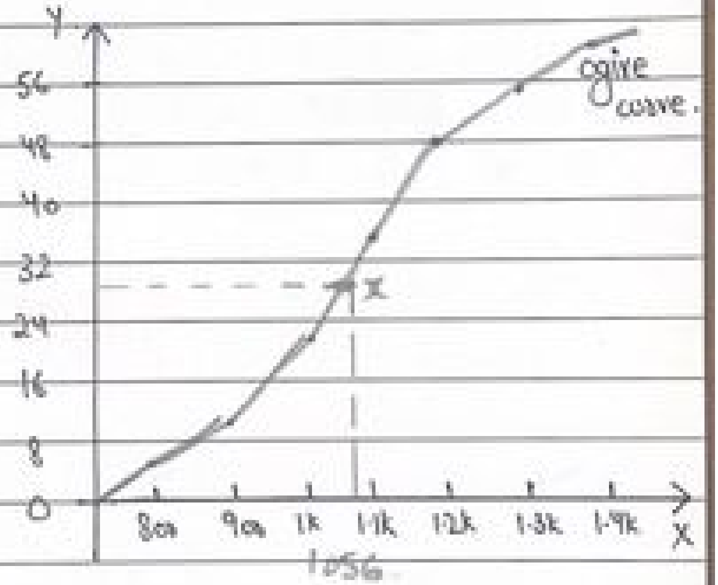
Wages	No. of workers	wages	no. of workers
700-800	4	1100-1200	12
800-900	6	1200-1300	7
900-1000	10	1300-1400	3
1000-1100	16		

Wages	No. of workers	cf
700-800	4	4
800-900	6	10
900-1000	10	20
1000-1100	16	36
1100-1200	12	48
1200-1300	7	55
1300-1400	3	58
	$\Sigma = 58$	

Median $= \frac{N}{2}$th

$\Rightarrow \frac{58}{2} = 29$

Median class = 1000-1100.



Median $= l + \left(\frac{N/2 - cf}{f}\right) \times h.$

$\Rightarrow 1000 + \left(\frac{29-20}{16}\right) \times 100 = 1000 + 56.25$

$\Rightarrow$ Median $= 1056.25$

.15 Prove that S.D is independent of any change of origin but is dependent on the change of scale.

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15 Let x be a variable with mean $\bar{X}$ & S.D σ.
Consider, $Y = ax + b$ [a & b are both constant]

1. The effect of origin, The mean of Y is
$\Rightarrow \bar{Y} = a\bar{x} + b$

$\Rightarrow$ The variance is
$$\sigma^2 Y = \frac{1}{N} \Sigma (ax + b - \bar{Y})^2 = a^2 \sigma^2 x$$

$\Rightarrow$ The standard deviation is
$$\sigma Y = \sqrt{a^2 \sigma^2 x} = |a| \sigma x$$

* Since b does not appear in the S.D formula, the S.D is independent of any change in origin.

2. The effect of change in Scale,
$\Rightarrow$ S.D $= |a| \sigma x$, meaning it is affected by a change in scale.

Ex-16 Find the A.M & S.D of both cities. Also, find which of the two cities show greater variability.

Exp.	City A	City B	Mid-point
3-6	28	39	4.5
6-9	292	284	7.5
9-12	389	401	10.5
12-15	212	202	13.5
15-18	59	48	16.5
18-21	18	21	19.5
21-24	2	5	22.5

Total families, $N_A = N_B = 1000$
$$\bar{X}_A = \frac{\Sigma f_i X_i}{\Sigma f_i} \Rightarrow \frac{10632.5}{1000} = 10.63$$

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Q-18 Find the missing frequency :

Class	10-20	20-30	30-40	40-50	50-60	60-70	70-80
Frequency	185	?	34	180	136	?	50

Median = 42.6 (Given)

Median = $l + \left(\frac{N/2 - cf}{f}\right) \times h$.

$N/2 = \frac{685}{2} = 342.5$

$219 + f_1 = 342.5$

$f_1 = 124$ (approx)

So, $585 + f_1 + f_2 = 685$.

$f_2 = -24$.

Q.19 Find the standard deviation of first 10 natural numbers.

No : 1, 2, 3, 4, 5, 6, 7, 8, 9 & 10.

$\Rightarrow \bar{x} = \frac{\Sigma xi}{\Sigma N} \Rightarrow \frac{55}{10} = 5.5$

x_i	$x_i - \bar{x}$	$(x_i - \bar{x})^2$
1	-4.5	20.25
2	-3.5	12.25
3	-2.5	6.25
4	-1.5	2.25
5	-0.5	0.25
6	0.5	0.25
7	1.5	2.25
8	2.5	6.25
9	3.5	12.25
10	4.5	20.25

$\Sigma (x_i - \bar{x})^2 = 82.5$

$\sigma = \sqrt{\frac{\Sigma (x_i - \bar{x})^2}{N}}$

$\Rightarrow \sqrt{\frac{82.5}{10}} = \sqrt{8.25}$

$\boxed{\sigma = 2.87}$

i) Find combined Standard Deviation.

ii) Whose height are more variable.

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	Boys	Girls
Number	400	100
Average	68 in	65 in
Variance	9	4.

Ans * Combined mean : $\bar{X} = \dfrac{N_1 \bar{X}_1 + N_2 \bar{X}_2}{N_1 + N_2}$

$\Rightarrow \dfrac{(400 \times 68) + (100 \times 65)}{400 + 100} = \dfrac{33700}{500}$

$\bar{X} = 67.4$ inches.

* Combined variance :

$\sigma^2 = \dfrac{N_1[\sigma_1^2 + (\bar{x}_1 - \bar{x})^2] + N_2[\sigma_2^2 + (\bar{x}_2 - \bar{x})^2]}{N_1 + N_2}$

Computing,

$(\bar{x}_1 - \bar{x})^2 = (0.6)^2 = 0.36$

$(\bar{x}_2 - \bar{x})^2 = (-2.4)^2 = 5.76$

$\Rightarrow \sigma^2 = \dfrac{400(9 + 0.36) + 100(4 + 5.76)}{500}$

$\Rightarrow \dfrac{3744 + 976}{500} = \dfrac{4720}{500} = 9.44$

* Combined S.D : $\sigma = \sqrt{9.44} = 3.07$

* CV boys : $\left(\dfrac{3}{68}\right) \times 100 = 4.41\%$.

* CV girls : $\left(\dfrac{2}{65}\right) \times 100 = 3.08\%$.

So, boys height are more variable.

Q1 Show the following is equal to $(2n+1)/3$.

Ans $\bar{X}_w = \dfrac{\sum W_i X_i}{\sum W_i}$ Here, $X_i = (1, 2, 3 \ldots n)$

& $(W_i = X_i)$

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Find the missing values of the following:

Group	Number	Mean	S.D
A	50	113	6
B	n_B	$\bar{x}_B$	σ_B
C	90	115	7
Combined	200	116	7.746

$$\bar{x} = \frac{n_A \bar{x}_A + n_B \bar{x}_B + n_C \bar{x}_C}{n_A + n_B + n_C}$$

$$\Rightarrow 116 = \frac{(50 \times 113) + (N_B \bar{x}_B) + (90 \times 115)}{200}$$

$$\Rightarrow 23200 = 5650 + N_B \bar{x}_B + 10350$$

$$\Rightarrow N_B \cdot \bar{x}_B = 7200$$

$$\Rightarrow \bar{x}_B = 7200 / 60$$

$$\Rightarrow \bar{x}_B = 120$$

Sum of No. = 50 + N_B + 90

$\Rightarrow N_B = 200 - 140$

$N_B = 60.$

$$\Rightarrow \sigma^2 = \frac{N_A\left(\sigma^2_A + (\bar{x}_A - \bar{x})^2\right) + N_B\left(\sigma^2_B + (\bar{x}_B - \bar{x})^2\right) + N_C\left(\sigma^2_C + (\bar{x}_C - \bar{x})^2\right)}{N_A + N_B + N_C}$$

$$\Rightarrow \sigma^2 = 8.14$$

i) ~~Find the S.D of boys & girls together.~~

ii)

Name : Nyasa
Class & Sec. : BBA(G) + VI 'C'
Roll No. - 218

DELTA Pg No. 1
Date / /

2nd March, 2025

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Priyanka

Assignment-01

IAPM

Ques 1. State Investment Decision process. What factors should an investor consider while making Investment Decision.

Ans 1. The Investment Decision Process is a systematic procedure that an investor follows to evaluate potential investment opportunities, with the aim of achieving the desired financial objectives. This process involves a series of steps that guide the investor through the complexities of investing, ensuring that decisions are made based on informed judgement and analysis.

Steps in the Investment Decision Process:-

1. **Setting Investment Objectives:** Investors must define their financial goals, such as wealth accumulation, income generation, or capital preservation.

2. **Assessing Risk Tolerance:** Understanding how much risk an investor can bear is crucial. Risk tolerance varies based on age, income and financial obligations.

3. **Analyzing market conditions**: Evaluating economic indicators, interest rates, inflation, and market trends helps in making informed decisions.
4. **Asset Allocation**: Diversification across different asset classes like equities, bonds, and real estate reduces risk.
5. **Security Selection**: Choosing specific stocks, bonds, or mutual funds based on fundamental and technical analysis.
6. **Portfolio Construction**: Combining selected securities to create a well-balanced portfolio that meets investment objectives.
7. **Monitoring and Rebalancing**: Regularly reviewing the portfolio's performance and adjusting it based on market conditions and changes in financial goals.

FACTORS TO CONSIDER WHILE MAKING AN INVESTMENT DECISIONS:-

1. **Risk and Return Trade-off**: Higher returns usually come with higher risks. Investors should assess their willingness to take this
2. **Investment Horizon**: The period ~~for~~ which the investment is planned (short-term vs. long-term) affects asset selection.

Liquidity Needs: Some investments, like real estate, are less liquid, while stocks and bonds offer better liquidity.

4. Market Conditions: Economic cycles, interest rates, and inflation impact investments decisions.

5. Tax Implications: Different investments have varying tax treatment, affecting net returns.

6. Diversifications: Spreading investments across asset classes reduces risk.

7. Macroeconomics Factor: Global and domestic economic factors influence returns.

8. Personal Financial Situation: Income level, expenses, and existing assets determine investment capacity.

Ques 2. Difference between —

a) INVESTMENT AND SPECULATION

b) DIRECT INVESTING AND INDIRECT INVESTMENT

1. MARKET RISK (SYSTEMATIC RISK):

- This is the risk that affects the entire market or a broad segment of it.
- It cannot be diversified away.
- Eg: changes in interest rates, inflation, economic recessions and geopolitical events.

2. CREDIT RISK (DEFAULT RISK)

- This is the risk that a borrower will fail to make timely payments or default on their obligations.
- It is particularly relevant for bond investments.
- Credit ratings are used to assess credit risk.

3. INTEREST RATE RISK:

- This is the risk that changes in interest rates will affect the value of investments, particularly bonds.
- When interest rates rise, bonds prices typically fall and vice versa.

4. INFLATION RISK (Purchasing Power Risk)

→ This is the risk that inflation will erode the purchasing power of investment returns.

→ Investments that do not keep pace with inflation may result in a real loss of value.

5. LIQUIDITY RISK:

→ This is the risk that an investment cannot be easily bought or sold without significantly affesting its price.

→ Illiquid investments may be difficult to sell quickly when needed.

6. BUSINESS RISK (UNSYSTEMATIC RISK):

→ This is the risk specific to a particular company or industry.

→ It can be diversified away by investing in a diversified portfolio.

→ Egs: poor management, competition, and changes in consumer preferences.

7. CURRENCY RISK (Exchange Rate Risk):

→ This is the risk that fluctuations in exchange rates will affect the value of foreign investments.

→ It is particularly relevant for investors with international portfolios.

8. **Political Risk:**

→ This is the risk that political instability or changes in government policies will negatively affect investment returns.

→ This is especially important ~~in~~ emerging markets.

9. **Reinvestment Risk:**

→ The risk that future investment of earnings may occur at a lower interest rate than the current earnings.

Understanding and managing these risks is essential for successful investing. Investors should carefully assess their risk tolerance and develop an investment strategy that aligns with their ~~objectives~~ and risk profile.

Ishika Goel
36621201724

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Business Communication
Assignment - 2

A

Q1 What do you understand by Cross - Cultural communication ? Explain various factors that affects communication in closed cultural setting ?

- Cross - Cultural communication involves understanding and interacting with individuals or groups from different cultural backgrounds.

In cross - cultural setting, it navigates differences in languages, beliefs, customs, values and communication styles to foster manual understanding and effective communication.

→ Core elements of Cross - cultural communication

- Sender - The communicator may adapt their tone and style based on cultural expectations. In collectivist culture (Eg - China), indirect communication is preferred, while individualist culture (Eg - USA) favour direct expression.

- Medium - Different cultures rely on different communication channels - some prioritize written formal communication (Germany),

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while other value oral communication (India).

- Message - Content matters! High - content culture (Eg - Japan) embed meaning in whereas low- content culture (Eg- Netherland) use emplicit language.

- Feedback - In some cultures (Eg - USA) immediate feedback is encouraged, while other (Eg - ~~Thai~~ Thailand) prefer more reserved response.

→ Factors affecting

- Language Differences - Language is a primary barrier, as it can lead to misunderstanding and misinterpretations.

- Non - verbal communication - Cultural norms can influence body language, facial expressions, and gestures, which can be misinterpreted if not understood within the content.

- Cultural Values and norms - Different cultures have varying beliefs about social interactions, hierarchy and communication styles.

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- High-content Vs Low-content communication - Some cultures rely more on content and unspoken cues (high-content), while other prefer explicit and direct communication (low-content).

- Stereotyping and Prejudice - Preconvinced notions about individuals based on their cultural background can hinder open and honest communication.

- Communication Style - Individual cultures may have different communication styles, such as direct versus indirect, formal versus informal, or assertive versus passive.

Q2 Explain the various legal and ethical issues in Business Communication. Explain by giving relevant examples ?

- Legal and Ethical issues in business communication involve ensuring honesty, fairness and compilance with laws, while also considering the impact on stakeholders and the environment.

This includes avoiding misleading information, protecting privacy, respecting intellectual

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property and ensuring equal oppourtunities in the workplace. Legal compilance is a cornerstone, ensuring adherence to laws like data protection, anti-discrimination acts.

→ LEGAL ISSUES

- Data Protection - Laws like the Data Protection Act 1998 and General data protection regulation (GDPR) govern how personal data is collected, stored and used.

- Freedom of Information Act - This legislation gives individuals the right to access certain information held by public authorities.

- Anti-Discrimination Laws - Laws like the equality act 2010 prohibit discrimination based on various factors.

- Contract Law - Ensuring that all agreements are legally binding and enforcable.

- Copyright and Law - Protecting the rights of creators of original works.

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Defamation - Making false and damaging statements about someone that can lead to legal action.

- Advertising - ~~&~~ Law like the advertising standard authority (ASA) regulate the content and accuracy of advertising.

→ ETHICAL ISSUES

- Transparency & Honesty - Misleading or Deceptive communication can damage trust and reputations. For example - A company exaggerating product features or omitting crucial information is unethical.

- Privacy - Collecting, storing and using personal data without consent or proper security measures is a significant ethical concern. A data ~~bre~~ breach exposing customer information is a clear example.

- Respect for Intellectual property - Copyright infringement, plagrism and unauthorised use of trademarks are unethical and can have legal repercussions.

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Q1 Explain the concept Business communication, its nature and importance in detail.

Business communication refers to exchange of information between people within a company and with external stakeholders. It encompasses a wide range of activities, from written reports and emails to presentations, meeting and social media interactions. The core objective is to share information clearly, concisely, and purposefully to achieve specific business goals.
Effective business communication means a two-way street. It involves not only transmitting information but also actively listening, understanding and responding to the recipient's needs.

Need of business communication:
1) Improved Decision-making
Clear communication ensures everyone has access to accurate and timely information, enabling well-informed decisions across all levels of the organisation.

2) Enhanced collaboration
Effective communication fosters teamwork and collaboration by facilitating

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the exchange of ideas, feedback and problem solving-strategies.

3) Stronger relationships:
Business communication helps build stronger relationships with clients, vendors, investors, and other stakeholders. By keeping them informed and engaged, businesses can build trust and loyalty.

4) Increased productivity
Clear communication eliminates confusion, leading to streamlined workflows and increased efficiency.

5) Improved customer satisfaction
effective communication with customer ensures they understand products and services, leading to higher satisfaction & loyalty.

Nature of Business communication

1) Two way process
Business communication is a two-way process that involves the exchange of information between two or more parties.

2) Formal and informal
Business communication can be formal or informal. Formal communication is

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used for socializing and building relationships.

3) Internal & External
Business communication can be internal and external. Internal communication takes place between the employees and the management, whereas external communication takes place between the organisation and its stakeholders.

4) Verbal and non-verbal
Business communication can be verbal or non-verbal. Verbal communication includes face to face conversations, telephonic conversations and video conferences whereas non-verbal includes emails, memos etc.

5) Written or oral
Business communication can be written or oral. Written communication includes emails, memos, reports, and other documents, whereas oral communication includes face-to-face conversations, telephonic conversations and video conferences.

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Importance of business communication

1) Building better teams
An effective communication is necessary for the business to build a positive and encouraging atmosphere for the employees. Those who practice good communication skills make working beside them easier and less stressful. This helps in building effective teams.

2) Meeting goals and earning success
For a business, short and long term goals must be clear and cocise, when employee are fully aware about ~~the~~ their company's goals, they give their best to achieve them. These goals can only be conveyed to employees through an effective communication.

3) Promoting creativity and innovation
People who are good communicators are usually open to sharing ideas without judgement. Effective communication helps in thinking to finding creative solutions to problems.

4) Improving customer service
Businesses need to know what their customers want and need from them. Effective communication with customer by answering questions and providing

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Discuss 7 C's of Business communication

The 7 C's of business communication are as follows:

1) Clarity: Ensure your message is clear, well-organised and easy to understand. Avoid jargon and complex sentence structures.

2) Conciseness: Get straight to the point. Strive for clear, concise and focused message that avoid unnecessary details or rambling.

3) Concreteness: Support your message with specific examples, data and facts. This adds credibility and strengthens your arguments.

4) Correctness: Use proper grammar, spelling, punctuation. This demonstrates professionalism and ensures your message is interpreted accurately.

5) Coherence: Organise your thoughts logically, ensuring a smooth flow of information in your communication.

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Explain the process of business communication.

Business communication follows a well-defined process, ensuring clarity and purpose in every interaction.

1) Planning :- The process of business communication involves ~~stage~~ determining the communication objective, target audience and desired outcome.

2) Message development: The process of business communication includes crafting a clear, concise and well-organised message tailored to the chosen medium and audience.

3) Channel selection: The need of business communication is choosing the most important communication channel for the specific message, considering factors like urgency, formality and audience preferences.

4) Encoding :- The need of business communication is to convert the message into a clear and understandable format, whether written, spoken or visual.

5) Transmission: Delivering the message through chosen channel

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Decoding: The need of business communication is when a recipient interprets and understands the message.

) Feedback: A crucial aspect of communication, feedback allows for clarification, ensuring the message was received and understood as intended.

By following these steps, businesses can ensure their communication is effective and achieves the desired results.

Teacher's Sign ....

Name - Navya Garg
Class - BBA - G(E)
IV
Enroll. No - 70221201723.

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BUSINESS ANALYTICS
ASSIGNMENT-1

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Q1)- Write a short note on the meaning and evolution of Business Analytics.

Ans)- Meaning -
Business Analytics (BA) involves the systematic exploration of business data using statistical methods, tools and techniques to derive insights and support decision-making. It helps organizations identify patterns, optimize processes, and make data-driven decisions. BA is often categorized into four types -

→ Descriptive Analytics - Focus on what happened
→ Diagnostic Analytics - Explains why it happened
→ Predictive Analytics - Forecast what might happen
→ Prescriptive Analytics - Recommends action to achieve desired outcomes.

~~elaborate~~

- Evolution -

1) Traditional Data Analysis (Before 1990s)

Businesses relied on manual data collection and basic statistical methods to analyze historical data for decision-making.

2) Introduction of Business Intelligence (1990s - 2000s)

Advancements in computing and databases led to the

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rise of Business Intelligence (BI), which focu on reporting, dashboards & querying.

3) Big Data and Advanced Analytics (2010s) -

With the growth of digital transformation and clou computing, companies started leaving big data, machine learning and artificial Intelligence (AI) for deeper insights.

4) Modern Business Analytics (2020s - Present)

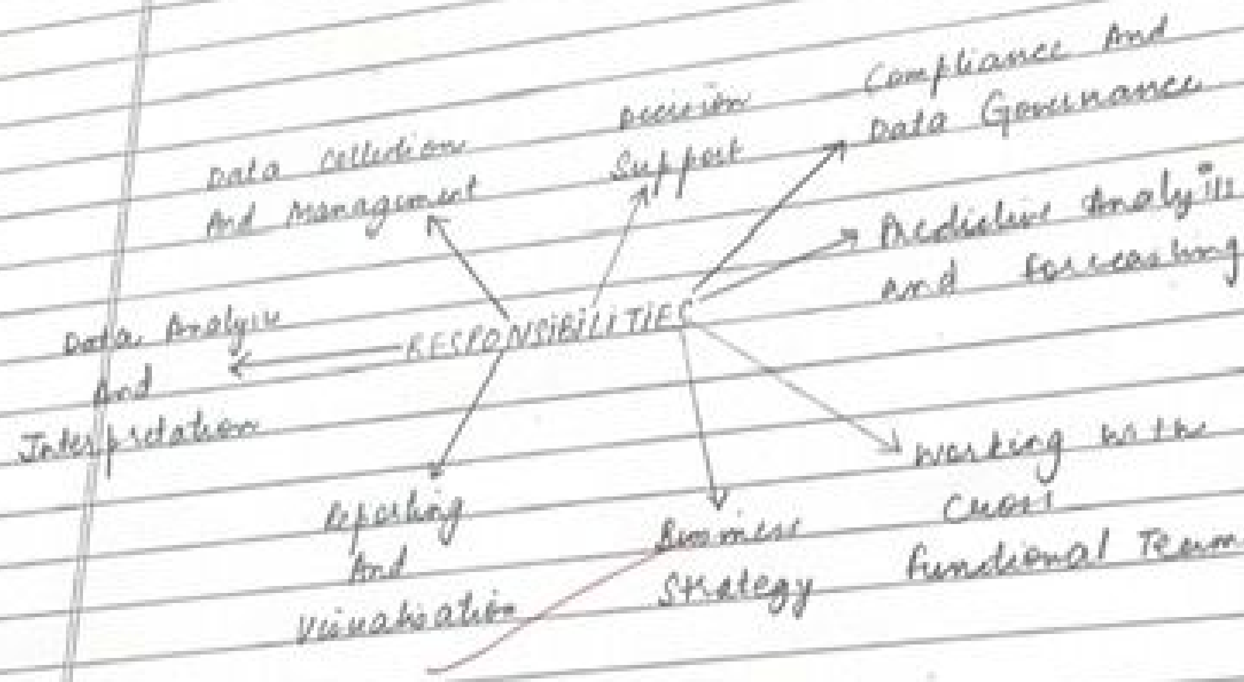
Businesses now use real time analytics, automation and AI powered decision-making to optimize operations, predict trends and personalize custome experience.

Business Analytics continues to evolve with advancemen in AI, blockchain and IOT, making data-driven decision making more precise and accessibl

Q2) - Discuss the roles and responsibilities of Business Data Analyst.

Ans) - A business Data Analyst plays a key role in analysing data to help organizations make informed decisions. They bridge the gap between business operations and data science, ensuring that data-driven insights align with business objectives.

ROLE - A business data analyst is responsible for gathering, processing and interpreting data to support business growth, efficiency and strategic decision-making. They work with different teams to improve business performance, optimise processes and drives profitability using data Insights



1) Data collection and Management.

- Gather data from multiple sources like databases customer feedback, financial reports and market research
- Maintain and manage data accuracy, consistency and security.

TOPIC Data Analysis & Interpretation

2) Data Analysis & Interpretation

- Use statistical tools and techniques to analyze data.
- Identify trends, correlations and patterns to provide insights for decision making.

3) Reporting And visualisation
- Prepare reports and dashboards to present findings to management and stakeholders.
- Use tools such as Excel, SQL, Tableau or Power BI to create data visualisations.

4) Business strategy and Decision Support.

- Support strategic planning by providing data-driven recommendations.
- Help in optimizing business processes, increasing efficiency and reducing costs.

5) Working with cross functional teams.

- Collaborate with IT, marketing, finance and operations teams to align data insights with business goals.
- communicate technical data insights in a simple and understandable manner to non-technical stakeholders.

6) Compliance & Data Governance.

- ensure compliance with data protection laws and industry regulations.
- Maintain ethical standards in data collection &

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reporting.

Q3)- How can business analytics be applied in various industries?

Ans)- Business Analytics is the process of using data, statistical tools and technology to analyze business performance and make informed decisions. It is widely used across industries to improve efficiency, reduce costs and enhance decision making.

1) Retail & E-commerce

- Customer Behavioural Analysis - Tracking purchasing patterns to offer personalized recommendations.

- Inventory Management - Predicting demand and optimising stock levels.
- Pricing optimization - Analyzing market trends to set competing prices.

2) Healthcare

- Predictive Diagnosis - Analyzing patient data to predict diseases early.
- Operational efficiency - Managing hospital resources, staff allocation and reducing wait times.
- Drug Development - Using analytics in clinical trials to speed up drug discovery.

3) Banking & Finance

- Risk management - Assessing credit risk & loan default using predictive modeling.
- Fraud Detection - Identifying suspicious transactions and preventing cyber fraud.
- Customer Segmentation - Analyzing customer data to offer tailored financial products.

4) Manufacturing

- Supply Chain Management - Predicting demand and managing raw materials efficiency.
- Quality control - Detecting defects in products using Analytics.
- Predictive maintenance - Analyzing machine data to prevent equipment failure.

5) Marketing & Advertising

- Customer Segmentation - Identifying target audiences for personalized campaigns.
- Campaign Performance Analysis - measuring ad effectiveness and ROI
- Social media Analytics - Tracking engagement & Sentiment analysis.

6) Education.

- Student Performance Analysis - Identifying learning

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patterns and areas of improvement.

- Curriculum Enhancement - Using data to design more effective teaching strategies.
- Dropout Prediction - Identifying at risk students to provide timely support.

Q4) - Differentiate - Data Scientist, Data Engineer & Business Data Analyst.

Ans) -

Basis	Data Scientist	Data Engineer	Business Data Analyst.
Primary focus	Advanced data modeling, machine learning & predictive analysis.	Building & maintaining data infrastructure and pipelines	Analyzing business data to provide insights for decision making.
) Key Responsibilities	• Develop machine learning models • Perform Statistical analyses.	• Design & manages data storage systems • Ensure data availability & reliability.	• Gathers & interprets business data • Creates report and dashboards
3) Skills Required	Python, SQL, R, Tableau, machine learning & AI	SQL, Python, Java, Spark, AWS, Azure	SQL, Excel, Power BI, Tableau Business Intelligence

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BASIS	Data Scientist	Data Engineer	Business Data Analyst
4) Output	Predictive models, AI driven insights and data driven recommendations	Scalable & efficient data pipelines, optimized databases	Business reports, dashboards & decision support insights.
5) Data Handling	works with structured and unstructured data to derive pattern	Manages raw data, ensuring it is clean & accessible	Uses structured data to analyze trends & KPIs
6) Industry Use Cases	Fraud Detection, customer recommendation engines	Data warehouse management, Real Time Data Processing	Sales forecasting, Customer segmentation.

Name : Deepak Patel
Enrollno : 08721202023
Sec : B

A+

BCA (E)

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Assignment - 1
Computer Networks

Q1 Describe distributed processing and its advantages.

Ans Distributed System are a class of Computing Systems where Components located on network Computers Communicate and Coordinate their actions by passing messages. These Systems aim to acheive a Common goal, often functioning as a Single Coherent System. Characteristics of Distributed Systems include:

- Multiple Components: Involves multiple autonomous Computers or nodes.
- Communication: Nodes Communicate through a network using protocols.
- Coordination: Components work together to perform task or provide services.
- Scalability: Designed to Scale out by adding more node.
- Fault Tolerance: Can tolerate failure of individual Components without affecting the overall System.

Advantages of Distributed Systems

- Scalability:
  - Horizontal Scaling: Easily add more nodes to handle increased load and accomodate growth.
  - Load Balancing: Distribute workloads across multiple Servers to improve performance and responsiveness.

- Fault Tolerance and Reliability:
  - Redundancy: Duplicate Critical Components

and Services to prevent Single points of failure.

- failover Mechanisms: Automatically Switch to backup Systems or nodes in Case of failure, ensuring Continuous Operation.

- Resource sharing: • Distributed Resources: Utilize diverse resource, Storage, processing across diffrent location.
  - Collaboration: Allow multiple user or Systems to work together and Share resources efficiently.

- Flexibility and Adaptability: • Modular Design: Facilites System upgradges and modification by adding our removing Components without affecting the entire System.
  - Easy Upgrades: Implement new features our improvements incrementally without Significant disruptions.

- Cost Efficiency: • Utilization of Commodity Hardware: Use off-the-Shelf hardware to reduce Coasts Compared to specialized Systems.
  - Dyanmic Resource Allocation: Optimize resource Usage based on demand, potentially lowering operational Cost.

Q2 Discuss Various design issues that occur in Computer networks.

Ans

(1) Addressing: Every device in a network require a unique identifier, typically an IP address. Efficient addressing Schemes are crucial for proper Communication, especially in large-scale network, and design choices here impact routing & Scalability.

(2) Routing: Routing involves Selecting paths for data to travel across the network. Challenges include finding optimal routes, balancing load, avoiding Congestion and ensuring minimal delay.

(3) Error Handling: Network are susceptible to errors due to hardware malfunctions, transmission noise, and Software bugs. Error detection and Correction mechanisms need to be designed Carefully to maintain data Integrity

(4) Flow Control: Flow Control ensures that the Sender does not overwhelm the receiver by Sending data too fast. This is especially important when devices with different processing Speeds are involved in Communication

(5) Congestion Control: when too many packets try to use the Same network resources, Congestion Occurs, leading to packet loss and reduced performance. Technique like buffering, packet scheduling, and dynamic bandwidth allocation are designed to manage Congestion

(6) Security : Network faces various security threat like eavesdropping data tampering, and denial - of - services attacks. Protocols for authentication, encryptions and access control must be designed to protect network resources.

(7) Scalability : As networks grow in size, design choice that worked for small networks might no longer be efficient. Scalability involves creating architectures that can handle growth without a significant drop in performance.

(8) Interoperability : Networks components from different vendors or system need to work together need to work together. Protocols and standards must be designed to ensure interoperability across diverse devices and software platforms.

Q3 Differentiate between physical address and logical address of a device with Example.

Ans

Basis	Physical Address	logical Address
Definition	The physical address also known as the MAC (media Access Control) address, is a unique hardware identifier assigned to a network interface Card (NIC) by the Manufacturer.	The logical address is an address assigned by software, specifically as IP address. It is used to identify a device on a network at a higher level, allowing for communication across different networks.

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Layers:	It Operates at the Data link (layer 2) of the OSI model.	It operates at the network layer (layer 3) of the OSI model.
Format:	It is typically a 48-bit address represent in hexadecimal format (E.g. 00:1A:2B:3C:4D:5E).	For IPv4, it is a 32-bit address usually represented in dotted decimal notation (Eg: 192.168.1.1). for IPv6, it is a 128-bit address represent in hexadecimal format (Eg: 2001:0db8:85a3:0000:0000:8a2e:0370:7334).
Scope:	The physical address is only relevant for Communication with the Same local network (LAN). Devices within the Same LAN use the MAC address to Communicate.	Logical addresses are not permanent; they Can Change depending on the network or assigned dynamically using protocol like DHCP (Dynamic Host Configuration Protocol)
Permanence:	It is usually fixed hard Coded into the network interface hardware. However it Can Sometimes be Changed (a process Called MAC Spoofing).	Logical addresses are ~~used~~ not permanent they Can change depending on the network or assigned dynamically on the network Protocol like DHCP.
Examples:	A MAC address Such as 00:1A:2B:3C:4D:5E.	An IP address Such as 192.168.1.10 (IPv4) or 2001:db8::ff00:42:8329 (IPv6).

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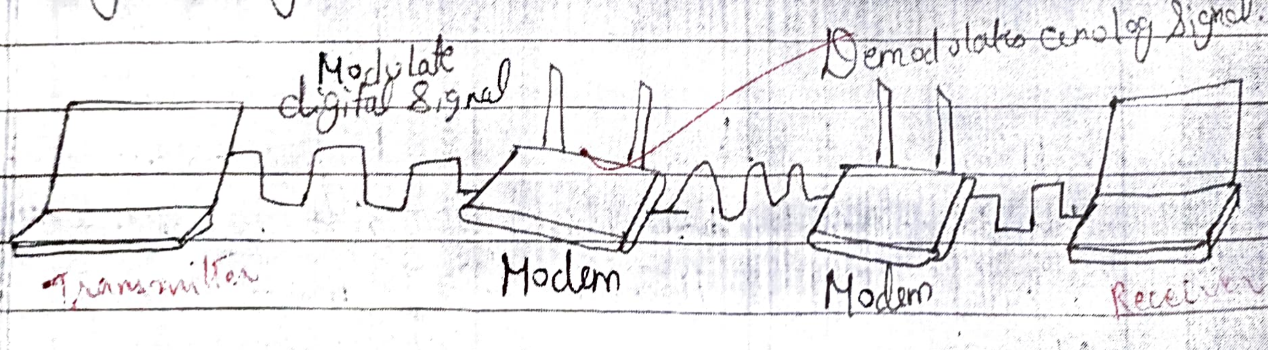
Q4 Write a short not on Modem.

Ans Modem stands for Modulator / Demodulator. The modem is defined as networking device that is used to connect devices connected in the network to the internet. The main function of a modem is to convert the analog signals that come from telephone wire into a digital form. In digital form, these converted signals are stored in the form of 0s and 1s. The modem can perform both the task of modulation and demodulation simultaneously. Modem are majorly used to transfer digital data in personal system. The modem is also known as a signal translator as it translates one signal into another signal by modulating the digital signal into an analog signal for transmission and then demodulates receiving analog signals into digital signals.



Q5 Describe different techinical Specifications and Connectors of UTP, Coaxial cable and fiber optic Cable.

Ans.

(1) UTP (Unshielded Twisted Pair Cable):

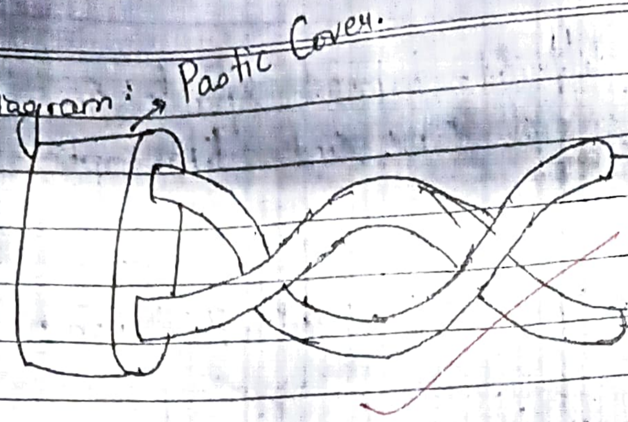
→ Technical Specifications:

- UTP Cables Consist of pair of twisted wires, with no additional Shielding, making them Susceptible to interference but Cost-effective and flexible.
- Categories like Cat 5e, Cat 6, and Cat 6a indicate performance and maximum data transfer rates.
- Cat 5e Supports speeds up to 1 Gbps, Cat 6 up to 10 Gbps over Shorter distances, and Cat 6a Supports 10 Gbps over longer distance.
- Maximum distance for reliable transmission is generally 100 meters.
- Frequency range varies: Cat 5e Supports up to 100 MHz, Cat 6 up to 250 MHz and Cat 6a up to 500 MHz.

→ Connectors:

- RJ-45 Connectors are standard for Ethernet Connections.
- Each Connector has 8 pins Corresponding to the 8 wires in the Cable (4 twisted pairs).

→ Diagram :



(2) Coaxial Cable :

→ Technical Specifications :

- Consists of a Central Conductor, Surrounded by insulating Layer, a metal Sheild and an Outer insulating layer.
- Designed to Carry high-frequency electrical Signal with less interference than UTP Cables due to its Shielding.
- Two Common types : RG-6 and RG-59. RG-6 is used for high-frequency applications like Cable TV and broadband internet, while RG-59 is used for low-frequency Signals such as video Surveillance.
- Data transfer Speeds vary, but typical broadband Coaxial Cable internet Can provide Speed up to 1 Gbps.
- Impedance : 75 ohms is Standard for most Coaxial Cables used in home applications.

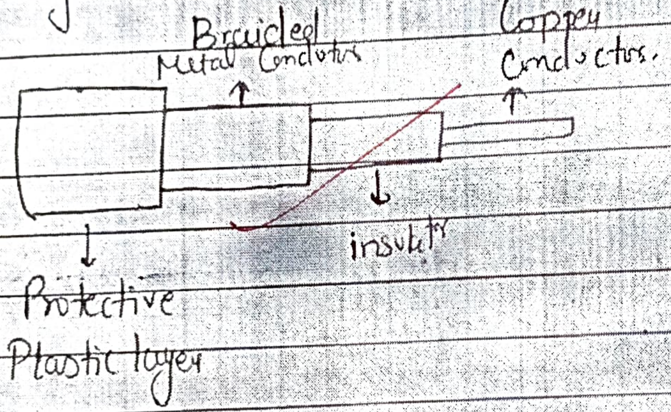
↳ Connectors:

- f-type Connectors are most Common in Cable TV and internet Setups.

- BNC Connectors are used in professional video, radio, and CCTV Systems

- N-type Connectors are used in higher-frequency applications.

⟶ Diagrams:



(3) fiber Optic Cable:

⟶ Technical Specifications:

- Transmits data as light Signals, providing higher bandwidth and longer-distance transmission than UTP or Coaxial Cables.

- Two main types: Signal-mode fible (SMF) and multimode fibre (MMF)

- SMF: Used for long distance Communication (up to 100 km), Core diameter is typically 8-10 microns.

- MMF: Used for shorter distance (up to 2 km) Core diameter is typically 50-62.5 microns.

- Supports extremely high data transfer rates, often in the ranges of 10 Gbps, 40 Gbps, or even 100 Gbps.

- Immune to electromagnetic interference (EMI), making it ideal for high-performance and Sensitive environments.

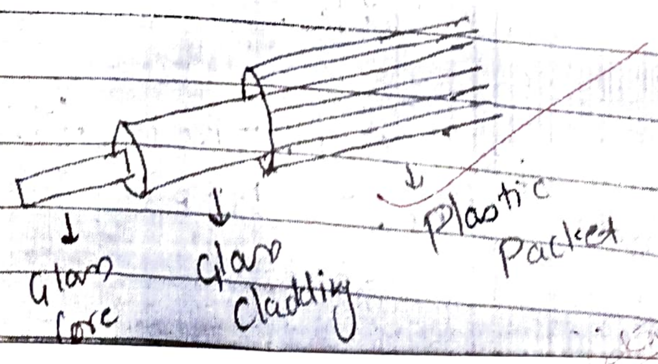
→ Connectors:

- SC (Subscriber Connector): Square-shaped, Common in data Centers and telecom.

- LC (Lucent Connector): Smaller version of SC, widely used for high-density Connections.

- ST (Straight Tip): Common in early networking but less used today.

→ Diagram:



Topic...Date....................................

Name ~> Aditya Kumar

C.N. ~> 06621202022

Subject ~> DWDM

Assignment ~> Unit 1

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Teacher's Sign ....

Name - Aditya kumar , en= 06621202022

DWDM Assignment Unit-1

Topic..Date.................................

Q1 Explain the 3-tier structure of a data warehouse and how a data warehouse helps in better Analysis of a business?

A.1 3-tier structure of a Data warehouse:-

1, Bottom Tier - Data Extraction and storage. (Data source layer)

- This layer consist of databases, transactional systems, or external sources from which data is extracted.
- Data is collected from various source like operational Database, CRM, ERP, spreadsheets, and external systems.
- Before storing, ETL processes are used to clean, integrate and format Data.

2, Middle ~~laye~~ Tier - (Data Warehouse layer) - Storage & processing:-

- This is the core of the data warehouse, where structured and processed Data is stored.
- It consists of a central repository that support multi dimentional Data storage.
- Uses Data marts for departmental or domain - specific Data storage.
- Ensure Data indexing and aggregation for Analysis.

3, Top tier (Presentation layer) - Data Analysis:-

- The layer provides querying, reporting and visualization tools for end-users.
- Uses BI tools, dashboards, and Analytics Applications to generate insights.
- Enable users to performs ad-hoc queries, generate reports, and apply ML or AI Models

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→ How a Data warehouse Helps in Business Analysis :-

1, centralized Data Storage:- consolidate data from multiple sources, eliminating redundancy and ensuring consistency.

2, Historical Data Analysis:- Stores past records, enabling businesses to identify trends and patterns over time.

3, Faster query Performance:- optimized for Analytical queries, reducing response time for complex queries.

4, Better Decision making:- Provides real-time insights and helps businesses make Data-driven decisions.

5, Improved Data quality:- cleansing and transformation ensure Accuracy, completeness, and reliability of data.

Q2 What is the difference between STAR and SNOWFLAKE schema?

A-2

STAR Schema	SNOWFLAKE Schema.
i, Simple and denormalized structure	Complex and normalized structure
ii, Central fact table with directly connected dimension tables.	Central fact table with Normalized dimension tables.
iii, Denormalized, each dimension table is directly connected to the fact table	Normalized, dimensions are split into multiple related tables.

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(iv)	Faster queries due to fewer joins.	Slower queries due to multiple joins.
(v)	Requires more storage (due to Data Redundancy)	Requires less storage (due to Normalization)
(vi)	Easier to maintain and query	Complex to maintain due to Multiple joins.

Q3 Discuss any five Applications of Data warehouse?

A-3 1, Retails & E-commerce :-
In retail and e-commerce, companies like Amazon and walmart utilize data warehouses to track customer preferences, seasonal trends, and stock levels. By Analyzing historical sales data, they can make informed decisions about pricing strategies, discounts, and promotional offers.

2, Banking & finance :-
Banks and financial institutions leverage data warehouses to monitors real-time transactions, detect fraudulent Activities, and Manage risks. Customer data is Analyzed to offer tailored loan options, credit scores, and investment opportunities, enhancing customer satisfaction and revenue Generation.

3, Healthcare & Medical Research :-
In this industry, data warehouses help hospitals and Research institutions store patient records, track disease trends, and improve treatment plans.

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4, Telecommunications :-

Telecom companies like ~~AT&T~~ AT&T and Vodafone use data warehouses to Analyze network performance, identify high-traffic areas, and optimize service coverage.

5, Government and Public Sector :-

These sector organizations rely on data warehouse for policy-making, urban planning, and crime prevention.

Q4 What is the difference between database systems, data warehouse and data marts.

Diagrams ?

A-4

	Database System	Data warehouse	Data mart
i,	A system for storing and managing transactional data.	A centralized system for integrating and Analyzing data from multiple sources.	A subset of a data warehouse, designed for a specific department or function.
ii,	Supports daily transaction (OLTP)	Support business intelligence and Analytics	Provides department specific Analytics and reporting.
iii,	Current, real time data that changes frequently.	Historical and Aggregate data used for reporting and decision Making.	Filtered and summarized data relevant to a specific department.
iv)	Normalized to avoid redundacy - structure	Denormalized for faster querying and perform-ance - Structure.	Denormalized, optimized for a specific business need.

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Q5 What is ETL? Explain the advantages and limitations of ETL in Data warehousing.

A-5 ETL (Extract, Transform, Load) is a process used in data warehousing to collect data from multiple sources, process it for consistency, and load it into a data warehouse for analysis.

★ ETL Process Steps.

-> Extract :- Collect raw data from sources like databases, API or files.

-> Transform :- Cleans, formats, and processes data for consistency and quality.

-> Load :- Stores the transformed data into a datawarehouse for reporting and Analytics.

Advantages of ETL :-

i, Data integration from multiple sources :- ETL allows businesses to consolidate data from different sources.

ii, Improved Data Quality and Accuracy :- ETL processes include data cleaning, removing duplicates, and handling missing values.

(iii) Fast query :- Transformed and structured data is stored in a denormalized format, improving query speed.

(iv) Automation & Scheduling :- ETL tools like informatica, Talent, SSIS allow for scheduled data extraction, reducing manual efforts.

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v) Supports BI Tools and Analytics :- ETL provides well-structured data for BI Tools, Tableau, Qlikview. It helps in decision making.

-> Limitations of ETL

i) High initial setup cost & complexity :- ETL tools & infrastructure require significant investment. and skilled professionals required

ii) Time consuming process :- Large datasets take longer to process during extraction and transformation.

iii) Difficult to Handle Real-Time Data :- Traditional ETL is batch-oriented and may not support real-time data processing.

(iv) Scalability issues with Big Data :- ETL struggles with huge datasets due to performance bottleneck.

v) Data risk During Transformation :- Poorly designed ETL processes may omit important data.

NIKITA
BBA (G) Shift 2 III - B
20421201723

TOPIC HRM DATE

Assignment - 2

1) Why is HR planning important in an organisation? How job discription and job specification helps in planning man power effectively?

Ans:) Human Resource planning is the continuous process of systematic planning to achieve optimum use of an organization's most valuable asset - quality employee.

HR planning is a crucial process for businesses as it helps align the company's workforce with the strategic goals and objectives.

- Strategic decision Making - HR planning provides valuable insights into the workforce and can Inform strategic decision making. For example, understanding the current workforce and anticipating their future needs helps businesses make Informed decision about organizational structure.

- Proactive Management - HR planning allows companies to anticipate staffing needs, skill gaps, and workforce challenges. This helps in preparing for future changes such as expansion, technological advancements.

- Cost Management - Effective HR planning reduces costs by ensuring that recruitment, training, compensation align with actual business needs. It prevents overstaffing, understaffing, and unnecessary expenditures.

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- Adaption to change - In a dynamic business environment, HR planning enables organisations to responds efficiently to changes like market trends, economic fluctuations and technological innovations.

- Succession Planning By identifying critical roles and the competencies required for them, HR planning can help organizations also, develop potential successors. two in on and

Job description is a detailed information about the vacant position that states the job title, job location, duties, job role etc. The main job of job description is to collected 'job-related' data in order to advertise for a particular job.

Job specification is a document that outlines the specific duties and requirements of a particular job. It can be used to help identify candidates who are a good fit for the job, and to help the recruitment process.

Job description and specification both help in manpower planning in Human Resource management.
By detailing the specific tasks and duties associated with each role, HR can accurately assess how many employees are required to meet organizational needs.

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This helps in avoiding both overstaffing and understaffing.
On the other hand, job specification helps assists in identifying the current and future skills and expertise required within the organisation. HR can use this information to anticipate skill shortages or surpluses and adjust hiring plans or employee development.

ues 2) Indicate the steps in recruitment of the employee. What different precautions HR manager has to take at the time of management.

ns) Recruitment can be defined as the process of identifying, selecting and hiring the most suitable candidates available for available roles within an organization, either externally or internally in a timely manner. Recruitment is an initial stage in an organization's capacity to expand its resources, as qualified personnel are indispensable for meeting organizational objectives and achieving profitability.

There are basic steps that are followed by most organisations

Step 1) Preparing – once the job opening is approved internally, the recruiter contacts the hiring manager. This step is about gathering details about the open position.

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Step 2 Next step after job description is Sourcing. It refers to identifying and contacting qualified candidates rather than waiting for the candidate to apply for the position. The primary goal is to find qualified candidates. A recruiter uses a variety of job portals to find the resumes.

Step 3 Screening → Screening of a candidate can take place in many ways. If the resume meets the criteria required for the job opening, next step in this is phone screening.

Step 4 Selecting - This process is about the sending assignments, psychometric tests and scheduling interviews, participating in the interviewing process, and also keeping the hiring manager in the loop for the whole process.

Step 5.) Hiring - This step includes the final discussion with the candidate about salary, joining date etc. Once the joining date is confirmed, the offer letter is released.

- Here are some precautions that HR manager should take

1) Legal compliance - Ensuring the adherence of labor laws, including non-discrimination and equal opportunity regulations.

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) Non - discrimanition - Bias should be avoide on race, gender, age or other characteristics focus should rather be on skills & qu

) Clear job description - Accurate job description that outline expectations and qualifications be provided.

4) Standardized selection process - Use convenient evaluation criteria to assess all candidates fo Avoid subjective methods by implementing structured Interviews, skill assessments and cl rating system.

5) Background checks - Conduct thorough and conf background checks, only with the candidate's consent.

6) Confidentiality - Protection of candidate's privacy securing personal information and limiting acce authorised personnel only.

ues3) Elaborate the need for effective training in an organisation. Also explain on the job training methods.

Ans) " Training is the act of increasing the knowledge and skills of an employee for doing a particular job " — Edwin B. Flippo.

Training is an organised activity for increasing the

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technical skills of the employees to enable to do particular jobs efficiently. Training equally important for the existing as well new employees, It enables the new employees to get acquainted with the jobs and also increase the job related knowledge and skills.

Effective training in HRM is crucial for organizational success, employee development as well.

- <u>Skill development</u> - Training provides employees with necessary skills and knowledge to perform their jobs effectively.
- <u>Employee Engagement</u> - Increases job satisfaction and motivation by demonstrating the organisation' commitment to employee growth.
- <u>Retention</u> - Reduces turnover rates by investing in employee's professional development, fostering loyalty and reducing recruitment costs.
- Moreover, effective training ensures compliance with legal and regulatory requirements, minimizing legal risks for the organisation. It prepares the workforce to adapt to technological advancements and industry changes too.

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Methods of Training

Various methods used for training employees are classified into 2 categories

1.) On the Job Training → refers to method of teaching employees skill & knowledge that typically take place in actual work.

a) Coaching - In this, supervisor instructs & guides the trainee. This method improves relationship b/w worker & supervisor. This method can be effective only when supervisor is competent.

b) Understudy - Under this, trainee is imparted training by a senior and experienced employee. The trainee is designated as a successor to trainee & learn by observation and imitation

c.) Assistant To - In this, trainee is placed as an assistant to a senior executive of the firm. Initially, the senior executive entrusts him with the routine work and guides him to perform a job.

d.) Job Rotation - In this method, trainee is periodically rotated from job to job. The purpose is to broaden his outlook and give a general background of different jobs. The trainee learns a variety of tasks & develops a better view of the organisation

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Off The job Training

1) Intenship training - This a joint programme training in which busines should collaborate technical institutions. Intenship Training involve balance between theory & practice. The traine given theoritical instructions in technical insti This method is used in medical, accountan and legal professions.

2.) Vestibule Training - It is the most common off the job training method, vestibule means a room betwe the outer door and interior of a building, Worker are trained in a classroom or hall. A large no of workers are trained under guidance of expert. Trainees get accustomed to the work routine and can overcome initial nervousness before working on actual job.

c) Apprenticeship Training - This method is used in technical trade & crafts in which a long period is required to become proficient. The worker is attached to an experienced senior employee. The purpose is to prepare employees for skilled occupations like plumbing, electrician, carpentry etc. It combines classroom instruction and on the job training. The trainee learns the intricacies of the job under the direct supervision of his master.

d) Classroom Training - Under this method, training is provided in company classrooms or in educational institutions.

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lectures, case studies, group discussions, audio visual aids are used to explain knowledge and skills to the trainees. Classrooms training is suitable for teaching concepts & problem solving skills. It is also useful for orientation and safety training programmes. Some companies maintain their own training institutes or schools. Special courses are designed eg - management course for foremen, computer course for typists etc.

Conclusion

NAME → AKHIL AGARWAL
CLASS → IV-C (BBA-G)
12021201723

A+

FINANCIAL MANAGEMENT.

Assignment - 1

Q-1 Write short note on :-

(i) Financial management ? Define its scope.

(ii) Role of financial manager.

(iii) Time Value of money - significance.

(iv) Annuity and perpetuity.

Ans-1 (i) Financial management refers to the strategic planning, organising, directing and controlling of financial activities within an organization. It involves making decisions about procurement, allocation and utilization of financial resources to achieve business objectives efficiently.

Proper financial management ensures optimal fund utilization, balancing risk and profitability while maintaining liquidity for smooth operations. It also plays a key role in strategic planning, organising, budgeting and financial forecasting helping businesses sustain growth and stability by managing financial risk and ensuring proper capital allocation, financial management enhances efficiency, maximizes shareholders value and supports long term business success.

* Scopes

(1) Investment decision (capital budgeting) - Evaluating long term investment opportunities, analyzing risks and returns, and allocating funds to fixed and working capital.

(2) Financing decisions
Determining the right mix of debt and equity, selecting suitable sources of financing and managing capital structure to minimize cost & maximize profitability.

(3) Dividend decisions.
Deciding the distribution of profits between dividends to shareholders and retained earnings for future growth.

(4) Working capital management.
Managing short term assets and liabilities, ensuring liquidity and optimizing cash flow, inventory and receivable / payables.

(5) Risk Management.
Identifying and mitigating financial risks such as market, credit and liquidity risks through strategies like hedging and diversification.

(6) Financial planning and strategy
Setting financial goals, budgeting, forecasting, sales and analyzing financial policies with business objectives.

(ii) Role of a financial managers

A financial managers plays a crucial role in an organization by overseeing financial planning, controlling resources and making strategic decisions to ensure financial stability & growth.

(1) Financial planning & strategy - Developing financial strategies

, setting budgets and forecasting future financial performances.

(2) Investment decisions - Assessing investment opportunities, allocating funds efficiently and managing risk to ensure maximum returns.

(3) Financing decisions :- Determining the optimal mix of debt and equity securing funding and managing the company's capital structure.

(4) Risk management :- Identifying financial risk, implementing strategies to mitigate them and ensuring financial stability ~~as~~ and securing through insurance and ~~by~~ hedging.

(5) Working capital management - managing cashflow, inventory, receivable and payable to ensure liquidity for smooth operations.

(iii) Time Value of money - significance.

The Time Value of Money (TVM) is a fundamental concept in finance that states that money available today is worth more than same amount in the future due to its potential earning capacity.

(1) Investment decisions - TVM helps investors compare different option by considering the future value of their money ensuring better financial planning.

(2) Capital budgeting - Businesses uses TVM to evaluate profitability of long term projects, helping in capital allocation.

(3) Loan and debt management - TVM is used to determine loan payments, interest rates and repayment schedules ensuring efficient debt management.

(4) Retirement and savings planning - Individuals uses TVM to calculate how much they need to save today to meet future financial goals.

(5) Inflation adjustment - TVM accounts for inflation ensuring that financial decisions reflect the real purchasing power of money over time.

(ii) Annuity and Perpetuity

- An annuity is a series of equal payments made at regular intervals over a specified period. It is commonly used in investments, retirement plans and insurance payouts.

Annuities can be classified into -

① Ordinary annuity - Payments are made at the end of each period (e.g. bond, interest payments).

② Annuity due - Payments are made at the beginning of each period (e.g. rent payments).

The value of an annuity is calc... formula ...

to assess the worth of these payments over time.

- A perpetuity is a type of annuity where payment continue indefinitely since the payments never stop. The present value of perpetuity is calculated using the formula.

$$PV = \frac{C}{r}$$

Where

C = fixed periodic payment.

r = discount rate.

Perpetuities are commonly seen in financial instruments, preferred stocks, where dividends are paid indefinitely.

Q-2 Wealth maximization is a better criteria than profit maximization " do you agree ? Explain.

Ans-2 Financial management aims to ensure the success and sustainability of a business. Two primary objectives often debated are profit maximization and wealth maximization. While profit maximization focuses on increasing short term earning, wealth maximization focuses on financial health and shareholders value.

Wealth maximization is better than profit maximization :-

(1) Long term perspective :- Profit maximization emphasizes short term gains often leading to decisions that may not be sustainable in the

2) Risk and uncertainty consideration:
Profit maximization ignores risk and uncertainties often leading to reckless decisions

(3) Shareholders value enhancement:-
Profit maximisation benefits only the businesses in the short term

(4) Focus on cash flows rather than profits
- Profit maximization considers only accounting profits which can be manipulated
- Wealth maximization focuses on cash flows, ensuring that real earnings and financial health are considered in decision making.

(5) Ethical and social responsibility
A profit driven approach may lead to unethical practices like cost cutting at the expense of employee welfare or environmental harm.

(6) Balanced decision making
Profit maximization may lead to cost cutting in crucial areas like research and development leading to stagnation.

(7)
- Better market reputation
- Companies focusing only on profits may [illegible] customers trust due to [illegible]
Firms that prioritise [illegible] reputation

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Q-3. Solve the following problems:-

a). A deposit ₹5000 at end of each year for 4 years @ 6% interest. How much the deposit will grow at the end of 4 years?

Ans-3 Formula for future value of annuity (FVA)

$$FV = P \times \frac{(1+r)^n - 1}{r}$$

Where $P = ₹5000$, $r = 6\%$, $n = 4$

$$FV = 5000 \times \frac{(1.06)^4 - 1}{0.06}$$

$$= 5000 \times \frac{0.2627}{0.06}$$

$$= 5000 \times 4.3733$$

$$FV = ₹21866.5$$

So at the end of 4 years the interest will grow to ₹21866.5

Q-3.b) Find the present value of ₹1000 receivable after 6 years @ 10%.

Ans-3b) The present value (PV) of a future amount can be calculated using the formula:

$$PV = \frac{FV}{(1+r)^n}$$

$FV = 1000$ ₹, $r = 10\%$ or 0.10, $n = 6$ years

$$PV = \frac{1000}{(1+10)^6}$$

₹564.47

[illegible] receivable after 6 years @ 10%.

Vedaant Anand (JAN - July 2025)

Topic: BBA (G), II - B. 06221201724. Date

A1

DTB Assignment -1

Ques.1 When the variance equals to the Standard Deviation, under what circumstance can variance be less ? Explain.

Ans Variance can only be equal to the S.D when it is 1, because the S.D is the square root of the variance. It means if variance will be 1, square root will also be 1.

Variance can only be less than S.D if it is in a decimal value less than 1.

Standard Deviation = $\sqrt{\text{variance}}$

$(\text{Standard Deviation})^2$ = Variance.

Ques.2 Calculate the values of Q_1, Q_3, D_7 & P65 from the data :

X	10	5	7	11	8
F	15	20	15	18	12

Ans

X	F	C.F
5	20	20
7	15	35
8	12	47
10	15	62
11	18	80
		N=80

$\Rightarrow Q_1 = \frac{N}{4} = \frac{80}{4} \Rightarrow Q_1 = 20$

$\Rightarrow \cancel{Q_1} = L + \left(\frac{N/4 - CF}{F}\right) \times h$

$\Rightarrow 5 + \left(\frac{20-0}{20}\right) \times h = 5 + 1$

$\Rightarrow Q_1 = 6$

$Q_3 = \frac{3N}{4} = \frac{3(80)}{4} \Rightarrow Q_3 = 60.$

$\Rightarrow L + \left(\frac{3N/4 - CF}{F}\right) \times h = 10 + \left(\frac{60-47}{15}\right) \times 1$

$\Rightarrow 10 + 0.87 = 10.87$

$\Rightarrow D_7 = \frac{7N}{10} = \frac{7(80)}{10} \Rightarrow D_7 = 56.$

$\Rightarrow L + \left(\frac{7N/10 - CF}{F}\right) \times h = 10 + \left(\frac{56-47}{15}\right) \times 1$

$\Rightarrow D_7 = 10 + 0.6 = 10.6$

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Ques. 9 When is mode preferred over other form of averages?

Ans Mode is preferred over other averages when dealing with categorical data (nominal scale) as it is the only measure of central tendency that can be used for such data types, where values cannot be ordered numerically.

Ques. 10 "Statistics is a bundle of lies". Comment.

Ans "Stats is a bundle of lies", means that statistical data can be easily manipulated or misrepresented to support a particular agenda often by selectively choosing data using misleading graphs, or omitting crucial context, essentially allowing people to "lie" with stats to fit their desired narrative.

Ques. 11 Find the class interval if the A.M of the following is 33 & assumed mean (A) is 35.

(u)	Step-deviation	-3	-2	-1	0	1	2
(f)	Frequency	5	10	25	30	20	10

Ans $\Sigma fu = (-3\times5)+(-2\times10)+(-25)+0+20+20$

$\Rightarrow \Sigma fu = -20$

$\Sigma f = 5+10+25+30+20+10$

$\Rightarrow \Sigma f = 100$

$\bar{x} = A + \frac{\Sigma fu}{\Sigma f} \times h$

$\Rightarrow 33 = 35 - \frac{20}{100} \times h$

$\Rightarrow -2 = -0.2h$

$\Rightarrow h = \frac{2\times10}{2}$

$\boxed{h=10}$

So, Class interval (h) = 10.

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Ques. 12 Find the median wage :

4 % earn below ₹60 → 40 people.

15 % earn below ₹ 62.5 → 150 people

15 % earn below ₹100 & over ₹95 → 150 people

5 % earn ₹ 100 & above → 50 people

Range	% of earner	cumulative %	c.f
below 60	4 %	4 %	40
below 62.5	15 %	15 %	150
Median		Median class	
Above 95	15 %	85 %	850
Above 100	5 %	95 %	950

Median class $\Rightarrow \frac{1000}{2} = 500^{th}$ person

$$\text{Median} = L + \left(\frac{N/2 - cf}{f}\right) \times h$$

$$\Rightarrow 62.5 + \left(\frac{500-150}{700}\right) \times 32.5 = 62.5 + 16.25$$

Median wage = ₹ 78.75.

Ques. 13 Find the combined mean & S.D.

Ans Combined mean = $\bar{X} = \frac{\bar{X}_1 . n_1 + \bar{X}_2 . n_2}{n_1 + n_2}$

$$\Rightarrow \frac{(54.4 \times 50) + (50.3 \times 100)}{100 + 50} = \frac{2720 + 5030}{150}$$

$$\Rightarrow \bar{X} = \frac{7750}{150} = 51.67$$

Combined standard deviation =

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Ques. 14 Find the median wage graphically from the following table :

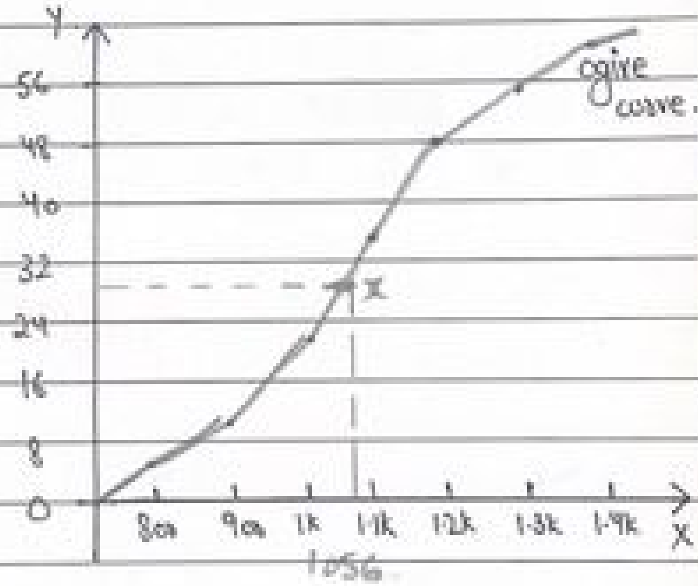
Wages	No. of workers	wages	no. of workers
700-800	4	1100-1200	12
800-900	6	1200-1300	7
900-1000	10	1300-1400	3
1000-1100	16		

Wages	No. of workers	cf
700-800	4	4
800-900	6	10
900-1000	10	20
1000-1100	16	36
1100-1200	12	48
1200-1300	7	55
1300-1400	3	58
	$\Sigma = 58$	

Median $= \frac{N}{2}$ th.

$\Rightarrow \frac{58}{2} = 29^{th}$

Median class = 1000-1100.



$$\text{Median} = l + \left(\frac{N/2 - cf}{f}\right) \times h.$$

$$\Rightarrow 1000 + \left(\frac{29-20}{16}\right) \times 100 = 1000 + 56.25$$

$$\Rightarrow \text{Median} = 1056.25$$

Q.15 Prove that S.D is independent of any change of origin but is dependent on the change of scale.

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15 Let x be a variable with mean $\bar{X}$ & S.D σ.
Consider, $Y = ax + b$ [a & b are both constant]

1. The effect of origin, The mean of Y is
$\Rightarrow \bar{Y} = a\bar{x} + b$

$\Rightarrow$ The variance is
$$\sigma^2 Y = \frac{1}{N} \Sigma (ax + b - \bar{Y})^2 = a^2 \sigma^2 x$$

$\Rightarrow$ The standard deviation is
$$\sigma Y = \sqrt{a^2 \sigma^2 x} = |a| \sigma x$$

* Since b does not appear in the S.D formula, the S.D is independent of any change in origin.

2. The effect of change in Scale,
$\Rightarrow$ S.D $= |a| \sigma x$, meaning it is affected by a change in scale.

ex-16 Find the A.M & S.D of both cities. Also, find which of the two cities show greater variability.

Exp.	City A	City B	Mid-point
3-6	28	39	4.5
6-9	292	284	7.5
9-12	389	401	10.5
12-15	212	202	13.5
15-18	59	48	16.5
18-21	18	21	19.5
21-24	2	5	22.5

Total families, $N_A = N_B = 1000$

$$\bar{X}_A = \frac{\Sigma f_i X_i}{\Sigma f_i} \Rightarrow \frac{10632.5}{1000} = 10.63$$

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Q.18 Find the missing frequency :

Class	10-20	20-30	30-40	40-50	50-60	60-70	70-80
Frequency	185	?	34	180	136	?	50

Median = 42.6 (Given)

Median = $l + \left(\frac{N/2 - cf}{f}\right) \times h$.

$N/2 = \frac{685}{2} = 342.5$

$219 + f_1 = 342.5$

$f_1 = 124$ (approx)

So, $585 + f_1 + f_2 = 685$.

$f_2 = -24$.

Q.19 Find the standard deviation of first 10 natural numbers.

No : 1, 2, 3, 4, 5, 6, 7, 8, 9 & 10.

$\Rightarrow \bar{x} = \frac{\Sigma x_i}{\Sigma N}$ $\Rightarrow \frac{55}{10} = 5.5$

x_i	$x_i - \bar{x}$	$(x_i - \bar{x})^2$
1	-4.5	20.25
2	-3.5	12.25
3	-2.5	6.25
4	-1.5	2.25
5	-0.5	0.25
6	0.5	0.25
7	1.5	2.25
8	2.5	6.25
9	3.5	12.25
10	4.5	20.25

$\Sigma (x_i - \bar{x})^2 = 82.5$

$\sigma = \sqrt{\frac{\Sigma (x_i - \bar{x})^2}{N}}$

$\Rightarrow \sqrt{\frac{82.5}{10}} = \sqrt{8.25}$

$\boxed{\sigma = 2.87}$

i) Find combined Standard Deviation.

ii) Whose height are more variable.

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	Boys	Girls
Number	400	100
Average	68 in	65 in
Variance	9	4.

20 * Combined mean : $\bar{X} = \dfrac{N_1 \bar{X}_1 + N_2 \bar{X}_2}{N_1 + N_2}$

$\Rightarrow \dfrac{(400 \times 68) + (100 \times 65)}{400 + 100} = \dfrac{33700}{500}$

$\bar{X} = 67.4$ inches.

* Combined variance :

$\sigma^2 = \dfrac{N_1\left[\sigma_1^2 + (\bar{x}_1 - \bar{x})^2\right] + N_2\left[\sigma_2^2 + (\bar{x}_2 - \bar{x})^2\right]}{N_1 + N_2}$

Computing,

$(\bar{x}_1 - \bar{x})^2 = (0.6)^2 = 0.36$

$(\bar{x}_2 - \bar{x})^2 = (-2.4)^2 = 5.76$

$\Rightarrow \sigma^2 = \dfrac{400\,(9 + 0.36) + 100\,(4 + 5.76)}{500}$

$\Rightarrow \dfrac{3744 + 976}{500} = \dfrac{4720}{500} = 9.44$

* Combined S.D : $\sigma = \sqrt{9.44} = 3.07$

* CV boys : $\left(\dfrac{3}{68}\right) \times 100 = 4.41\,\%$.

* CV girls : $\left(\dfrac{2}{65}\right) \times 100 = 3.08\,\%$.

So, boys height are more variable.

21 Show the following is equal to $(2n+1)/3$.

21 $\bar{x}_w = \dfrac{\Sigma W_i X_i}{\Sigma w_i}$ Here, $X_i = (1, 2, 3 \ldots n)$

& $(W_i = X_i)$

Topic: Date:

Find the missing values of the following :

Group	Number	Mean	S.D
A	50	113	6
B	n_B	$\bar{x}_B$	σ_B
C	90	115	7
Combined	200	116	7.746

$$\bar{x} = \frac{n_A\bar{x}_A + n_B\bar{x}_B + n_C\bar{x}_C}{n_A + n_B + n_C}$$

$$\Rightarrow 116 = \frac{(50 \times 113) + (N_B\,\bar{x}_B) + (90 \times 115)}{200}$$

$\Rightarrow 23200 = 5650 + N_B\bar{x}_B + 10350$

$\Rightarrow N_B \cdot \bar{x}_B = 7200$

$\Rightarrow \bar{x}_B = 7200 / 60$

$\Rightarrow \bar{x}_B = 120$

Sum of No. $= 50 + N_B + 90$

$\Rightarrow N_B = 200 - 140$

$N_B = 60.$

$$\Rightarrow \sigma^2 = \frac{N_A\left(\sigma^2_A + (\bar{x}_A - \bar{x})^2\right) + N_B\left(\sigma^2_B + (\bar{x}_B - \bar{x})^2\right) + N_C\left(\sigma^2_C + (\bar{x}_C - \bar{x})^2\right)}{N_A + N_B + N_C}$$

$\Rightarrow \sigma^2 = 8.14$

i) ~~Find the S.D of boys & girls together.~~

ii)

Name : Nyasa
Class & Sec. : BBA(G) + VI 'C'
Roll No. - 218

DELTA Pg No. 1
Date / /

2nd March, 2025

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Priyanka

ASSIGNMENT-01

IAPM

Ques 1. State Investment Decision process. What factors should an investor consider while making Investment Decision.

Ans 1. The Investment Decision Process is a systematic procedure that an investor follows to evaluate potential investment opportunities, with the aim of achieving the desired financial objectives. This process involves a series of steps that guide the investor through the complexities of investing, ensuring that decisions are made based on informed judgement and analysis.

STEPS IN THE INVESTMENT DECISION PROCESS :-

1. Setting Investment Objectives: Investors must define their financial goals, such as wealth accumulation, income generation, or capital preservation.

2. Assessing Risk Tolerance: Understanding how much risk an investor can bear is crucial. Risk tolerance varies based on age, income and financial obligations.

3. Analyzing market conditions: Evaluating economic indicators, interest rates, inflation, and market trends helps in making informed decisions.
4. Asset Allocation: Diversification across different asset classes like equities, bonds, and real estate reduces risk.
5. Security Selection: Choosing specific stocks, bonds, or mutual funds based on fundamental and technical analysis.
6. Portfolio Construction: Combining selected securities to create a well-balanced portfolio that meets investment objectives.
7. Monitoring and Rebalancing: Regularly reviewing the portfolio's performance and adjusting it based on market conditions and changes in financial goals.

FACTORS TO CONSIDER WHILE MAKING AN INVESTMENT DECISIONS:-

1. Risk and Return Trade-off: Higher returns usually come with higher risks. Investors should assess their willingness to take this
2. Investment Horizon: The period for which the investment is planned (short-term vs. long-term) affects asset selection.

Liquidity Needs: Some investments, like real estate, are less liquid, while stocks and bonds offer better liquidity.

. Market Conditions: Economic cycles, interest rates, and inflation impact investments decisions.

5. Tax Implications: Different investments have varying tax treatment, affecting net returns.

6. Diversifications: Spreading investments across asset classes reduces risk.

7. Macroeconomics Factor: Global and domestic economic factors influence returns.

8. Personal Financial Situation: Income level, expenses, and existing risk determine investment capacity.

Ques 2. Difference between —

a) INVESTMENT AND SPECULATION

b) DIRECT INVESTING AND INDIRECT INVESTMENT

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1. MARKET RISK (SYSTEMATIC RISK):

→ This is the risk that affects the entire market or a broad segment of it.
→ It cannot be diversified away.
→ Eg: changes in interest rates, inflation, economic recessions, and geopolitical events.

2. CREDIT RISK (DEFAULT RISK)

→ This is the risk that a borrower will fail to make timely payments or default on their obligations.

→ It is particularly relevant for bond investments.

→ Credit ratings are used to assess credit risk.

3. INTEREST RATE RISK:

→ This is the risk that changes in interest rates will affect the value of investments, particularly bonds.

→ When interest rates rise, bonds prices typically fall and vice versa.

4. Inflation Risk (Purchasing Power Risk)

→ This is the risk that inflation will erode the purchasing power of investment returns.

→ Investments that do not keep pace with inflation may result in a real loss of value.

5. Liquidity Risk:

→ This is the risk that an investment cannot be easily bought or sold without significantly affecting its price.

→ Illiquid investments may be difficult to sell quickly when needed.

6. Business Risk (Unsystematic Risk):

→ This is the risk specific to a particular company or industry.

→ It can be diversified away by investing in a diversified portfolio.

→ Egs: poor management, competition, and changes in consumer preferences.

7. Currency Risk (Exchange Rate Risk):

→ This is the risk that fluctuations in exchange rates will affect the value of foreign investments.

→ It is particularly relevant for investors with international portfolios.

8. **Political Risk:**

→ This is the risk that political instability or changes in government policies will negatively affect investment returns.

→ This is especially important ~~in~~ emerging markets.

9. **Reinvestment Risk:**

→ The risk that future investment of earnings may occur at a lower interest rate than the current earnings.

Understanding and managing these risks is essential for successful investing. Investors should carefully assess their risk tolerance and develop an investment strategy that aligns with their ~~objectives~~ and risk profile.

Ishika Goel
36621201724

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Business Communication
Assignment - 2

A

Q1 What do you understand by Cross - Cultural communication? Explain various factors that affects communication in closed cultural setting?

- Cross - Cultural communication involves understanding and interacting with individuals or groups from different cultural backgrounds.

In cross - cultural setting, it navigates differences in languages, beliefs, customs, values and communication styles to foster manual understanding and effective communication.

→ Core elements of Cross - cultural communication

- Sender - The communicator may adapt their tone and style based on cultural expectations. In collectivist culture (Eg - China), indirect communication is preferred, while individualist culture (Eg - USA) favour direct expression.

- Medium - Different cultures rely on different communication channels - some prioritize written formal communication (Germany),

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while other value oral communication (India).

- Message - Content matters! High-content culture (Eg-Japan) embed meaning in whereas low-content culture (Eg-Netherland) use emplicit language.

- Feedback - In some cultures (Eg-USA) immediate feedback is encouraged, while other (Eg- ~~Thai~~ Thailand) prefer more reserved response.

→ Factors affecting

- Language Differences - Language is a primary barrier, as it can lead to misunderstanding and misinterpretations.

- Non-verbal communication - Cultural norms can influence body language, facial expressions, and gestures, which can be misinterpreted if not understood within the content.

- Cultural Values and norms - Different cultures have varying beliefs about social interactions, hierarchy and communication styles.

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- High-content Vs Low-content communication - Some cultures rely more on content and unspoken cues (high-content), while other prefer explicit and direct communication (low-content).

- Stereotyping and Prejudice - Preconvinced notions about individuals based on their cultural background can hinder open and honest communication.

- Communication Style - Individual cultures may have different communication styles, such as direct versus indirect, formal versus informal, or assertive versus passive.

Q2 Explain the various legal and ethical issues in Business Communication. Explain by giving relevant examples?

- Legal and Ethical issues in business communication involve ensuring honesty, fairness and compilance with laws, while also considering the impact on stakeholders and the environment.

This includes avoiding misleading information, protecting privacy, respecting intellectual

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property and ensuring equal oppourtunities in the workplace. Legal compilance is a cornerstone, ensuring adherence to laws like data protection, anti-discrimination acts.

→ LEGAL ISSUES

- Data Protection - Laws like the Data Protection Act 1998 and General data protection regulation (GDPR) govern how personal data is collected, stored and used.

- Freedom of Information Act. - This legislation gives individuals the right to access certain information held by public authorities.

- Anti - Discrimination Laws - Laws like the equality act 2010 prohibit discrimination based on various factors.

- Contract Law - Ensuring that all agreements are legally binding and enforcable.

- Copyright and Law - Protecting the rights of creators of original works.

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Defamation - Making false and damaging statements about someone that can lead to legal action.

- Advertising - ~~&~~ Law like the advertising standard authority (ASA) regulate the content and accuracy of advertising.

→ ETHICAL ISSUES

- Transparency & Honesty - Misleading or Deceptive communication can damage trust and reputations. For example - A company exaggerating product features or omitting crucial information is unethical.

- Privacy - Collecting, storing and using personal data without consent or proper security measures is a significant ethical concern. A data ~~bre~~ breach exposing customer information is a clear example.

- Respect for Intellectual property - Copyright infringement, plagrism and unauthorised use of trademarks are unethical and can have legal repercussions.

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Q1 Explain the concept Business communication, its nature and importance in detail.

Business communication refers to exchange of information between people within a company and with external stakeholders. It encompasses a wide range of activities, from written reports and emails to presentations, meeting and social media interactions. The core objective is to share information clearly, concisely, and purposefully to achieve specific business goals.
Effective business communication means a two-way street. It involves not only transmitting information but also actively listening, understanding and responding to the recipient's needs.

Need of business communication:
1) Improved Decision-making
Clear communication ensures everyone has access to accurate and timely information, enabling well-informed decisions across all levels of the organisation.

2) Enhanced collaboration
Effective communication fosters teamwork and collaboration by facilitating

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the exchange of ideas, feedback and problem solving -strategies.

3) Stronger relationships:
Business communication helps build stronger relationships with clients, vendors, investors, and other stakeholders. By keeping them informed and engaged, businesses can build trust and loyalty.

4) Increased productivity
Clear communication eliminates confusion, leading to streamlined workflows and increased efficiency.

5) Improved customer satisfaction
effective communication with customers ensures they understand products and services, leading to higher satisfaction & loyalty.

Nature of Business communication

1) Two way process
Business communication is a two-way process that involves the exchange of information between two or more parties.

2) Formal and informal
Business communication can be formal or informal. Formal communication is

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used for socializing and building relationships.

3) Internal & External
Business communication can be internal and external. Internal communication takes place between the employees and the management, whereas external communication takes place between the organisation and its stakeholders.

4) Verbal and non-verbal
Business communication can be verbal or non-verbal. Verbal communication includes face to face conversations, telephonic conversations and video conferences whereas non-verbal includes emails, memos etc.

5) Written or oral
Business communication can be written or oral. Written communication includes emails, memos, reports, and other documents, whereas oral communication includes face-to-face conversations, telephonic conversations and video conferences.

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Importance of business communication

1) Building better teams
An effective communication is necessary for the business to build a positive and encouraging atmosphere for the employees. Those who practice good communication skills make working beside them easier and less stressful. This helps in building effective teams.

2) Meeting goals and earning success
For a business, short and long term goals must be clear and concise, when employee are fully aware about ~~the~~ their company's goals, they give their best to achieve them. These goals can only be conveyed to employees through an effective communication.

3) Promoting creativity and innovation
People who are good communicators are usually open to sharing ideas without judgement. Effective communication helps in thinking to finding creative solutions to problems.

4) Improving customer service
Businesses need to know what their customers want and need from them. Effective communication with customer by answering questions and providing

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Discuss 7 C's of Business communication

The 7 C's of business communication are as follows:

1) Clarity: Ensure your message is clear, well-organised and easy to understand. Avoid jargon and complex sentence structures.

2) Conciseness: Get straight to the point. Strive for clear, concise and focused message that avoid unnecessary details or rambling.

3) Concreteness: Support your message with specific examples, data and facts. This adds credibility and strengthens your arguments.

4) Correctness: Use proper grammar, spelling, punctuation. This demonstrates professionalism and ensures your message is interpreted accurately.

5) Coherence: Organise your thoughts logically, ensuring a smooth flow of information in your communication.

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Explain the process of business communication.

Business communication follows a well-defined process, ensuring clarity and purpose in every interaction.

1) Planning :- The process of business communication involves ~~stage~~ determining the communication objective, target audience and desired outcome.

2) Message development: The process of business communication includes crafting a clear, concise and well-organised message tailored to the chosen medium and audience.

3) Channel selection: The need of business communication is choosing the most important communication channel for the specific message, considering factors like urgency, formality and audience preferences.

4) Encoding :- The need of business communication is to convert the message into a clear and understandable format, whether written, spoken or visual.

5) Transmission: Delivering the message through chosen channel

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Decoding: The need of business communication is when a recipient interprets and understands the message.

) Feedback: A crucial aspect of communication, feedback allows for clarification, ensuring the message was received and understood as intended.

By following these steps, businesses can ensure their communication is effective and achieves the desired results.

Good attempt

Teacher's Sign ....

Name - Navya Garg
Class - BBA - G(E)
IV
TOPIC ______ DATE ______
Enroll. No - 70221201723.

BUSINESS ANALYTICS
ASSIGNMENT-1

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Q1) - Write a short note on the meaning and evolution of Business Analytics.

Ans) - Meaning -

Business Analytics (BA) involves the systematic exploration of business data using statistical methods, tools and techniques to derive insights and support decision-making. It helps organizations identify patterns, optimize processes, and make data-driven decisions. BA is often categorized into four types -

→ Descriptive Analytics - Focus on what happened
→ Diagnostic Analytics - Explains why it happened
→ Predictive Analytics - Forecast what might happen
→ Prescriptive Analytics - Recommends action to achieve desired outcomes.

~~elaborate~~

- Evolution -

1) Traditional Data Analysis (Before 1990s)

Businesses relied on manual data collection and basic statistical methods to analyze historical data for decision-making.

2) Introduction of Business Intelligence (1990s - 2000s)

Advancements in computing and databases led to the

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rise of Business Intelligence (BI), which foc
on reporting, dashboards & querying.

3) Big Data and Advanced Analytics (2010s) -

With the growth of digital transformation and clou
computing, companies started leaving big data,
machine learning and artificial Intelligence (AI)
for deeper insights.

4) Modern Business Analytics (2020s - Present)

Businesses now use real time analytics, automation
and AI powered decision-making to optimize
operations, predict trends and personalize custome
experience.

Business Analytics continues to evolve with advancemen
in AI, blockchain and IOT, making data-
driven decision making more precise and accessibl

Q2) - Discuss the roles and responsibilities of Business Data Analyst.

Ans) - A business Data Analyst plays a key role in
analysing data to help organizations make
informed decisions. They bridge the gap between
business operations and data science, ensuring
that data-driven insights align with business
objectives.

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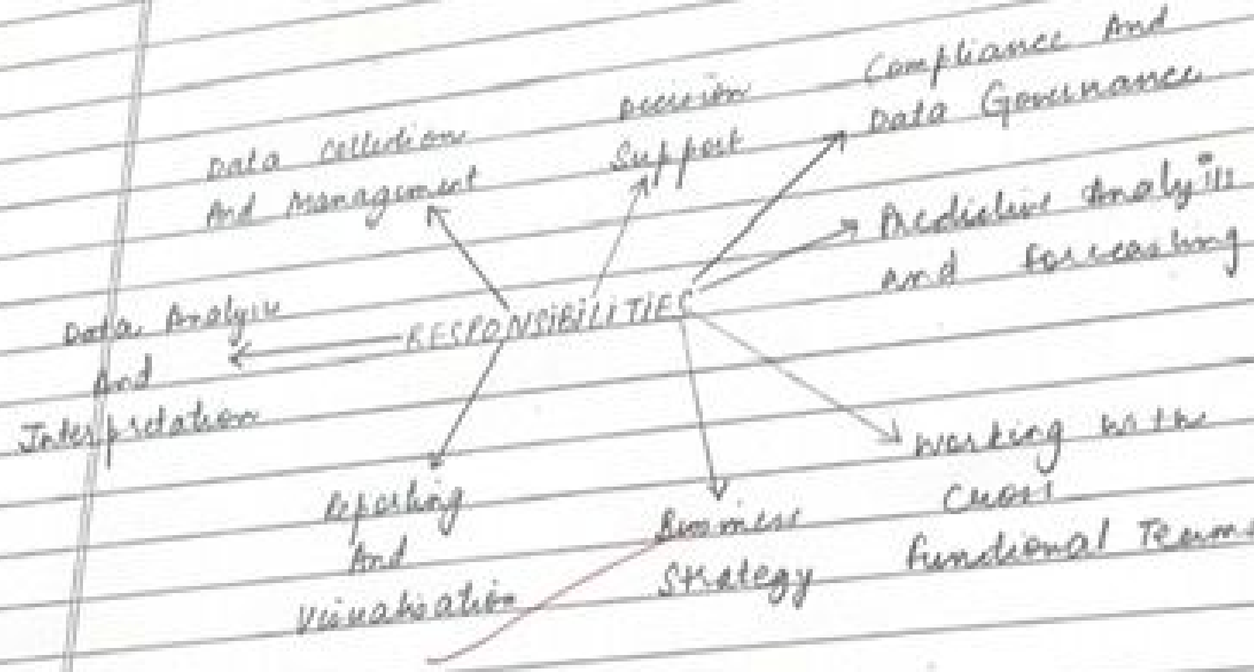
ROLE - A business data analyst is responsible for gathering, processing and interpreting data to support business growth, efficiency and strategic decision-making. They work with different teams to improve business performance, optimise processes and drives profitability using data Insights



1) Data collection and Management.

- Gather data from multiple sources like databases customer feedback, financial reports and market research
- Maintain and manage data accuracy, consistency and security.

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2) Data Analysis & Interpretation

- Use statistical tools and techniques to analyze data.
- Identify trends, correlations and patterns to provide insights for decision making.

3) Reporting And visualisation
- Prepare reports and dashboards to present findings to management and stakeholders.
- Use tools such as Excel, SQL, Tableau or Power BI to create data visualisations.

4) Business strategy and Decision Support.

- Support strategic planning by providing data-driven recommendations.
- Help in optimizing business processes, increasing efficiency and reducing costs.

5) Working with cross functional teams.

- Collaborate with IT, marketing, finance and operations teams to align data insights with business goals.
- communicate technical data insights in a simple and understandable manner to non-technical stakeholders.

6) Compliance & Data Governance.

- ensure compliance with data protection laws and industry regulations.
- Maintain ethical standards in data collection &

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reporting.

Q3)- How can business analytics be applied in various industries?

Ans)- Business Analytics is the process of using data, statistical tools and technology to ~~an~~ analyze business performance and make informed decisions. It is widely used across industries to improve efficiency, reduce costs and enhance decision making

1) Retail & E-commerce

- Customer Behavioural Analysis - Tracking purchasing patterns to offer personalized recommendations.
- Inventory Management - Predicting demand and optimising stock levels.
- Pricing optimization - Analyzing market trends to set competing prices.

2) Healthcare

- Predictive Diagnosis - Analyzing patient data to predict diseases early.
- Operational efficiency - Managing hospital resources, staff allocation and reducing wait times.
- Drug Development - Using analytics in clinical trials to speed up drug discovery.

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3) Banking & Finance

- Risk management - Assessing credit risk & loan default using predictive modeling
- Fraud Detection - Identifying suspicious transaction and preventing cyber fraud
- Customer Segmentation - Analyzing customer data to offer tailored financial products.

4) Manufacturing

- Supply Chain Management - Predicting demand and managing raw materials efficiency.
- Quality control - Detecting defects in products using Analytics.
- Predictive Maintenance - Analyzing machine data to prevent equipment failure.

5) Marketing & Advertising

- Customer Segmentation - Identifying target audience for personalized campaigns.
- Campaign Performance Analysis - Measuring ad effectiveness and ROI
- Social Media Analytics - Tracking engagement & Sentiment analysis.

6) Education.

- Student Performance Analysis - Identifying learning patterns and areas of improvement.

- Curriculum Enhancement - Using Data to design more effective teaching strategies.
- Dropout Prediction - Identifying at risk students to provide timely support.

Q4) - Differentiate - Data Scientist, Data Engineer & Business Data Analyst.

Ans) -

asis	Data Scientist	Data Engineer	Business Data Analyst.
imary Focu	Advanced Data modeling, machine learning & predictive analysis.	Building & maintaining data infrastructure and pipelines	Analyzing business data to provide insights for decision making.
) Key Responsibilities	• Develop machine learning models • Perform Statistical analyses.	• Design & manages data storage systems • Ensure data availability & reliability.	• Gathers & interprets business data • Creates report and dashboards
3) Skills Required	Python, SQL, R, Tableau, machine learning & AI	SQL, Python, Java, Spark, AWS, Azure	SQL, Excel, Power BI, Tableau Business Intelligence

BASIS	Data Scientist	Data Engineer	Business Data Analyst
4) Output	Predictive models, AI driven insights and data driven recommendations	Scalable & efficient data pipelines, optimized databases	Business reports, dashboards & decision support insights.
5) Data Handling	works with structured and unstructured data to derive pattern.	Manages raw data, ensuring it is clean & accessible	Uses structured data to analyze trends & KPIs
6) Industry Use Cases	Fraud Detection, customer recommendation engines	Data warehouse management, Real Time Data Processing	Sales forecasting, Customer segmentation.