CMA Final

Strategic Performance Management And Business Valuation

Casual Notes

- CA SATISH JALAN

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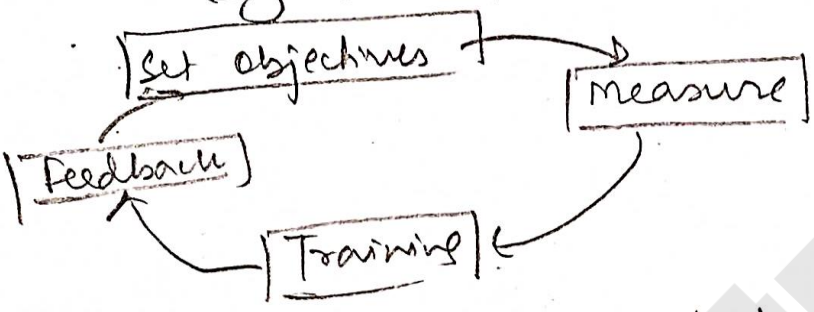
Module 1.

Intro to Perf Mgmt

Performance :- Evaln of productivity of people & contbn to orgn succes

Perf Mgmt :- Continuous procen of identifying, measuring & developing the performance of individuals & aligning perf with the strategic goals



Objectives – Superior Performance, Profn knowledge & skills, Reward Mechanism, feedback & coaching, environment - strategic purpose ; Personal growth & Advancement

Elements (loop) – Obj O → measure M → Feedback F → R

A

Performance, Productivity & Efficiency

Prod & Eff => Performance & Measures

Productivity = O/P / I/P (TM) — Total Productivity; Partial Productivity

Productive ≠ Efficient (quality)

Efficiency = maximum productivity with minimum wasted effort or expense

Cost as an input — efficiency considers the cost

Quality & Qty as input — eff is quality

Refinement ⇒ efficiency is Refinement

Financial Performance Analysis

1. Fin St – P/L – B/S – CF — CNP2 Pg 43 (Qs)

(Q1) 2. Analysis of Fin St – Process of evaluating the relⁿ between component parts of fin st to obtain better understanding of the firm's position & performance.

3. Tools & Techniques

- (Horizontal Analysis) Comparative St & Trend Analysis (Pyramid Method)
  - Multi Yr Comparison
  - CNP 3 Pg 43 – B/S analysis
- Common Size Analysis
  - Same yr / Single period
  - Vertical Analysis
- CF Analysis
  - Free Cash Flow Analysis
    - in BV FCFF – E.g 1
    - FCFE – E.g 2
- Ratio Analysis
  - Profitability
  - Activity
  - Liquidity
  - Solvency
  - Investment (Investor)
- Inter firm & Intra firm

Procurement to Pay & Vendor Relnship Mgmt

Procurement Process – Purch reqn to goods recd

Procure to Pay Process – Goods recd to Payment
- Procurement deptt + A/cs Payable deptt

Better Vendor Relnship ∴ maximise buying power.

A Procurement Plan – Purchase procedure with contingencies.
Helps (i) Prevention of delays & stock out
(ii) Minimising wastes

3 Perspectives of P2P – Purch Order, Rec Process, Invoicing Process

P2P Process: 1. Issue of Purch Reqn → Vendor Selection & quotation → Issuance of P.Order → Logging of various docs related to P2P → Receipt, Verifn & Reconc of Invoice

[partly cut off] ... A/c Payable ...

Vendor Relnship Mgmt
d
will reduce Costs
↓
Buyer-Supplier Relnship + Mutual trust + Mutual benefits

Benefits
- Cost Efficiency, Increased Effectiveness, Ever changing tech, cost competitiveness, deliver quality at right time — Improves TCO (Total Cost of Ownership)

Important Aspects → 1. Select the right Vendors (Most imp.)
2. Categorise Vendors to ensure the right contract, metrics & relationship
3. Determine the ideal no. of vendors
4. Mitigate risks when using vendors
5. Establish a vendor mgmt organisn that best fits the enterprise

SCM vs Vendor Relnship Mgmt
Scm is a big umbrella

Supplier vs Vendor
Firm — RM, Jobworkers, Tech, MLS

Supply Chain Mgmt

Supply Chain — Network of facilities & distbn — functions of procurement, transformation into FG, distbn to customers
Also called as Value chain / Demand chain — Includes manufacturers, suppliers, transporters, W/H, Retailers, & Customers

Supplier's Supplier → Supplier → OEM/OBM → Dist → Retailer → Cust
Focal Co.
Value Creation →
← Demand

4 Intrinsic flows or Functions or 4 major areas of Concerns
- Mat Flow — Supplies to customers
- Info Flow
- Fin Flow
- Commercial Flow — changes in ownership

Supply Chain Mgmt –

– Any activity for betterment of any link & flows.
– coordination of prodn, inventory, location & transpn among the participants in a supply chain to achieve the best mix of responsiveness & efficiency.

Objective of SCM
R– Conform to customer req
C– Efficient & cost effective across
I– Efficient integration of suppliers, manufacturers, warehouses, stores

Components of SCM

Logistics vs Supply chain

within the Orgn	within + O/s

5 specific Areas

Prodn – as per mkt req / master prodn sch
Inventory – optimal inventory
location – for prodn & storage
Transptn – cost effective
Inform' – smooth / effective decisions – what / how / where / to prod^e

Target Market

Main Market → Cost leadership → Optimisation of cost

Niche Market → Product diffn → Customer satisfn & responsiveness

Reverse Mapping of Business Strategies from Market Place using Data Analytics

(3)

Perspectives for strategy - different for different people

1. Strategy Maps - Financial Plans
   Quality
   Customer orientation
   HR/Learning

∴ Strategy Map is required

5 Crucial Doctorines - Kaplan & Norton
- Translation into operational terms
- Alignment of whole orgn in terms of strategy
- Everyday Perspective - for all employees
- continual process
- Mobilize changes.

It is a visualisation of entire strategy of the organisation

↓

Cause & Effect Relationship between the components

↓

Tool: BSC — Fin, C.Satisfn, I.B, HG

2. Forward or Reverse?

Traditional :- Top Down

End - Ways - Means

End: Objective
Ways: Strategies (Has uncertainties in changing environment)
Means: Resources

Reverse Map :- Bottom Up

Feed from customers → what to be done.

Limitations of End Ways Means

1. Difficult to accurately assess the resources
2. proper costs can go out of control
3. Limited perspective on environment
4. Not able to account for unpredictable changes.
5. Rigid

3. Use of DAnalytics in Reverse Mapping

- Extract meaningful information from the available data

Used for:- 1. Budgeting & forecasting 2. Product development 3. Mktg & Sales 4. Risk mgmt

- 4 types of DA
  1. Descriptive - what happened.
  2. Diagnostic - why happened
  3. Predictive - what will happen
  4. Prescriptive - Actions to be taken

1.6 Order to Cash & CRM

1.6.1 **Order to Cash** (part of CRM)

Orders → Customer Order → Customer Credit → Order fulfilment → Invoicing → Payment → Cash

Process Cycle time.

Top KPI's
- Process Cycle time
- Day Sales Outstanding
- On time delivery performance

(GIP Q1 Pg)

Other KPI's – Order accuracy, Shipment accuracy, on time shipping, financial – Reduction of receivables, Collection agent costs, – Days of Sales O/s,

Benefits – Increase of Cashflow, Reduction of Operating costs, Smoother & improved customer relations, More time to strategic function.

2. Best Practices to Optimise O2C Process

1. Automation of Admin tasks – Billing / Invoice Collection / Payment Collection / Credit Mgm
2. Standardisation of O2C process for the entire company
3. E invoices 4. Credit ~~Optim~~ Policies – to minimise receivables
5. Efficiency in billing – realtime, quick discharge, quick mitigation.
6. Automated Account Receivables – Reminders, responses, online payment
7. Data Management – softwares that improves decision making + Credit management

3. CRM

Types: 1. ~~Strategic~~ 2. Operational 3. Analytical. [4. Collaborative]

Issues: 1. Identifying the needs of customers
2. Developing strategies for each

Advantages – 1. Customer loyalty 2. Product development 3. Quality 4. Predictions 5. Team work 6. Rea time but not just that

Misrepresentations
1. CRM is merely database marketing – it depends on data
2. CRM is a marketing process – Beyond Mktg – selling / servi
3. CRM is IT issue. – IT is an enabler – important aspects are – people & process
4. CRM can be used by any Co. – Analytical CRM is not for small Cos.
5. CRM is a loyalty scheme – loyalty is a part of CRM

Definition of CRM
Business strategy comprised of process, organisational & technical change whereby Co. seeks to manage around its customer behaviours.

Strategic CRM — Goals :- Attract new customers, Retain Old customers (4)

Operational CRM — Selling, marketing & After Sales Service.

Mktg :- Eg Campaigns, trigger marketing, marketing Optimisation
Sales :- E.g. A/c Mgmt, Pipeline Mgmt, Quotation & Proposal
Service :- Case management, Communication mgmt, Queuing, Routing
Service level management

Analytical CRM — for large organisations, Big data analytics

Collaborative CRM — Info flow seamlessly throughout the supply chain using technology.

Models of CRM [CRM is an integrated approach to identify, acquire & retain customers]

- The IDIC Model (Don Peppers & Martha Rogers)
  - Identify – Customers
  - Differentiate – most Value
  - Interact – Expectations & Relationship
  - Customise – Offer & communications
- The CRM Value Chain (Francis Buttle) 2004
- Payne & Frow's 5 Process Model (2005)
  - Strategy
    1. Strategy Dev Process
    2. Value Creation Process
  - Operational
    3. Multichannel Integr Process
    4. Perfo assessment Process
    5. Info mgmt Process

  (Analytical)
- Gartner Competency Model

Impacts of CRM

1. Increased Expectations for Rev/Profit (Primary)
2. Complexity of multiple channel
3. Vital Info

Risks (Support)

1. Violation of privacy/security
2. Ineffective/Inconsistent
3. Lack of Control.
4. Poor customer single.

Customer Portfolio Analysis	Customer Intimacy	Network Development (SCOPE)	Value Proposition Development	Manage the Customer Lifecycle

PROFITS

Leadership & Culture
Data & IT
People
Process

[VSVPITM]

8 Areas

1. CRM Vision — Leadership, Social work
2. CRM Strategy — objectives, Segments, Interaction
3. Customer experience
   1. Requirements
   2. monitor expectation
   3. Satisfaction vs Competitor
   4. Collaboration
4. Orgn Collab — Culture, Understanding, Skills, Partners
5. CRM Process — lifecycle, knowledge, Cost/loyalty ← Metrics
6. CRM Info — Data
7. IT — Apps
8. CRM Metrics

Customers Profitability Analysis

⇓

Performance of Co.

Steps:

1. Customer Segmentation — Demographic — location, Age, Sex, Income
   Psychographic — Need, Behaviour — attitude & int
2. Revenue attributable — Annual revenue, Cash disc, Bulk disc, Service fee
3. Profit of Each Segment — Use ABC
4. Analysis of Profitability
5. Development of Strategies — elimination / Inclusion. (Turnaround products, inc rev, dec cost)
   (raising price, unsuitable by changing product design)
6. Review of Strategy

Analysis — Decision Grid Analysis (DGA)

High Contrib % of Sales	POTENTIAL — promotion	WINNER — Retention
Low Contrib % of Sales	LOSER — eliminate	PROBLEMS — Turnaround
	Low Volume	High Volume

Refer Q1, Pg 36

Components of DGA

1. Identify the decision problems
2. Build the decision grid
3. Evaluate the alternatives
4. Score the Alternatives
5. Make a decision

Improvement of Corporate Credit Rating Score

1. Credit Rating Score

People overestimate their financial health ∴ letting a third party gauge the credit worthiness of the entity improves overall financial environment

→ for Corporates	→ for Individuals
= Credit Rating	Credit Scoring
Alphabets	Score — mathematical model
Judgement & Experience	Modelling
Ability to payback based on past, present & future	Historical data.

2. Credit Rating Agencies in India

CRISIL – Credit Rating Info Services of India
ICRA – Investment Info & Credit Rating Agency
CARE – Cooperative for Assistance & Relief Everywhere
India Ratings & Research Pvt Ltd
Acuite Ratings & Research
Brickwork Ratings India Pvt Ltd.
Infometrics Valuation & Rating Pvt Ltd.

AAA - Being highest, D being lowest

Long term (CRISIL)	What it suggest ±
AAA	
AA	
A	
BBB	
BB	
B	
C	
D	
ST	
A1	A4
A2	D
A3	

3. Improvements in Corporate Rating

- Continuous Process
- Terminates only when the Co. withdraws or prematurely closes its contract with the rating agency or with the redemption of the instrument being rated.
- Rating Published by the agency on its website & Communicated to the issuer company
- On the basis of change in financial profile – upgrade/downgrade

4. Credit Score

- individual personal credit health
- Ability to repay the loans
- used by Banks/Credit Card Cos.
- FICO-USA — Creditworthiness of the individual Customer

Less than 580	Poor
580 – 669	Fair
670 – 739	Good
740 – 799	Very Good
800+	Exceptional

In India, - CIBIL ⇒ 2007 - by Trans Union CIBIL Ltd.

⇒ Ranges between 300 to 900

⇒ Higher is better - for lower terms

4 Aspects:

(a) Payment History ↓ defaults - negative (b) High Credit Card balance — negative

(c) Credit Mix — Mix of Sec & Unsec = positive

(d) Inc in debt burden - more loan queries — negative

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Performance Measurement Evaluation & Improvement Tools — Chapter 2

↓

~~Balanced Score Card~~

Intro :

Strategic Goal of Every Co. — Outgrow its competitors.

2 view points :- (a) People Performance Management :-

Employees are one of the most imp. — Alignment — with strategic goal — all ees must agree on the measures in place.

(b) Corporate Performance Management :-/Enterprise Perf Mgmt or Strategic Performance Management

- Set of mgmt processes — BSC | KPI | Analytics | Budgeting | Benchmarking | Business excellence | SQC | Sig Sigma | Lean | TQM | TPM | ERM | Project Mgmt | Performance Reporting

2.1 BSC

1984 :- Shareholder Wealth Maximisn was main objective — R. Edward Freeman

1990 — Create value for all stakeholders

4 Critical Management Processes :- BSC accomplishes — by a framework

1. Clarify & translate vision & strategy
2. Communicate & link strategic objectives & measures
3. Plan, Set targets & align strategic initiatives
4. Enhance Strategy feedback & learning

4 Perspectives

1. How do customers sees us — Customer Perspective
2. What must we excel at — Internal Business Perspective
3. Can we continue to improve & create value — Learning & Growth Perspective
4. How do we look to shareholders — Financial Perspective

Financial	Customer	Internal Business Proces	L&G
Op. Pft	Mkt share	Innovation	New respon sibilities
ROI	Customer retention	Operation processes	New skills,
RI	New Customer Acq	Sales Post service processes	New technologies
EVA	Customer satisfaction		Employee productivity, satisfaction, Retention
Rev growth	Customer profitability		
Cost Redn			
Asset utilisation			

Benefits of BSC

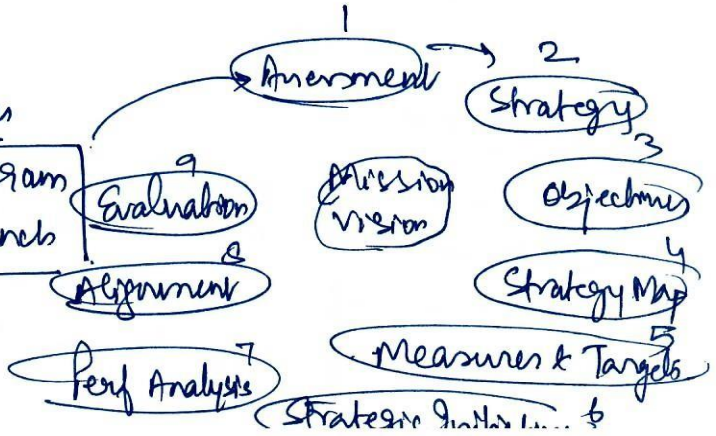
(a) Better Strategic Planning – Strategy map
(b) Improved Strategy Comm & Exec – Plan on a Page
(c) Better Alignment of Projects & Initiatives – Map the initiatives to objectives
(d) Better Mgmt info. – KPIs
(e) Improved Perf Reporting – Dashboards
(f) Organisational Alignment – create structure
(g) Better Proces Alignment – Align - Proces. - budgeting, Risk mgmt & analytics

Limitations of BSC

(a) No clear relation between BSC & shareholder Value
(b) It does not lead to single aggregate summary of control
(c) Conflicting measures
(d) Shift in Culture

Nine step Guideline for Implementation

Plan | KPI | Align | Strategic Plan each year | Program Launch



DuPont & RONA Model

Profitability Analysis

- In Relation to Sales
- In Relation to a firm's investment.
  - ROI
    - ROA = EBIT(1-t) / Avg Total assets
      - ability & efficiency with in using the firm's assets to generate profits
    - ROE or RONW → Du Pont Analysis
      - 2 Pf. ROA = Return / Assets × Sales / Total Assets
      - → Net Pft to Net assets
      - → Net income can be adjusted for non rec. items
      - Du Pont Analysis
        - 3 Pf.
          - = ROA × Equity Multiplier.
          - = Return / Assets × Assets / Equity
          - [Assets = Debt + Equity]
          - = NP / Sales × Sales / assets × Assets / equity
          - Profitability × Productivity × Equity Multiplier.
          - Q Solved Case 1, 2
        - 5 Pf.
          - EBIT / Sales × EBT / EBIT × EAT / EBT × Sales / T. Assets × Assets / Equity
          - Operational Efficiency × Int burden × Tax Burden × Asset utilisation × financial leverage
          - Q Solved Case 3
- in relation to Valuation
  - for capital intensive cos.
  - RONA = PAT / FA + Net WC

2.3

Benchmarking & Bench Trending

Benchmarking: Comparing one's business process and performance metrics to industry bests & or best practices from other industries.

↓

Continuous process

↓

Dimensions — Quality / Cost / time — Better, Cheaper, faster

↓

Not just copying

↳ deep self assessment / ability to translate

↓

Ongoing / systematic process / external focus

↓

Requires - A key personnel incharge of process — with an external standard — for measurement — identify where opportunities & improvement may reside.

Types of Benchmarking — Based On Nature of business

- Internal — same org
- Competitive - direct competitors
- Industry - not a direct competitor
- Generic - unrelated but same type of process

Based on Practices or Process

- Product ⇒ Reverse Engineering
- Process - Process within the industry
- Performance — KPI. Comparis
- Strategic — Performa of leader

The process of Benchmarking

First Phase – Internal preparation
↓
Project Proposal

Second Phase – Data Comparison
- Recurrent work with participants
- Data Collection, validation & Report writing

Final Phase – Improve

Bench Trending

Continuously monitoring developments — to identify future gaps – for long term success – with a select group of partners

---

2.4. Six Sigma & Lean Management

Six Sigma ! = Zero defects – Motorola
- to improve performances
- to gain profitability & mkt share
- Best quality mgmt practices
- Malcolm Baldrige National Awards

Sigma level	DPMO	%
1	691462	69%
2	308538	31%
3	66 807	6.7%
4	6210	0.62%
5	233	0.023%
6	3.4	0.00034%
7	0.019	0.0000019%

Six Sigma Deployment
- DMAIC ↓ Existing Process
- DMADV ↓ New Process

Key Roles for deployment
1. Executives
2. Champions
3. Master black belt
4. Black belt
5. Green Belt
6. Yellow belt
7. White belt

Six Sigma	vs	TQM
Concept: 1. Six Sigma – Newer/small changes		Continuous effort by employees to ensure high quality products
focus 2. Eliminate defects		preserve quality standards
Implement: Complicated.		No special training
Results: 4 Better results.		Less results.

Lean

Lean ⇒ John Krafcik – 1988.

Toyota Production System is a forebearer of Lean

Lean – Systematic elimination of waste — Tangible —

– 3 Ms ⇒ Muda = waste
Mura = inconsistency
Muri = unreasonableness

Waste: Anything that adds cost to the product without adding value

7 types (TIM-WOOD)

Grouped waste – People – Man over process
– Qty – I.T. over Prod.
– Quality – Defects

Transportation | Inventory | Motion | Waiting | Overproduction | Defects | Over Processing

5 Principles

(a) Value – what customer wants

(b) Value stream – Set of business activities

(c) Flow – uninterrupted flow of activities.

(d) Pull = Prodn as dd

(e) Perfection – continuously improve

5 S of Lean – To create a workplace for visual control (4)

Seiri – Sort
Seiton – Set in Order
Seiso – Shine
Seiketsu – Standardise
Shitsuke – Sustain

Benefits of 5 S

- Safety
- Availability
- Lower Defects
- Agility & flexibility
- Employee Morale
- Asset Utilisation
- Image – Customer / Supplier / Employees / management

Lean + Six Sigma

- To maximise shareholder value by achieving the fastest rate of improvement in customer satisfaction, cost, quality, speed & capital.

2.5 SQC

Product Differentiation → high quality product – features & characteristics to satisfy customers at the time of purchase & use

Benefits of focusing on quality:
(a) Build reputation
(b) Lower cost
(c) Higher satisfaction
(d) Higher future revenue

8 Dimensions of Quality – (a) Performance – Primary; (b) Features – Additional; (c) Reliability – Not fail; (d) Conformance – meet Criteria; (e) Durability – life; (f) Serviceability – restore; (g) Aesthetics – look/feel; (h) Reputation – past

Quality Control – An assurance process – actual vs standard
– Beyond tolerance – Action is taken.

SQC – Statistical techniques for quality control – to set standards

Elements of SQC – (a) Sample Inspection – instead of 100% inspection
(b) Statistical techniques
(c) Fundamental objective – in control / Out of Control
(d) Decision making – for out of control

Benefits of SQC – (a) less defects ⇒ less VC
(b) less wastage, scrap, pollution
(c) Decrease in maintenance cost
(d) Pool of satisfied customers
(e) Employee motivation
(f) Productivity & overall ~~ineff~~ efficiency

Techniques of SQC

- Process Control → Control Charts
  - Control Charts for Variables
  - Control Charts for Attributes
- Product Control ⇒ Acceptance Sampling
  - For Variables
  - for Attributes

Tools: Statistical Process Control (SPC)
Histogram, Check Sheet, Pareto Chart, Cause & Effect Diagram, Process Flow Diagram, Scatter Diagram, Control Chart

Control Chart – CL, UCL, LCL

	Variables		Attributes	
	$\bar{X}$ Chart	Range chart	P chart	c chart
CL	$\bar{\bar{x}}$	$\bar{R}$	$\bar{P}$	$\bar{c}$
UCL	$\bar{\bar{x}} + A_2 \cdot \bar{R}$	$\bar{R} \cdot D_4$	$\bar{P} + 3\sqrt{\frac{\bar{P}(1-\bar{P})}{n}}$	$\bar{c} + 3\sqrt{\bar{c}}$
LCL	$\bar{\bar{x}} - A_2 \cdot \bar{R}$	$\bar{R} \cdot D_3$	$\bar{P} - 3\sqrt{\frac{\bar{P}(1-\bar{P})}{n}}$	$\bar{c} + 3\sqrt{\bar{c}}$

Acceptance Sampling (AS) – Dodge & Romig

E.g. - if all bullets tested, none left for battle
if none tested, malfunctions –
∴ Random test.

~~No inspect~~

As does not help in assessing quality.

Applicable only when:– (i) Testing is destructive
(ii) 100% inspection is very high cost
(iii) 100% inspection takes ~~too long~~ too long

2.6 PDCA or Schewart Cycle

- Dr. Shewart 1939
- Edited by Dr. W. Edwards Deming in 1950 – Renamed Deming wheel.

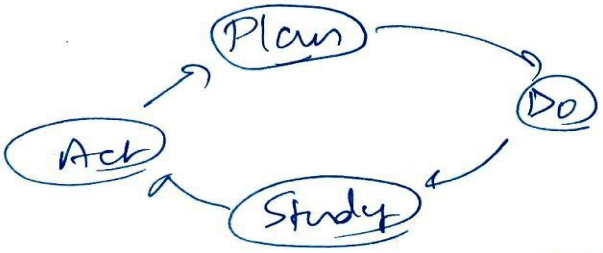
Schewart Cycle

Specification → Production → Inspection → Specification

Deming Wheel

Design (Plan) – objectives / processes
Production (Do) – Implement
Sales (Check)
Redesign / Research (Act) → Improve → Design

Schewart Cycle for learning & Improvement – PDSA



MIS in a Digital Environment

Different Type of Info Systems

Transaction Processing System
Management Information System
Office Automation System

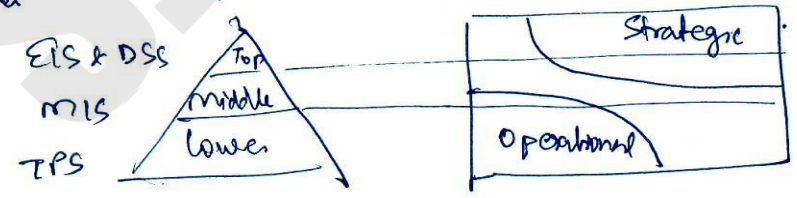
Decision Support System
Business Intelligence System
Electronic Commerce System
Accounting Information System

MIS - an overview

- System of collecting, processing, transmitting of data to meet the information requirement of – different levels of mgmt.

Mgmt → Info System

- Operational → day to day → lower level
- Tactical → allocation of resources → Middle level
- Strategic → Goals / Priorities / New programs & policies → Higher level



Strategic Objective of MIS

- Timely & accurate information
- Highlight Critical factors
- Develop a systematic & regular process of communication for performance
- Tools for programmed decision making
- Best services to customers
- To gain competitive advantage
- Information support for planning

MIS Reports — for dec. making & management by exception

- Summary Reports
- Trend Reports
- Predictive Reports
- Exception Reports
- Budget Reports
- Cash flow reports
- Sales Reports
- On demand reports
- Financial reports
- Inventory Reports
- Profit Reports
- Cost Reports

MIS in Digital Environment

3 terms :—

(1) Digitisation : — Converting information from a physical format to digital one.

(2) Digitization : — Use of digital technologies, data to create revenue, improve business, Create a digital culture where digital information is at the core.
Processes — efficient, productive & profitable

(3) Digital transformation — Transformation of business activities, processes, products & models to fully leverage the opportunities of digital technologies —
(doing things in a new way)

Digitisation Process :-

Bar Coding & Decoding
↓
used in inventory mgmt

Programmable logic Controller (PLC)
↓
for monitoring work flow & machine conditions.

General Packet Radio System (GPRS)
↓
used in LAN for controlling mobile equipments. In vehicles - for work load (movements), fuel

Face Recognition System (FRS)
↓
used for attendance

Computer Aided Design (CAD)
Computer Aided Mfg (CAM)
E-Commerce
ERP → includes real time data — at any node (Computer) connected to the system
→ Availability of information —
→ Integration of financial & non financial data

E.g.: (i) Online invoicing & inventory records — by e-commerce & Bar coding / Decoding
(ii) Order fulfilment — integn of purchase & sale orders, inventory, indents for stores & FG
(iii) Migrate attendance — for employee wise wages & salary
(iv) Built up — integrated information as required — (FG, WIP, Eg. Running hrs, Power / fuel, etc.)

· New Digital Transformation Technologies :-

Modern ERP & database technologies :-
(i) Cloud based ERP — use friendly, adaptable, AI, big data

(2) Advanced Analytics — insights / reports / — deep / accurate / actionable. (7)
uses AI & Machine learning

(3) Cloud Connectivity — Internet of things / cloud infra

(4) Artificial Intelligence / Machine learning — Big data / conventional tools are adapt to process big data

[(5) Robotics Process Automation] Others

(6) Internet of Things

28 Total Productive Maintenance (TPM)

- TPM is a part of TQM
- Objective — TPM: No Downtime / breakdown | No defect
- TPM — focus on operator & equipment

5 Pillars of TPM

(a) Improving equipment effectiveness by targeting 6 major losses
(b) Involving operators in daily maintenance — Autonomous maintenance
(c) Maintenance Efficiency & Effectiveness
(d) Training for everyone
(e) Life Cycle Equipment mgmt / Maintenance Prevention

6 Major losses

Availability
1. Unexpected breakdown losses
2. Setup & adjustment losses

Efficiency or Performance
1. Idling & Stoppage losses
2. Speed losses

Quality
1. Quality Defects & Rework losses
2. Equipment & Capital investment losses. — (Durability)

OEE – best metric for categorizing losses, benchmarking progress, comparing the productivity of manufacturing equipment by eliminating waste.

(Advantages)

Availability Ratio = Act time / Planned time

[Planned time = Max time − Planned Idle time]

Quality Ratio = Good units / Gross Production units

Performance Ratio = Std time for AO / Act time

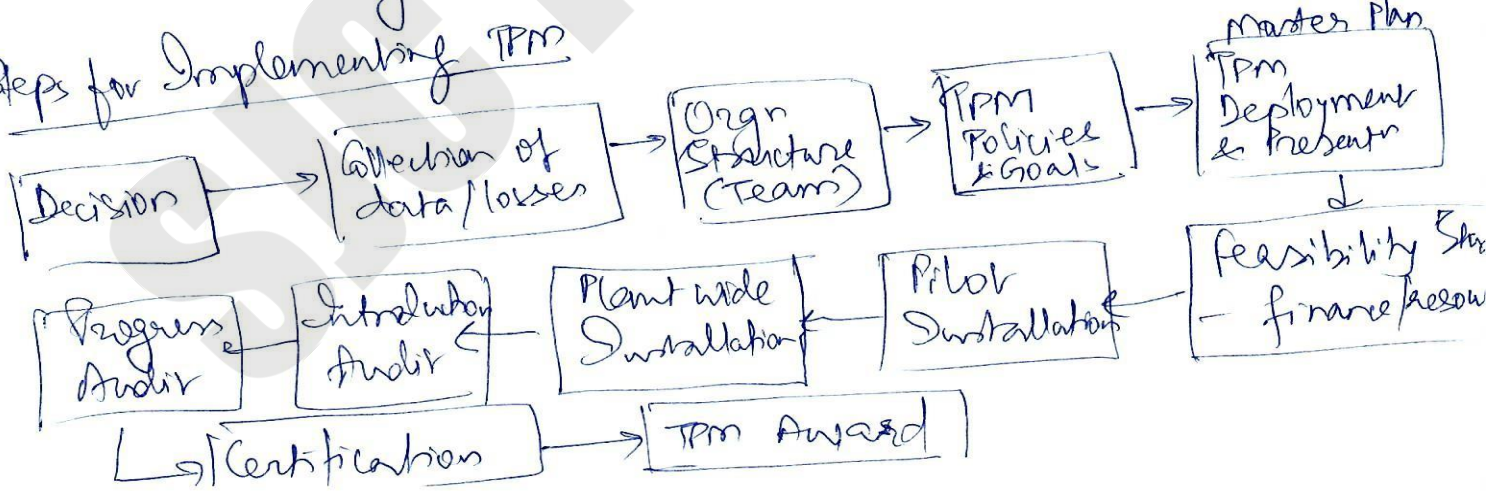
OEE = A × P × Q

Benchmark = 85%, Higher is better.

Individual Benchmark – A = 90%, P = 95%, Q = 99%

Benefits of TPM – Increased OEE, Rectify complaints; Reduce accidents, follow Pollution Control measures, Higher confidence level among employees, Achieve goals by team, share knowledge & experience

Steps for Implementing TPM



2-9 TQM

Quality: Perception of people defining it.

5 Perspectives:-

- Conformance to Specification → as determined by designers
- Fitness for Use → intended use
- Value for Price Paid → usefulness
- Support Services → after sales
- Psychological Criteria → ambience, prestige.

- Quality has direct relation with Superior performance
- Quality Costs
  - Quality Control Costs
    - Prevention Costs
    - Appraisal Costs
  - Quality failure Costs
    - Internal failure Costs
    - External failure Costs

~~- Shewart – introduced Quality charts for processes~~

- Quality Gurus & their Contribution

• Dr. Walter A Shewart	• Contributed to understanding of process variability • Concept of Statistical control charts • Pointed to eliminating variability - • Statistical Process Control
• Dr. W. Edward Deming	• Deming Prize by Japanese Govt • Mgmt's Responsibility • 14 Points Guide
• Dr. Joseph M. Juran	• Conformance to specifications. • Fitness for use

	• Quality trilogy – Quality Planning, Quality Improvement & Quality Control
	• Cost of Quality
Dr. Armand V. Feigenbaum	• TQC → TQM
Dr. Philip B Crosby	Zero defects Quality is Free Doing it Right the first time
Dr. Kaoru Ishikawa	Fish Bone – Cause & Effect Simplified Statistical Techniques Quality also mean after sales service. Internal Customer
Dr. Genichi Taguchi	Product Design Low function – financial loss to society Minimal loss = quality from poor quality product to society during life.

TQM is a USA version of Japanese Company Wide Quality Control.

TQM — improve quality at every level
- Vision — long term planning, drawing up & implementing annual quality plans
- Corporate Culture — Increased customer satisfaction, continuous improvement

TQM in Organisation

Total
Cover all functional areas, employees,

Quality
Fulfill Customer needs, fitness to use, Customer satisfaction

Management
Effective utilisation of all resources

Essentials of TQM

- Customer focus
- Continuous Improvement
- Employee Empowerment
- Use of Quality Tools
- Product Design
- Process mgmt
- Supplier Quality

3 Concepts of TQM

- Q Control
- Q Assurance
- Q mgmt

Steps for Implementation

Stage 1 - Identifying Customers/Groups
Stage 2 - Identifying Customer expectations
3 - Customer dec making requirements
4 - Perceived problems in process activities
5. Comparison with other firms & benchmarking

Stage 6 Customer feedback

Stage 7 Identification of Improvement Opportunities &

Stage 8 - Implementation of Quality Improvement Process

2.10 - Data Envelopment Analysis

↓

For Performance Measurement

[free Software online output-com/ dea-software]

Charnes, Cooper & Rhodes - 1978

↓

Input Oriented Model

↓

Less input for same output

Output Oriented Model

↓

More output with same Output

Fundamental Issues in Efficiency Measurement

- Efficiency is in Ratio = $\frac{\text{Output}}{\text{Input}}$ = Same measurement
  = Multiple Inputs - then Cost basis

Advantages	Disadvantages of DEA
(a) No mathematical form specified	(a) Sensitive to selection of inputs/output
(b) Multiple Inputs & Output	(b) High efficiency values obtained by a niche combination of inputs
(c) For every decision making Unit.	(c) No. of Efficient firms on the frontier increases with no. of inputs & output variable

Efficiency Measurement in DEA

Single I/p & Single O/p	Two Inputs & One Output	Single Input & Two outputs
Eg - Sales/Employee	Eg. Employee/Customers & Space/Customers	Eg. Personal trainer fee
Eff Ratio = Output/Input		Business Trainer fee.

Efficient frontier
= line drawn through origin & highest efficiency

Data Envelopment Analysis
= Frontier envelops all pts including the frontier point

Line of best fit - Regression line = middle line

Points above it are efficient
Points below it are inefficient

Relatively Efficient
= Eff Ratio / Best Eff Ratio

Input Target = Actual Input × Relative Efficiency %

Input Slack = Actual input − Input Target

Input Slack % = Input Slack / Actual Input

Output Target = Actual Output / Relative Efficiency

Output Slack = Output Target − Actual Output

Output Slack % = Output Slack / Actual Output

Inverted Efficiency Ratio
= Input/Output
Lower the ratio the better is the efficiency

Efficient frontier
= line drawn by joining best lowest points (best efficiency as per input1 & input2)
= Convex to the origin [⌐]

Points lying on the frontier are efficient. → Same

Enveloped within the frontier are inefficient → Same

Virtual DMU — drawn by joining the origin & the frontiers. → N/A

Efficiency Ratio (9)
= Output / Input

Efficient frontier
= line drawn by joining best highest points

Relative Efficiency
= Length of line from origin to the DMU / Length of line from origin to the frontier.

Mathematical Programming in DEA

- Great no. of inputs & outputs.
- Return to scale (CRTS) – to characterise different DEA Models
- Types of DEA frontiers

CRS – Constant RTS
VRS – Variable RTS (Constant, Increasing, Decreasing)
NIRS – Non Increasing RTS
NDRS – Non Decreasing RTS

Steps in DEA

1. Collect the pooled data – Output & Input – Use Software – DEAP
2. Install the DEAP
3. Arrange dataset as per the requirement of DEAP
4. Modify input file & compute Technical, Allocative & Economic Efficiency

Allocative: How efy are combined – How many inputs – If cost increase due to different inputs – inefficient

Technical: maxm o/p with least cost
– Other factors than input
– Eg breakdown of machinery

Module 3

Economic Efficiency of the firm

↓

Performance Analysis

Unit 1 Economic Performance Indicator

Defn:

Nos:→ Allow analysis of economic performance → Prediction of future performance → of economy.

↓

Used in investment strategy

3 Attributes of Indicators

(a) Relation to busines cycle/Economy:
- Procyclic — same direction with economy
- Countercyclic — opposite
- Acyclic — no relation

(b) Frequency of data — GDP — quarterly
Unemployment — monthly

(c) Timing
- leading — stock mkt index
- lagging — unemployment rate
- Coincident — in tandem — GDP

7 Types of Indicators published by Govt in USA

- Total Output Income Spending
- Employment Unemployment Wages
- Production & Business Activity
- Prices
- Money, Credit & Sec. Markets
- Federal Finance
- International Statistics

Economic Performance = financial and Operational objectives

↓

linked to overall mission & vision

= Overall health can be measured or monitored

Santos & Brito Model for Measuring firm Performance

↓

based on stakeholder theory by freeman

↓

Overall firm Performance = ~~financial~~ Organisational Effectiveness

⇓

[Financial + Strategic] [39]

Financial

(i) Profitability
- ROA
- EBITDA Margin
- ROI
- Net Inc/Sales
- ROE

(ii) Market Value
- EVA
- EPS
- Δ in Stock Price
- Div Yield
- Stock Price Volatility
- MV Added
- Tobin's Q = MV / Rep Cost
- ~~Mkt Share %~~
- ~~Amt growth~~

(iii) Growth
- Mkt Share
- Amt
- Net Rev
- Net Inc.
- No. of Ees
- Cus To

Strategic

(i) Employee Satisfn

(ii) Customer Satisfn

(iii) Social Performance

(iv) Environmental Performance

(i) Ee Satisfn:
- Investment in Employee Dev & Train
- Wages & Rewards Policies
- Career Plans
- Organisational Climate
- General Employee Satisfn
- ~~no. of Products & Service~~

(ii) Customers Satisfn
- Mix of Products
- No. of Complaints
- Repurch Rate
- New Customers Retention
- General Customers Satisfn

(iii) Social Performance
- Employment of Minorities
- No. of Social & Cultural Projects
- No. of law Suits filed by employees
- Customers & Regulatory Agencies

(iv) Environmental Performance
- Env Audit
- No. of projects to improve to recover the environment
- level of pollutants
- Use of Recyclable material
- Recycling level & Reuse
- New Products Design
- No. of Suits

Key Performance Indicator (KPI)

	CSF	KPI
Parameter	Issues that lead to Succes	metrics of Succes
Role	Specify Requirement of Succes	What we are doing
Dependency	Standalone	Depend on benchmark
Type of Measurement	Qualitative	Quantitative
Busines Insights	Use insights	Generate insights
Result	Objective achieved	CSF achieved
E.g	mkt share Cust Satisfn	% of busines — Target - 10% % of Satisfied Customers — 96%

Principles for Implementing KPIs - PTM SAAD

- Partnership with staff, unions & third parties
- Transfer of Power to the front line
- Measure & Report only what matters
- Source KPI from CSF
- Abandon Proces that do not deliver
- Appointment of a homegrown chief measurement officer.
- Organisation wide understanding of winning KPIs

Factors in Setting EPM - SMART

Specific Measurable · Achievable Realistic Tangible

18 KPIs

- **Financial Metrics** (7)
  - Profit
  - Cost
  - Revenue vs Target
  - Expense vs Budget
  - COGS
  - DSO
  - Sales by Region
- **Customers Metrics** (5)
  - CLV
  - CAC
  - CS & R
  - NPS
  - No of Customers
- **Process Metrics** (3)
  - Customer Support Tickets
  - Percentage of Product Defects
  - Organisn's Overall Efficiency Measure
- **People Metrics** (3)
  - Ee T/o Rate
  - % Response to Open Position
  - Employee Satisfn

3.2 Profit optimisn under different mkt Structn

1. Defn of mkt :- group of people - obtain what they need through creating offerings & freely exchanging products & services

2. Elements of mkt :-
   - Seller & buyer agree to transact
   - Nature of commodity is known
   - Price of product is determined under condition
   - Competition depends on increase in buyers & sellers
   - Price inc — No. of buyers inc
   - Price dec — " " sellers inc
   - Free comms
   - Size - restricted to city / region / country / world
   - Homogeneous / Differentiated product

Mkt Structure

- Perfect Competition
- Imperfect Competition
  - **Monopoly**
    - IRCTC
    - HAL
  - **Monopolistic Competition**
    - Pizza Hut, Dominos
  - **Oligopoly**
    - Automobiles
  - **Duopoly**
    - Pepsi & Cocacola
  - **Monopsony**
    - Only 1 buyer
    - E.g. CESC for solar power
  - **Oligopsony**
    - very few buyers.
    - E.g. cereals.

Price Discrimination

- for monopoly
- = Act of selling the same article to different buyers at different prices
- 2 Specific Conditions — 1. Divide mkt into sub parts according to price elasticities
  2. Effective separation of the sub mkts, so that the buyer is not able to resell & transact between low price mkt & high price mkt.
  E.g. (Services of a Doctor)

- Kinds of Discrimination
  - **Personal**
    - ability to pay
    - Doctor – more fees from rich
  - **Place/Local**
    - Different regions.
    - Eg. Dumping
  - **Use/Trade**
    - based on use
    - E.g. Electricity for resi/comm

Degrees of Price discrimination

1st → No Consumer Surplus → Perfect Price discrimination

2nd → Monopolist gets a part of consumer Surplus

3rd → 2 or more types of customers based on elasticity of demand → Common one

Importance of Price Discrimination

- Railways – to make it profitable.
- Welfare = Eg Doctors

Profit Optimisation

1st Order derivative = 0
2nd Order derivative = -ve/+ve

3.3 Market Factors Affecting Pricing decisions

1. Hall & Hitch ⇒ Firms set price as ⇒ AVC + AFC + Normal Pft
   Traditional ⇒ Price ⇒ where, MR = MC (assumes all conditions are constant)

Criticisms of Traditional Theory :-

1. Pft maximisn is the only goal – whereas alternate goals are also there – e.g stakeholders approach
2. Firm mgd by mgmt – having different motives

2. Baumol's Theory of Sales Revenue Maximisn :- Sales maximisn motivates the managers

3. Marris's Model of Maximisation of Firm's Growth Rate :-

(7)

- Maximisation of balanced growth rate — i.e. growth in demand growth of capital supply — i.e. when demand for products & supply of capital increase at the same rate.

- Mgr's Utility function:⇒ $U_m = f$ (salary, power, job see, prestige, status)

- Owner's Utility function ⇒ $U_o = f$ (output, capital, market share, profit, public esteem)

Maximisation of U_o = Maximisation of demand for products or growth

4. Williamson's Model of Managerial Discretion (Own Utility)

Mgrs Maximise their own utility. Main attempting to maximise profits — $U = f(S, M, ID)$

S = additional exp on staff
M = Mgrial emoluments
ID = Discretionary investments

Constraint is - minimum profit is necessary to satisfy the shareholders & also to secure the jobs of the managers.

5. Behavioural Model of Cyert & March - (Satisfaction behaviour)

A behavioural model of Rational choice — Real business world is full of uncertainties. Less time to act even if data available. Not possible to assume consistency for profit maximisation. So, mgrs achieve a satisfactory profit or a growth & so on.
Satisfy various interest groups by sacrificing own interest/objectives.

Pricing Methods - Price impacts profitability.

- **Cost Based Pricing**
  - Full Cost
  - Marginal Cost
- **Demand Based Pricing**
  - Perceived Value (Buyer's perception of value of product)
  - Differential (sell in different prices) ← geographical location, type of consumer, qty, time
- **Competition Based Pricing**
  - Sealed Bid → Tender Contracts
  - Going Rate → general price as set by the price leader.
  - Trade Association → Express or Implied Agreements to maintain prices → Can break the agreement - if (a) Price war (b) keep rivals in the dark about price cut
  - Customary Based → Charm Prices → If cost rises, quality reduced, price same. E.g. Parle G - ₹5, Chips - ₹10.
- **Strategy Based Pricing**
  - Skimming → High price initially → Inelastic dd, dd not known, huge capital cost
  - Penetration → New Product at low price & for mkt share. Eg Jio

Factors Affecting Pricing Decision

a) Internal Factors -

- Strategic Goal → Cost leadership / Diffn
- Costs → Double Edge Sword ... impacts quality
- Organizational Consideration → unify dept mgrs
- Mktg Mix → 4P (Price, Product, Promn, Place) → Price links all.

b) External factors

- Demand in the market
  - Competitors, Size, Customers Pref., ability to pay.
  - ↓
  - High dd, high price
- Competitors
  - Perfect Competition – Same price
  - Monopolistic Compet°/ Oligopoly/Duopoly – price high/low
- Govt Policies
  - ↓
  - If subsidy recd, reduce price.
  - ↓
  - Govt may fix Price.
- Economy
  - ↓
  - Prosperity – raise price

Chapter 4.1 Enterprise Risk Management

4.1 Risk Mgmt | 4.2 Corporate Risk | 4.3 Corporate failure

Risk Management

1. Risk Management Introduction

1. Financial Risk :-
   - Systematic Risk
     - Int-Rate Risk
     - Mket Risk
     - PP Risk
     - FIE Risk
     - Political Risk
   - Unsystematic Risk
     - Liquidity Risk
     - Credit Risk
     - Operational Risk
2. Risk Mgmt Process
   - Likelihood
   - Impact
   - Exposure

   VUCA

   ↓

   Process of understanding & managing risks to achieve corporate objectives

   Identifying | Analyse | Prioritise | Mitigate | Monitor

   ↓

   5 aspects by COSO

   Risk Assessment | Risk Mgmt | Risk Response | Risk Reporting | Residual Risk Reporting

   Risk response:
   - Risk avoidance
   - Risk reduction
   - Risk share/trfer
   - Risk acceptance

   Risk Reporting:
   - Reporting to external
   - Reporting to internal

   ↓

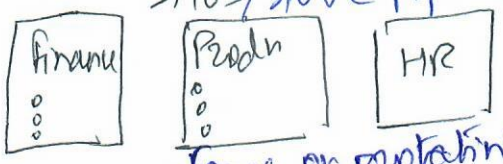
   Objectives

   • losses • Anxiety/fear • legal • Resource • EPS

3. Traditional Risk Mgmt & ERM

Traditional Risk Mgmt

- Silos/Stove Pipe



Limitations: Focus on protecting tangible assets

- Mapped exclusively to a Silo
- Affects multiple Silos
- Impact on other aspects
- External matters may be ignored
- Connect with strategic Planning

ERM

- Holistic view of most significant risks of orgn at large.
- Strategic tool to achieve its strategic goal.
- Protecting tangible & intangible assets

5 Elements of ERM

- Strategy/ Objective Setting
- Risk identification
- Risk assessment
- Risk response
- Control & Monitoring

2. COSO Framework

Committee of Sponsoring Organisation (COSO) -

↓

Identifying, Analysing, Responding & Monitoring Risks & Opportunities, within the internal & external environment which the entity faces.

1. Avoidance 2. Reduction 3. Transfer 4. Accept

↓

ERM Integrated Framework in 2004 :-

↓

Misconceptions — a. Function/Department
b. Risk Listing
c. More than internal control
d. Not a checklist
e. Any size

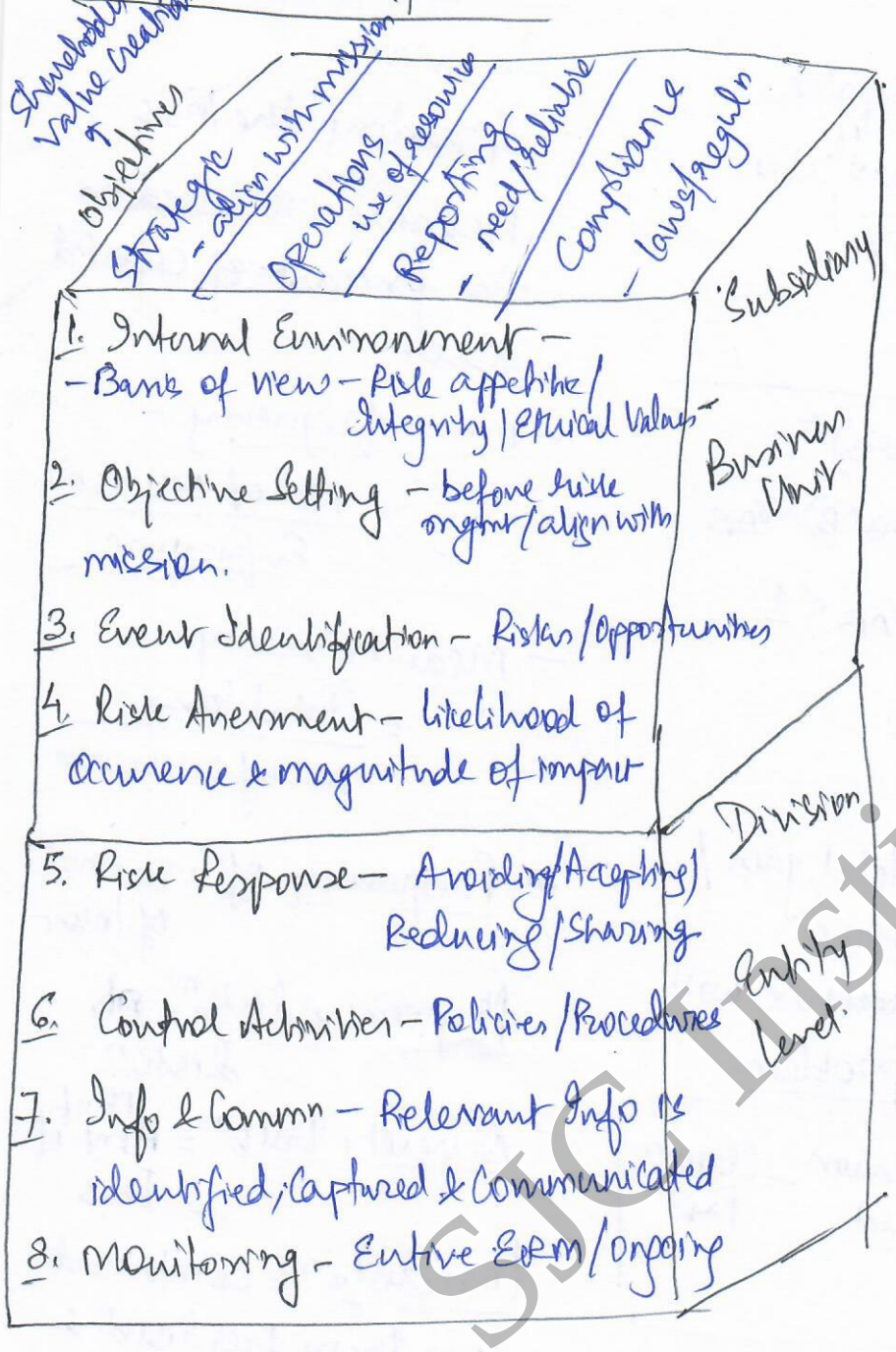
Goal — a. Key Principles
b. Common language
c. Clear direction & guidance

Defn: - Effected by an entity's board of directors, mgmt & other personnel, applied in strategy setting, across the enterprise, to identify potential events, & managing risk to provide

Fundamental Aspects

- ERM is an Ongoing process - all aspects
- People close enough
- Strategy Setting
- Across the enterprise / Portfolio view of risk
- Proactively identify events & map them
- Alternative to Silo/ Stove-Pipe

Components of ERM



Essence of ERM

1. Pragmatic use of risk mgmt to drive value
2. Capabilities to manage risk
3. Risk & Opportunities Mgmt.

Need of ERM

1. Reduce Performance variability
2. Align varying views of Risk mgmt
3. Build Confidence
4. Enhance Corp. Governance
5. Respond to changing environment
6. Align strategy & Culture

3 Pooling

- Used by Insurance Cos.
- Risk Mgmt Strategy
- sharing Costs & potential exposure

Benefits -

- Mitigate the problem of Premium Spiralling.
- Premium stable & within specific limit

Positive • Inc service level • Dec. Safety Stock, • Dec. Overhaul Cost

Negative • force majeure cases • High Transport Cost • Inc lead time

Pooling in SCM

- variability in demand for raw materials reduced by aggregating demand across multiple products / location / time.
- **Benefits** – low inventory
  – Avoid stockout
- **Aspects of SCM**
  a) Inventory Mgmt
  b) Warehouse location & product flow
  c) Transportation
  d) Product Design

4. Diversification

- Unsystematic Risk – diversifiable
  Systematic Risk – Not diversifiable
- Portfolio Risk ⇒ SD of Sec. = $\sqrt{\frac{\Sigma(x-\bar{x})^2}{n}}$

⇒ SD of P/F = $\sqrt{(w_A\sigma_A)^2 + (w_B\sigma_B)^2 + 2(w_A\sigma_A)(w_B\sigma_B)\times r_{AB}}$

⇒ risk reduces when $r_{AB} < 1$

5. Total loss Distribution

- Insurance
- Spreading the loss
- Premium is based on the forecast of expected losses
- mean frequency = No. of occurrences / Exposure
- Mean severity = Total losses / No. of occurrences
- Frequency of loss = no. of losses

Frequency distⁿ = pb. distⁿ

- Severity Distⁿ = Pb of Amt of loss
- Loss distⁿ = Combined loss from freq distⁿ & severity distⁿ
- SError = SD of popⁿ / $\sqrt{n}$

= devn between actual & expected losses that concerns the Ins. Co.

6. Ruin Probability

- Collective Risk theory.
- finding Distⁿ functions of total gain / claims in a P/F / Risk enterprise
- finding Pb that the risk reserve will become exhausted – Ruin problem.

> Net Surplus = Initial surplus / Capital + Premium Reced − Claims Paid
>
> ↓
>
> If negative ⇒ Ruin.

- Surplus function increases at a constant rate c – until there is a claim & the surplus drops by the amt of the claim.

7. Risk Analysis

- Level of risk – possibility & Consequence.
- Which Risk factors have a greater impact on the project –
- To be handled with priority
- Benefits ⇒ Avoid potential litigation ⇒ Comply with new legislation ⇒ Minimise insurance
  ⇒ Address regulatory issues. ⇒ Reduce exposure ⇒ Imp input for dec making

8. Methods of Risk Analysis

Qualitative
- Brainstorming
- Questionnaire & Structured Interviews
- Evaluation for Multidisciplinary groups
- Judgement of specialists & experts

Quantitative
Requires/Includes
- Analysis of likelihood
- Analysis of consequences
- Computer simulation

↓

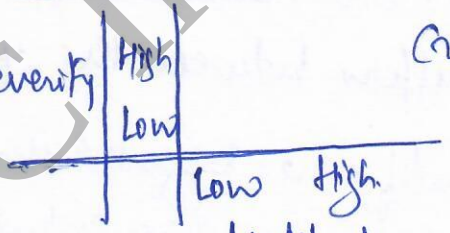
Monte Carlo Method

Semi Quantitative
→ High / Med / Low
- Appropriate scale

Risk Analysis Methods

Bow Tie Analysis
↓
Causes & Consequences

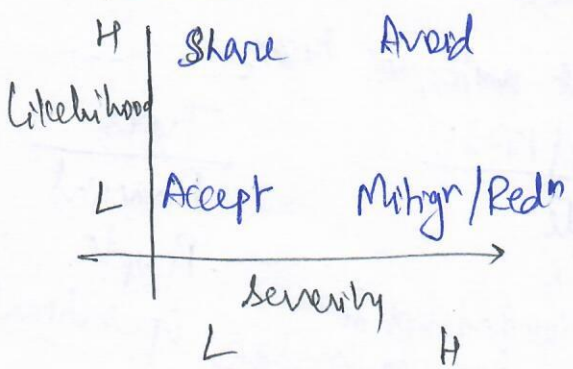
Risk Analysis Matrix
↓
Likelihood/Severity



Risk Register
↓
Document risks during execution
Critical info
↓
Input for planning
↓
Who / strategies / resources.

SWIFT Analysis
↓
Structured what if Analysis
↓
What can go wrong & what would happen
↓
Likelihood
↓
Consequences
↓
Prevention/monitor

8. Risk Mapping



Importance
Understand the risk
1. Categorises all risks.
- based on causes/consequences

2. Prioritisation Mitign Strategies
Risk prioritisation - to identify the most potential harm.

3. Reduce Insurance Cost
- Comprehensive strategy for Insurance Cos - favourable premium.

4. Other aspects
- Collaboration
- Shared dec. making
- Defn of risk appetite
- Integr
- Common language

Risk Heat Map

Specific focus of Top mgmt & risk mgr

Frequency	Light Green	Yellow	Orange		
Very High	5	10	15	20	25
High	4 LG	8	12	16	20
Med.	3	6 LG	9	12	15 Orange
Low	2	4 LG	6 LG	8	10
Very low	1	2	3	4 LG	5 LG
	Very low	Low	Med	High	Very high

Severity

Most Critical - Top mgmt attention & risk mgr

Risk Register

Sl. Risk Descpt Severity Strategy Residual Risk Colour Code.

Disadvantages of Risk Mapping

- Qualitative
- Multiple dimensions
- Very high loss for SBU = Low loss for gr
- Cost benefit analysis
- Facilitate risk reporting

9. Risk Indicators / KRIs

KRI → enhance the monitoring/mitigation

→ smoke alarm system

→ Most Critical indicators for managing the highest risks

→ Key risk for one business may not be important for another

→ Key risk differs between the years

Effective KRIs – Identify the biggest risks
– Quantify those risk & their impact
– Put risks into perspective – Compare by benchmarks
– Enable risk reporting & monitoring
– Alert key people in advance
– Help people to manage & mitigate risks

KPI vs KRI

KPI	KRI
Performance	Quantify risk
How well	Risks of not delivering the good Outcomes
E.g. IT perform Staff satisf	Susceptibility of Attacks losing the key staff

Features of KRIs

Measurable
Predictable
Informative/Catalyst for decision making

Types

Financial
People
Operational

Effectivity

1. Goals 2. KPIs 3. KRIs

- Linked to KPI
- Specific
- Predictive
- Easy to Quantify
- Thresholds/Triggers
- Monito

10. COBIT

- Control Objectives for Information & Related Technology
- Control framework developed by Information System Audit & Control Association.
- COBIT Versions - 2019 - flexible / tailored / Effective governance of info & tech
- Risk Mgmt
  - It help to develop, organise & implement strategies that align IT infra with busines goals.
- Holistic Cybersecurity program
- COBIT - 5.0 - Define & measure effectiveness of IT Controls

Overall ~~COBIT 2019~~ → Specially for Cos. that want to use IT as an Overall framework linking different process running to their orgn — while focusing on Risk mgmt, governance & security.

4.2 CORPORATE RISK MANAGEMENT

1. Transformation of Enterprise Risk Management to Risk Enabled Performance Management –

Traditional Perf mgmt	Traditional Risk Mgmt
Performance of orgn, deptt, employee, processes.	Manage compliance & control activities. – possible to be fully compliant & still suffer. Only financial risk. – Other risks are there.

Need: • Identify, anen, evaluate & manage the non-financial risk with potential impact on orgn value drivers.

• how each risk interact with others

Soln: Use perf mgmt tools – historical comparisons of KRIs/KPIs

Use evaluation tools – Set & specify risk thresholds

Use Predictive analysis – measuring & monitoring risks

Use Risk Adj forecasts

Use process controls

ie. Integrate risk with perf mgmt.

To incorporate risk into perf mgmt

- Prioritize risk based on greatest impact & likelihood
- line of sight to be created by working backward from identified risks & their root causes
- Correlate risks within & across silos
- Adjust for compounding effects of seemingly independent risk events.
- Plan for different scenarios/risk response plans

Risk Enabled Performance Management

- Risk & Perf mgmt would have to be integrated at all levels
- Risk advisors became business advisors
- Mgmt processes at strategic, tactical & operational level need to get risk support.
- Changes in meeting structure
- New requirements of MIS
- Tools to measure risk exposure

Effectiveness of REPM:- Formulate business drivers into key strategies & tasks, without losing focus on macro perspective

Focus of Traditional ERM

a. Independent enterprise risk identification & assessment
b. Risk reporting to top mgmt
c. Independent Risk Mgmt process
d. Historical perspective design
e- Focus on compliance.

vs

REPM

a. Measure & drive performance
   - Integrate risk & perf mgmt
   - Greater linkage between KRI & KPI
   - User data analytics
b. REPM is forward looking
   - Future trends / Predictive analysis
   - Emerging risks
   - Scenario analysis / Stress testing
c. Action & Result oriented.

Foundational ERM → ERM → Risk Enabled Perf Mgmt

Foundational ERM: Risk identif & reporting

ERM: Risk mgmt & perf mgmt

2. Risk Retention or Reduction

Risk Retention:- A method of self insurance.

= Accept - Reserve fund for unexpected losses.
- If Cost of other options are

Avoiding risk → loosing benefits
Reducing risk → Cost of new processes/systems - Resistance
Transfer risk → Cost of Insurance.

Risk retention is not a mitigation - because retaining risk does not reduce its effect.

Advantages: 1) No cost. 2) frees up resources to focus on more serious risks.

Disadvantage: No risk control.
(If minor impact then fine)

Pvt enterprises → risk taker.

Govt orgn competing with Pvt - must retain risk to have more P/L/ Return on assets

Criteria for Risk Retention - low - Likelihood/Consequences

Rules for risk retention - 1. Determine risk retention level - sales projection/cashflows/contracts/ liquidated damages/guarantees
2. Avg of losses over time
3. Capacity for funding

Risk Reduction:-

E.g: Wearing a seat belt

- Action taken to reduce likelihood/impact/both.
- Involve - process overhaul/cultural change/to stop doing.

Eg. • Pulling out of a Market
• Process change
• Culture change
• Discontinue a product.

3. Value at Risk

- Worst loss scenario arising out of unexpected fluctuations in the value of a portfolio. → Maximum expected loss over a time horizon & for a given confidence interval

- Advantages - (1) Easy to understand :- % or single no.
(2) Applicability - various asset class & portfolios
(3) Acceptability - widely accepted standard
(4) Used for performance evaluation - RAR adjusted returns
(5) Reliability - can be verified by Backtesting

- Limitations - (1) Depends on inputs & assumptions
(2) Inconsistent results
(3) Misleading & a false sense of security - that it is a maximum loss
(4) Difficult to calculate in large portfolio
(5) Subjectivity.

Confidence	Z
68%	1
90%	1.65
95%	1.96
98%	2.33
99%	2.58

Significance - Maxm loss = VAR = $\sigma \times Z$

With — % of Confidence,
Maximum — loss can
occur in — days.

VAR for 1 day = $\frac{VAR}{\sqrt{n}}$

Methods - 1. Historical
2. Simulation
3. Variance-Covariance, analytic or parametric - most used

- VAR of P/F of n days = P/F. Std devn $\times \sqrt{n} \times Z$

4. Capital Adequacy Norms in Banking Industry

Banking Supervision - Basel Committee on Banking Supervision (BCBS) in 1974 by Central Bankers from G-10 countries.

↓

Goal - Global standard setter & forum for regular co-operation on banking supervisory matters.

Supervision:- to ensure that banks operate in a safe & sound manner & that they hold capital & reserves sufficient to support their risks.

Key elements:
(a) Efforts to ensure - bank policies & procedures are best
(b) Ongoing monitoring of financial condition - with periodic reporting
(c) Capital regular
(d) Limits on permitted activities.

The Basel Accord :- Recommendations on banking regulations in regard to capital risk / market risk & operational risk

Purpose - enough capital to meet obligations & absorb unexpected losses.

Small banks - need to hold more capital/equity capital to manage risk

Basel Ib

Basel I (1988)

- Credit risk
- Capital adequacy based on Risk Weighted Assets
- Not risk sensitive
- All credit exposures carried Risk Weight of 100%
- Risk Capital = Credit Exposure × Risk Weights
- No emphasis on formal review

Basel II (2004)

- Cr/Op/Mkt Risk
- Capital
- → Same
- Risk sensitive
- Risk weights based on credit qualities
- Risk Capital = efficient banks have lower capital needs
- Emphasis on review

→ 3 Pillars

Minimum Capital Requirement	Supervisory Review	Mkt discipline
Cr. Risk: Standardised – Small banks; Internal Ratings – Large banks – FIRB/AIRB	↓ Regulator	↓ disclosure
Op Risk: Basic Indicator App; The Std Approach; Adv Measurement App		

Implications

- 8% CAR for all
- No provision for economic Pricing by banks
- Good quality assets have incentives
- Risk based pricing can be done / economic pricing

In Response to financial crisis – objective – absorb future shocks, supplement the recovery process, reducing spill over of risk

↑ Basel III – key reasons for crisis of 2007-09 – Poor Corporate governance, Liquidity mgmt, over-levered capital structure, misaligned incentives

- Capital Ratio ≥ 4.5% — Tier 1 Capital / Risk weighted Assets
- Leverage Ratio ≥ 3% → Tier 1 Capital / All assets
- Liquidity Coverage Ratio ≥ 100% — Liquid Assets (high quality) / Net Operating Cashflow

New Basel III

- Common Equity (Tier 1) ≥ 5.5%
- Tier 1 Capital ≥ 7% of total risk weighted assets
- Credit to GDP factor — may be reviewed.
- Banks liquid assets should be sufficient enough to cover net cash outflow.
- Maintain high credit ratings to ensure greater solvency / to avoid cost of raising additional capital
- Create buffer in good time.

Capital

Tier 1

50% in Tier 1.

↓

Equity + R/E

↓

To absorb losses without a bank being required to cease trading.

Tier 2

50% in Tier 2 (Provisions + subordinated debt)

↓

Absorb losses in winding up only.

↓

4 Components

- Revaluation Reserves
- Provisions
- Hybrid Capital Instruments
- Subordinated debt — Subordinated with regard to ordinary bank deposits & other loans & securities that constitute higher ranking senior debt

Total Risk based Ratio

~~Total Capital~~ = $\frac{\text{Tier 1 Capital + Tier 2 Capital}}{\text{Risk Weighted Assets}}$ [Basel I ⇒ Min 8%]

= Capital Charge / Capital Adequacy Ratio

Tier One Ratio

= $\frac{\text{Tier One Capital}}{\text{Risk-weighted Assets}}$ [Basel I ⇒ Min 4%]

Risk Weighted Assets

Corporate & most retail loans receive — 100% weight

Residential Mortgage loans receive — 50% weight

Loans to OECD member — 0% weight

Interbank loans to OECD member-20% to others — 100%

Chapter 4.3

Corporate failure

Stage 1:- Distress - unable to meet the obligations

Stage 2:- Insolvent - Surrendered / bankrupt

3 Indicators:- low profitability, High gearing, low liquidity

5 Causes :- Revenue, Cost, Asset Mgmt, Liability Mgmt, Capital Mgmt

Reasons of Declining Performance :-

Adverse changes in mkt demand, intensified competition, high cost structure, poor financial controls, weak management, failure of a large project, poor marketing effort, poor acquisition, poor quality

7 Causes of Financial Health deterioration:- Mitroff. [EIPHRCN]

Economic Causes, Information Causes, Physical Causes, Human Resources, Reputation, Criminal Causes, Natural Disaster

Endogenous & Exogenous Causes

Endogenous / Internal
- weak mgmt & its mistakes
- insufficient financial control
- poor mgmt of working capital
- high expenses
- insufficient marketing

Exogenous / External
- negative changes in mkt demand
- competition
- Change in input commodity prices

Models to Predict Corporate Failure

- **Failure** – lower than prevailing rate of returns
- **Insolvency** – unable to meet its current obligation, lack of liquidity
- **Defaults** – violates the condition of agreement with creditor
- **Bankruptcy** – erosion of net worth, formal declaration of bankruptcy in a court.
- **Distress** – unable to generate revenue to meet its financial obligations.

Stages of sickness – when it may occur — From old Syllabus

1. Project formulation — Hidden pitfalls, Inherent weakness, Existence of players not always a sound proof of success,
   - Remedy: • Thorough investigation required – (Sine qua non)
   - External factors to be considered – Present/future
2. Project Implementation – Delayed – Time/Cost overruns
   - finance arrangement – Promoters/Banks/Fin Inst
   - Increased Cost of Components
   - Power/water Connection / Delay in approvals
   - Rethinking/Changes
   - Over spending on travel/entertainment
   - Adverse foreign exchange rates
3. Production – Increase in COP / Dec in Qty, Quality / Inventory accumulation
   - Lack of proper planning of product mix

Models

① Single Variable Model or Uni Variate Model (Beaver-1966)

② Multi Variable Model or Multi Variate Model

- Altman's Z Score
- Beneish M Score

③ NCAER Model (National Council of Applied Economic Research)

① Uni Variate Model

- Individual Ratio analysis
- 79 failed & 79 Non failed Cos.
- 38 Inds
- One can predict failure one year in advance, with 90% accuracy

5 Ratios:
- ⇒ Net Inc to Debt Ratio
- ⇒ Net Inc to Sales Ratio
- ⇒ Net Inc to Net worth
- ⇒ Cash Flow to Total Debt
- ⇒ Cash Flow to Total Assets

- Compared with mean value of ratios of various Cos.
- Above Avg – No sign of distress
- Below Avg – Sign of distress

② Multi Variate Model - Z Score (Edward Altman)

- Public Cos (1968) → MV of Equity
- Private firms (1983) → BV of Equity
- Manufacturers / Industrials / Non Manufacturers & Emerging Mkt → BV of Equity

Case 1: Public Cos.

- 33 Failed Cos. / 33 Non failed Cos.
- 22 Ratios – Predictors of distress
- 5 Ratios were selected to create an eqn:-

$$Z = 1.2X_1 + 1.4X_2 + 3.3X_3 + 0.6X_4 + 1.0X_5$$

X_1 = Liquidity Position = WC Ratio = WC / Total Assets

X_2 = Reinvestment Capacity = Retained Earnings Ratio = RE / Total Assets

X_3 = Profitability = Return on Total Assets Ratio = EBIT / Total Assets

X_4 = Leverage = Equity Multiplier = MV of Equity / Total BV of Debt

X_5 = Activity = Sales generating ability = Sales / Total Assets

Important Notes

1. MV of Equity = MV of ESC + MV of PSC
2. Retained Earnings = R/S + P/L Cr. bal − P/L Dr. − Prel Exp
3. WC = CA − CL
   - Prel Exp / Fict Assets is not CA
   - Trade investment to be taken as CA – only if Question specifies
   - WC can be negative
4. Total Assets = FA + CA (excl Preliminary exp) + Trade Inv – if not included in CA.
5. Total Debt = LTD + CL
6. Operating Pft = EBIT

Interpretation:

$Z > 2.99$ ⇒ Safe Zone ⇒ Non failed / Non Bankrupt

$Z < 1.23$ ⇒ Distress Zone ⇒ Failed / Bankrupt

$Z > 1.23$ & < 2.99 ⇒ Grey Zone ⇒ Further investigation required

Case 2: Pvt Cos.

MV of Equity shares are not known.
Instead BV of Equity shares are known.

$$Z = 0.717 X_1 + 0.847 X_2 + 3.107 X_3 + 0.420 X_4 + 0.998 X_5$$

X_1, X_2, X_3] Same

X_4 = BV of Equity / Total Debt

X_5 = Same

Interpretation:

$Z > 2.9$ => Non failed firm

$Z < 1.23$ => failed firm

$Z > 1.23$ & < 2.9 => Grey Zone

Zabeerdast Notes

If MV of Equity shares are not given, use this model even for Public Cos.

Case 3: For Emerging Markets – unable to generate sales

X_1, X_2, X_3 – Same

X_4 = BV of Eq / Total Debt

X_5 = Not applicable

$$Z = 6.56 X_1 + 3.26 X_2 + 6.72 X_3 + 1.05 X_4$$

Interpretation:-

$Z > 2.60$ – Safe

$Z < 1.1$ – Failed

$Z > 1.1$ & < 2.60 – Grey

Model 2:- NCAER Model

3 Parameters:-

1. Cash Profit = Profitability Measure = Net PAT + Non Cash Exp/losses dr. to P/L (E.g. Depn / G/w) − Non Cash Income/Gain Cr to P/L (E.g. Revalⁿ Profit)

2. Net WC = Liquidity Measure = CA − CL

3. Net worth = Solvency Measure = Equity = ESC + PSC + (R/s − P/L Dr. − Fict Assets)

Interpretation:- Stage of Sickness

- Any One is negative ⇒ Tendency of becoming Sick
- Any two are negative ⇒ Incipient Sickness (beginning)
- All 3 are negative ⇒ Fully Sick.

Zabardast Note: If stage of Sickness is to be identified then we compute the 3 parameters above.

Model 3:- Beneish M Score

$$= -4.84 + 0.92 \times DSRI + 0.528 \times GMI + 0.404 \times AQI + 0.892 \times SGI + 0.115 DEPI - 0.172 \times SGAI - 0.327 \times LVGI + 4.679 \times TATA$$

1. DSRI = Day Sales Receivable Index = $\frac{\text{Alc Receivable}(t)/\text{Sales}(t)}{\text{Alc Receivable}(t-1)/\text{Sales}(t-1)}$

2. GMI = Gross Margin Index = $GM(t)/GM(t-1)$ [GM = Gross Margin = $\frac{\text{Sales} - \text{COS}}{\text{Sales}}$]

3. AQI = Asset Quality Index = $\frac{[\text{Total Assets}(t) - PPE(t)]/\text{Total Assets}(t)}{[\text{Total Assets}(t-1) - PPE(t-1)]/\text{Total Assets}(t-1)}$

4. SGI = Sales Growth Index

$$= \frac{\text{Sales}(t)}{\text{Sales}(t-1)}$$

5. DEPI = Depreciation Index

$$= \frac{\text{Depn}(t) / (\text{Depn} + \text{PPE})t}{\text{Depn}(t-1) / (\text{Depn} + \text{PPE})t-1}$$

6. SGAI = Selling, General & Admin Exp Index

$$= \frac{\text{SGA Admin Exp}(t) / \text{Sales}(t)}{\text{SGA Admin Exp}(t-1) / \text{Sales}(t-1)}$$

7. LVGI = Leverage Index

$$= \left[\text{Total Liabs} / \text{Total Assets}\right] \text{ or } \frac{\text{Total Debt}(t) / \text{Total Assets}(t)}{\text{Total Debt}(t-1) / \text{Total Assets}(t-1)}$$

Total Liabs = CL + LTD

8. TATA = Total Accrual to Total Assets

$$= \frac{\text{WC} - \text{Depn}}{\text{Total Assets}}$$

Interpretation: M Score < -1.78 => No manipulation

M Score > -1.78 => Manipulation is likely.

[In ICWAI Mar, M-Score < -2.22 = No manipulation

> -2.22 = Manipulation]

Methods of Measuring Corporate failure with Limitation

	Limitation
1. Financial Ratio Analysis	• Influenced by accounting practices • May not capture complete picture of company's operations
2. Altman's Z-Score	• Not valid for certain industries • Relies solely on financial data
3. Credit Rating Agencies	• Conflict of interest • Slow to react to changing circumstances
4. Market Based Measures (Stock Price)	• Volatile • Influenced by market sentiment
5. Qualitative Assessment (Mgmt quality, Corporate Governance, Competitive Positioning, Industry trends)	• Prone to biases • Subjective.

Significance of Altman's Z Score

- Established Track Record
- Predictive Accuracy
- Easy Calculation & Interpretation
- Broad Applicability
- Early Warning System.

Further developments in Z Score

Altman ZETA Model (1993)

Z-Score Expanded Trend Analysis – Sales growth, Stability of earnings, R&D intensity.

Altman Z-Metrics (2002)

Predict financial distress, Debt restructuring & Corporate Governance failures

Chapter-6 IBC

1. Date – 28 May 2016
2. ~~Objective~~ – Related Party defn – Sec-5(24)
3. Applicability of Default is – 1Cr or more
4. Resoln Process – Default by Corp Debtor → Appln to Adj Authority (180 days + 90 days extension (66% vote of COC))
   - Who can apply? – Drs / Crs / IRP, others
   - Fast track Resoln period – 90 days (ext – 45 days)
   - Min amt of default for CIRP – 1 crore
   - Appointment of RP
   - Appointment of Regd Valrs to determine Liquidn value
   - Formn of Committee of Crs
   - Prepn of Info memo by RP
   - Resoln Plan by COC
   - Plan approved by COC (75%)
   - Restru/Sell as going concern
   - ~~Continue~~ Liquidate

Insolvent vs Bankrupt

5. Liquidation – (NCLT Order) – Sec 53 – Distbn of Assets / Dissoln
   - Voluntary liquidn – only if no debt / No fraud

6. Regulation Pertaining to Value
   - Liquidation Value – Est NRV / 2 Regd Valrs
   - IBC Liq Process Regulns :-
     - Valn of assets to be sold (Regn 35)
     - Voluntary Liquidation of Corporate Person – Majority Directors Report of Valn
     - Final Report – Regn 38(1)(c) – By Liquidator

7. ~~Relevant Regs for Valuers~~
8. ~~Rules of becoming the Valuer~~

Cos. Act 2013

Sec 192 - Non Cash Trans involving Directors - Prior approval of members in GM

director acquires/Co. acquires → Contravention - Voidable by Co.

Sec 230 - Extracts - Compromise & Arrangements

- Redn of Share Capital, Buybacks, Takeovers, Corporate Debt Restructuring
- Objection by :- 10% of share holding or 5% of O/s debt persons holding

Sec 230(1)

- Auditor Certificate required.

Tribunal to order Meeting of Members/Creditors -

Between (i) Co. & Creditors — Tribunal → Meeting of Creditors →
(ii) Co. & Shareholders

Rearrangement

Appln by:

Crs/Member/Liquidator — share split — Consolidn of shares

Sec. 230(2) Affidavit by the Applicant to Disclose Certain Material facts

Disclose - latest fin position / Auditors report / Pendency of investigation / Proceedings

- Reduction of Share Capital included in Comp or rearrangement
- For debt restructuring - Consent by :- 75% of Sec. Creditors / Valn report by a Regd Valuer

include :- Cr Resp St, Safeguard other Crs, Auditor Report, RBI Guideline

Sec. 230(3) Notice of Meeting to Crs & members & debenture holders

individually / Website / SEBI / Stock exchange / Newspapers / Regd office

Sec. 231 Power of Tribunal to Enforce Compromise or Arrangement

231(1) – ~~Sec 230~~ – Tribunal to supervise.

231(2) – Order for winding up by Tribunal

Sec. 232 Merger & Amalgamation

232(1) Notice to call meeting by Tribunal

(2) Circular of Doc for members/crs meeting – Draft of terms, copy filed with Registrar, Effect of merger on shareholders, KMP, etc, Valn report, A/cs of merging Co.

(3) Sanction by Tribunal

(4) Property trfd.

(5) Order filed with registrar

(6) Effective date –

(7) Certified by CA/CS/Cost Acctant

(8) Punishment – 1L ₹ to 25L ₹ → Transferor/Transferee Co.

Officer – 1 yr or fine of 1L to 3L or both

247 Valn by Regd Valuers – impartial/true & fair – due diligence – no direct/indirect interest (upto 3 yrs)

Punishment:- to valuer – 50,000 ₹; intentional defraud – imprison – 1 yr & fine 1L to 5L or both

Convicted – refund remuneration – pay for damages to the Co.

281 Submission of Report by Co. Liquidator

3. Co. (Regd Valuers & Valuation) Rules' 2020

Rule 2 – Defn

3 – Eligibility for Regd Valuers

4 – Qualification & Experience — P/M – Grad – 5 yr; & E – PG – 3 yr; Sec. – 3 yrs

5 – Valn Exams – 50 hrs of Course + exam

6 – Certificate of regn – Eligible Individual/Eligible Partnership firm/Co.

7 – Condition for Regn

8 – Conduct of Valn – internationally accepted valn stds/adopted by RVO

9. Content of Valn Report –

4. SARFAESI Act

1. Intro
2. objective ← 3 methods of Recovery of NPA – (a) Securitisation (b) Asset Reconstn (c) Enforcement
3. Key terms
4. Non Perf Asset – as per RBI
5. Enforcement of Sec. Interest – → Notice → take possession → sale & Appoint mgr & Ask drs to pay
6. Right of borrower → object with DRT
7. Central Registry Estb
8. Need for Central Registry

Updated SARFAESI Act

Sec. 31 :- Not to apply on - lien/pledge/ unpaid seller/ Agri land/ less than 20% dues

Sec. 3 : Regn of ARC

Sec. 5 :- Acq of financials by Banks

6 :- Notice to obligor & Discharge of Obligor

7 :- Issue of Security by Raising of Receipts

9 :- Measures for Asset Reconstn

13 :- Enforcement of Sec. Interest

14 :- Chief Metropolitan Magistrate to assist

15 :- Takeover of Mgmt

15(3) - Takeover the busines of borrower

15(4) - Obligation of Secured Creditor

16 - Dirator/Mgr - no compensn be given

17 - Aggrieved person - to DRT

18 - Appeal to DRAT

20 - Central registry

21 - Central Registrar

22 - Central register.

23 - Transn detail

26E - IBC will supersede.

33 - Offences by Companies

Valn standards - by Internal Valn Stad Council

IVS 101 - Scope

102 - Investgn & Comp

103 - Reporting

104 - Basis of value

105 - Valn approaches & Methods

Asset standards - IVS - 200 - Business and Business Interests

210 - Intangible Assets

220 - Non financial liabilities

230 - Inventory

300 - Plant & Machinery

400 - Real property Interests

410 - Development Property

500 - Financial Instruments

Valn as per IT Act - Rule 11UA(1)(c) - Shares & Sec

11UAB - Inventory - Immovable - open mkt rate

Jewellery

Others

IND AS 113 - FV Measurement

Level 1 Input	Level 2 input	Level 3 Input
Listed Price	Listed Price of similar assets	financial forecasts ⊥ Historical Volatility

Principal mkt = Most advantageous Market = Highest volume

Chapter 7

BV Methods & Approaches

A) Income Method.
1. DCF
2. ~~Relative Val~~

B) MP Method - 1. VWAM
2. Relative Valn

C) BV method / Cost

D) Revenue & Sector Specific - EVA.

1. BV = PV of expected returns.

2. BV Methods

Income	MKT	Cost
↓	↓	↓
PV of CF / FCF.	Relative Valn	Replacement Cost / BV
↓	↓	↓
Bright future	to earnings / Sales / CF	very new / fewer future liquidation

3 Elements
- Economic Conditions
  - Present / Future / Industry & price growth
- Normalisation of Financial Statements
  - Non op / Extra ord item
- Valuation Approaches

3. Income Method

DCF.

1. Disc. Rate = WACC / Risk Adj Rate
   - WACC - Q1
   - Kd - Perpetual - Q2
   - Ke - CAPM - Q3
   - Beta - $r \times \frac{\sigma_s}{\sigma_m}$ - Q4
   - Q5
   - $\frac{Cov(s,m)}{\sigma_m^2}$ - Q6

2. Various Models
   - Dividend Disc Model = Value of Eq Shares - PV of CF - Realised Yield - Q7
   - Constant Dividend Model - Q8, Q9
   - Earning Cap Model - Q10 (controlling int)

- Gordon's Model — Q11
- Multi Stage Model — Q12, Q13, Q14.

Free Cf - FCFF - Cap Exp - Q15
WC - Q16
FCFF - Q17, Q18
FCFE - Q19, Q20, Q21, Q22
(Stable Cap structure)

3. Relative Value Multiple - Price to Sales Multiple - Q23
- Trailing PE - Q24
- Leading PE - Q25
- Other Multiples - Q26
- EV/EBITDA - Q27
- Sector Specific - Q28
- VWAP - Q29

Direct Comparison
Peer Group Avg
Peer Group Comparison
Adjusted for Diff.

4 Book Value Method - ~~Q30~~
- BV, NAV, Value/sh - Q30
- ~~NAV, Earning Cap~~
- NAV, Div Yield, PE Multiple, Earning Cap, DCF - Q31
- Controlling int / Few Shares - Q32
  Earning Cap - Paid up Value x Div Rate
- BV of Equity & Debt - June 24 - Q5(a)

Practice Questions: - June 24 QP - Q5(b)
- Dec 24 - MQP

FCFF :-

- **Based on Net Income (PAT)**

FCFF = PAT + I(1-t) + Depn − Cap Exp − Change in Non Cash WC

- **Based on Net Op Income**

= Op PAT + Depn − Cap Exp − Change in Non Cash WC

- **Based on EBITDA**

= EBITDA (1-t) + Depn × t − Cap Exp − Change in Non Cash WC

- **Based on CF**

= CFO + I(1-t) − Cap Exp.

Cap Exp = Inc in Cap Exp = Δ in Gross FA & Cap WIP

or

Δ Net FA + Depn during the yr + Cap WIP

Change in WC = Non Cash WC$_n$ − Non Cash WC$_{n-1}$

Non Cash WC = CA excl Cash ✓

(−) CL excl STD & Depn (Prov) (✓)

✓

One Stage Model : IV_0 = Pr of Stable FCFF @ K_0

Two Stage Model : IV_0 = PV of Stage 1 + Pr of Stage 2

No Op improvement — Cap Ex will be offset by Depn

Δ WC is nil

FCFE

= FCFF − Int(1−t) + Net borrowings

= (CFFAT − Reinv) − Int(1−t) + Net borr.

= CFFAT − Int(1−t) − [Reinv − Net Bor]

= OpPAT + Depn − Int(1−t) − [CapEx + ΔWC − Net Borr]

= PAT after Int − [(CapEx − Depn) + ΔWC − Net Borr.]

= PAT after Int − [(CapEx − Depn) + ΔWC] (1 − Debt Ratio)

or

[PAT after int + Depn − CapEx − ΔWC + Net borr]

or

PAT after Int + Depn − CapEx − ΔWC + New Debt Issued − Debt Repay + Net Issue of Pref Sh − Pref Sh div

BV Chapter 8 - Summary

1. Valn of P/m – 3 Stds of Value (Fair Mkt Value, Fair Value (ASC 820), Fair Value (Statutory))
   – 3 General Approaches
   – Install Cost — sometimes > Eq Cost

(a) Cost Approach – New ⇒ Cost to construct/acquire
Old ⇒ Cost - net of depreciation ⇒ Cost = FV as per current MP or Index

Depn = Fmv × (1 - Scrap %) × Age/Life

Soln to Q1 – FV ⇒ $471974 \times \frac{317}{254} = 589038$

Depn ⇒ $589038 \times 95\% \times \frac{6.5}{13} = 279,793$

$309,245

3 types of depn
1. Physical deterioration (wear/tear)
2. Functional Obsolescence (new tech)
3. Economic Obsolescence (ext factors)

(b) Mkt App ⇒ Comparison (with recent sales)
⇒ Adjust if characteristics not comparable

(c) Inc App ⇒ Earning Capitalisn / Discounted Cashflow
(Assumes - going concern basis & HABU)

2. Valn of Inventory [Eg.] – Lower of :-

for fa
- Cost Sheet – FIFO/LIFO/SAM/WAM
- Store Ledger – P/m – FIFO/LIFO/SAM/WAM

Cost Approach
- Cost of Purchase – PP, import duties, logistics cost, Handling Costs
- Cost of Conversion – DL + VOH + FOH (normal/Avg capacity based)
- Other costs – To bring to their present location & condition – Eg design/Transportation

Excluded :- Abnormal loss, Storage cost, AOH, Selling cost

NRV (SP - S/E)
- Item to Item basis (for Specific Items)
- Test check basis / Sampling basis (Sample's NRV applied to all other items) (for general items)

LIFO Reserve :- Difference between Value of Inventory as per LIFO & Value of Inventory as per other method
– No PFT is set aside for this – [illegible] in P/C

3. Valn of Investments – ~~Shares & Bonds~~ Investments / Debentures / Warrants / Pref shares

(a) Valn of Investment in Shares :-
- Short term – Cost / MV – lower } Q4
- Long term – Cost less Prov for permanent diminution

Cost of Inv (unquoted)

Purch Cost	✓
(+) Brokerage	✓
(-) Pre acq div/int	(✓)
	✓

SV	✓
(-) Brokerage	(✓)
(-) Post acq div	(✓)
Net SP	✓

Q5

COS = (proportionate on avg basis) Or

Pft = (Net Sales - Dividend) - COS

Cost of Bonus Shares = Nil

NAV (adjusted with FMV)

Q3

Mkt Price (Quoted)

Available Market Quotes

or

VWAP

$$= \frac{\text{Sum of Turnover}}{\text{Sum of No. of Shares}}$$

Q2

(b) Valn of Bonds

Redeemable

Value = PV of CF = PV of Coupon + PV of Rp

Annual, Semiannual

- Buy / Sell Decision

Q6, Q7, Q8

- Current Yield = Int / MPS Q9
- YTM = IRR or $\dfrac{I + \frac{Rp - Ip}{n}}{\frac{Rp + Ip}{2}}$ Q10
- Realised Yield = Sell prior to maturity

Irredemable

Zero Coupon

Q11 $Ip = \dfrac{Rp}{(1+r)^n}$

- Bonds with Options :- Callable / Puttable / Convertible
- Risks = Int rate risk, Reinv Risk, Call Risk, Default Risk, Infln Risk, Yield Curve Risk,
- Reln between Price & Yield
  Price ↑, Yield ↓
- Coupon Rate & Yield & Price
  C < Y ⇒ IP < Par = Discount
  C = Y ⇒ IP = Par ⇒ Par
  C > Y ⇒ IP > Par ⇒ Pr[illegible]
- Price & Time
  At maturity Price of bond = Par Value

~~Volatility~~

Macaulay Duration (time period to recover investment) ← ~~Duration maturity~~

Wtg durn ⇒ $\dfrac{\sum PV \times t}{\sum PV}$

- Price Sensitivity = ~~Duration~~ = Volatility (for Coupon Bonds) Pr.

$$= \frac{\%\ \Delta \text{ in Price}}{\%\ \Delta \text{ in Yield}}$$

- Short maturity = lower durn
- Higher Coupon = lower durn
- Higher Ytm = lower durn

(volatility)

Modified Durn = $\dfrac{\text{Macaulay Durn}}{1 + \text{Ytm}\%}$

- ZCB Duration = maturity as no coupons

(c) Valuation of Warrants

- **Convertible Security & Warrant:** - Warrant is just a right (not any security)
  - Conv Sec. ⇒ only conversion into security / no money reqd
  - Warrant ⇒ money reqd
- Like an Option Contract – to buy a share at a stated price.

- **Min Price of a warrant** := (MP of Eq sh – Exer Price) × Excha Ratio
  = If negative then take zero
- **Warrant Premium** ⇒ MP of warrant – Min Price of Warrant

Q12

(d) Valuation of Pref shares

- Value of Pref share – Irredeemable = $\frac{PD}{Re}$

4. Valuation of Intangibles – Copyright / Goodwill / Brand

Intangibles:- should generate measurable amt of economic benefit to the owner – incremental T/o, savings in cost, increased mrkt share

Ind AS 38 - 2 Criterias:- – Probable future economic benefits
– Cost measured reliably.

- Recognition:- – Acquired separately – at acq cost
– Acquired in business Combn / govt grant – Fv
– Generated internally – Exp incurred

(a) FV → Income Approach

only for Primary asset / for others use Distributor Method

- **Relief from Royalty**
  = Pv of Royalty Saved or Royalty Earned
  Royalty = Revenue × Royalty %
- **Multi Period Excess Earnings** = Pv of Incf
  ↓ for Significant or Primary Intangible
- **With & Without Method**
  Value of business With – Without
- **Greenfield Method** (for Franchise Agreements or Licenses)
  • Pv of cf – Res Control Cont
- **Distributor Method** (customer based asset)
  = Pv of Distributor Margin

(b) Cost Approach

= Replacement Cost (acquire or internally generated)

= For intangibles that are not the primary business drivers

= To value assets - for which market will not pay any premium.

Copyright ⇒ granted to authors, sculptors, painters, other artists for their creation.

⇒ Life of creator plus 70 years

Acquired :- Cost = PP + legal fees

Developed by owner :- No cost can be assigned / Amortization is by SLM or unit of prodn method

Valn :- Mkt / Income / Cost - Q13

Goodwill ⇒ Internally generated - may not be recognised as an asset

↓ ⇒ Acquired :⇒ Value = Purch considern - FV of assets acquired (incl brand value)

(value is embedded & need not be valued separately)

Value of Shares = (NAV + Goodwill) / No. of shares

(14, 15, 16, 17) ⇒ Pvt Cos :⇒ Super Pft ; Avg Pft ~~Annuity Method~~

MV of Assets - Ext Liabs (incl PSC) → CE (Cap Ed) (prefer) | Avg Cap Ed → [Op Cap + ½ PAT]

[For services]

Pft to exclude Investmt inc

Tax effect on income adjustments

Undervaln of Inventory ~~⇒ Add to Pft & B/S~~

~~# of Redeemable PSC is given, it is assumed as financial debt (treat like interest).~~

Super Pft Method

FMP ✓

(-) Normal rate of return (v) ⇒ [Cap Ed × Normal Rate] (Mkt Yield + Risk Refund)

Super Pft = Excess Earnings ✓

Goodwill = Avg Super Pft × No of Yrs

Time Value

For definite Period = PV of Super Pfts

Indefinite = Super Pft/yr ÷ KD

Avg Pft Method

= Avg Pft of past yrs × No. of yrs

No time value

= Super Pft p.a × No. of yrs

FMP

PAT (Avg) ✓

(±) Ab items (v)

(-) Pref Div (v)

FMP ✓

SAM = Σx/n ⇒ fluctuating

WAM = Σfx/Σf (More weight to recent yrs) - trending

- If yr specific - Adj from the yr

- If annual - Adj from Avg of Pfts

Adj affects P/L / B/S both.

Given G/W in B/S not considered

Adjusted Bank Balance

~~Value of firm with brand value - without brand value~~

3

Valuation of Brand

Value of Business => Avg FV = Net Assets based + Yield based

Yield based: Div Yield = D/ke

Earn Yield = FV × Act Yield ~~on Book earnings~~ / NAV of Shares (NAV)

Mkt Approach
↓
Sales Comparison Approach
↓
detailed comparison (mkt environment, legal, economic outlook)
↓

Cost Approach
↓
Cost invested or Replacement cost or Reproduction cost

Income Approach
↓
PV of future earnings of all segments where brand operates
↓

Relief from Royalty Method

Royalty = Amt firm would pay in the open mkt in licensing fees to obtain the rights to use the brand
⇓
PV of Royalty saved

Brand specific Royalty = Revenue × Royalty % × Share% from brand

Q18

Capitalisn Method

Excess Earnings = Pft with brand − Pft without brand

Q19 Q22

Adj PAT or Excess Returns ÷ Cap Rate

→ Adj normal return
(Add back - loss on sale of assets, less - Non Operating Income)
→ (Infln Adj factor)

Q20, Q21 → Cap be weighted Avg Adjusted PAT less Future expenses.

→ Pft = Mkt Size × Mkt Share% × Pft %

Q23

Valuation of Trademarks & Tradenames

= Similar to Copyrights

Leaseholds

=> Exclusive right to use the property.

=> Ind As 116/117

=> Right to Use Asset − PV of Lease Liability ✓
(+) Initial direct Costs ✓
(+) Est Cost to dismantle, remove or restore ✓
(+) Prepaid lease Payments ✓
(−) Lease incentives received (x)

F & License :- One time fee ⇒ capitalised & then amortised

R&D / Software cost :- Capitalised as intangible & amortised.

Q24

5. Valuation of Human Resources

Op 2

Expected value from the human resource

Op 1

Amt that entity could potentially realise if he/she stays during the service period

Cost Approach :- Actual Cost are amortized over the expected useful life

Value = Actual Cost incurred of the asset → [Difficulty :- useful life calculation]

Income Approach :-

Flamholtz's Stochastic Rewards Valuation Model

↓

individual generates worth as he/she moves along the roles (Exit is also a role)

Lev and Schwartz

↓

PV of wages during the stay with the orgn. (divide into groups)

disc rate = risk free rate or expected return from skills

or

PV of addl profits because of employee

Q25, Q26, Q27, Q28

Maxm bid Price = Addl Pft / rate

Maxm Salary = Addl Pft

6. Valuation of Real Estate

Principles - Progression (similar properties - better)
Regression (similar properties - poor)
Conformity (similar properties - same)
Substitution (MV of similar)
Change
Anticipation (future events)
Contest (Improvements)
Plottage (Adjacent lots combined)
HABU
Competition

Cost Method - Replacement Cost of Constn - Allowance for depr + Value based on property features

Depn % per yr = 100 / life of asset.

Market Approach = Recent SV
or
~~Cost~~ = Expected Annual Income × Gross Rent Multiplier

Income Approach = Expected Annual Income ÷ Capitalisation Rate (Avg)

2245 Q29, Q30, Q31

7. Value Added, EVA, MVA

Value Added ⇒ enhancing shareholder's value
⇒ Investing in positive NPV projects enhances the value of the company

EVA = NOPAT − CoC × Cap Ed

NOPAT = Op Pft after depn ✓
(+) Implied Int on Op lease ✓
(+) Glw Amorhsn ✓
Adj OPAT ✓
(−) Inc Tax (✓)
(+) Dec in Deferred Tax ✓
(+) Tax benefit from Int Exp & Int on lease ✓
(−) Taxes on Non Op Income (✓)
NOPAT ✓

Cash Operating Tax

Cap Ed
(+) NWC ✓
(+) PPE
(+) Glw
(+) PV of Op lease ✓
or
Esc + PSC + Rls + LCD

Two phase Model
TV = EVA / WACC − growth

Q32, Q33, Q34

MVA = MV of Equity Capital − Capital Employed
= Higher is better

EVA vs MVA ⇒ MV reflects expected EVA from assets in place & also
⇒ Expected EVA from future projects
⇒ Correlation between EVA & MVA will be weaker for high growth firms.

8. Valuation of Liabilities

8.1 Liabilities — present obligation arising from past events.

(a) Determinants of Liabilities Valuation —

Exist at present time, Equitable obligation, No discretion to avoid the future sacrifice, determinable maturity value, Payee known or identifiable.

(b) Valuation

- Discounted net value • Historical value • Current Cost
- Settlement Value • External liabilities - Debentures
- Current liabilities • Deferred liabilities • Liquid liabilities
- Contingent liability

8.2 Contingent claim Valuation

= Options Contract - right but no obligation

= NPV does not consider it, (E.g. - delay, abandon, expand a project) there is a way to compute it

= Value of an asset may not be greater than the PV of expected cash flows if the cash flows are contingent on the occurrence / non-occurence of an event.

Chapter - 9

Valuation in Mergers & Acq

1. Types of Mergers

- Horizontal
- Vertical
- Forward Integn
- Backward Integn
- Conglomerate Merger
- Acquisition

Hostile Mergers

- Target are not receptive to the idea of a merger —
(a) Tender offer (b) Proxy fight

Defensive Strategies

- Poison Pills – Issue stock options
- Poison Puts –
- Share Repurchase –
- Crown Jewel –
- White Knight –

Motives for Merger & Acq

- Growth
- Creation of Synergy
- Increase Market Power
- Acquiring Unique Capabilities & Resources
- Diversification

Acquisitions

Strategic
↓
intends to run the Co.

financial
↓
only for investment
↓
improved governance mgmt chan

2. Acquisition Pricing

- Price paid to the target Co.'s shareholders for its shares
- Cash Deal | Stock Deal | Hybrid
↓
Exchange Ratio

- Value Created for Acquirer = Value Recd – Acq price paid
↓ ↓
M. Value of Target Co. + Perf Improvement | MV of Target Co. + Acq Prem

Intrinsic Value = PV of CF
Market Value = IV ± Prem
Purch Price = Price Accepted
Synergy Value = Improvement
Value Cap = IV – PP

Analysis of Mergers

Exit Strategies

- M&A
- Selling the Stake
- Acquisitions
- Mgmt & Ee buyouts

Target Management Entrenchment

Managers investing in equity to increase their power.

Examples of Entrenchment Strategies

1. Poison Pills – right to give current shareholders for add shares
2. Restricted voting rights – differential voting rights
3. Golden Parachutes
   - leave co. with lucrative cash payouts

Antitrust & Security Issues

Antitrust violation among competitors in an industry – Cos after merger could determine in advance whether they would be in violation if they were to merge. [By Competition Comm^n]

Herfindahl Hirschman Index (HHI)

- better measure of assessing mkt concentration.

$$HHI = \Sigma \left(\frac{\text{Sales } i}{\text{Total Mkt Sales}} \times 100 \right)^2$$

< 1000 = Not Concentrated
1000 & 1800 = Moderately Concentrated
> 1800 = Highly concentrated

Analysis of Merger

1. Deal Price = Intrinsic Price + Acquisition Premium

IP = [Avg P/E of comp Cos. × Expected EPS] or [Any other Multiple × Expected or Reported Value]

Acq Premium: Avg premium of Comparable Cos.

2. Evaluation of Merger → Acq premium = Value Paid to Target − Pre merger Value of Target

Benefits of Target Co. ⟹ Acquisition Premium recd.

Acquiring Co. ⟹ Acquirer's Gain = Value of Synergy − Acq Premium paid − Cost of Integration

→ ~~Value of Combined Co.~~ = ~~Pre Value of Acq + Pre value of Target + Synergy~~

Value Paid to Target Co. ⟹

→ Cash Deal = Cash Amt = Amt/sh × No. of shares.

→ Stock Deal = [No. of Eq Sh in Target Co. × Exch Ratio] × MPS post Merger of Acq Co.

Exch Ratio = Target Co. / Acq Co.

MPS Post Merger = [EPS or MPS or given] ↳ In absence ⟹ use MPS

Value of Acq Pre merger +
Value of Target Pre merger +
Value of Synergies + Cash Paid if any

→ Hybrid Deal = Cash + Stock

3. Present Value of Growth Opportunities

= Price with growth − Price without growth

Price with growth = $\frac{EPS \times Payout}{ke - g}$ [g = b × r]

Price without growth = $\frac{EPS}{ke}$

= If negative ⟹ takeover target, inc value of shares by Paying entire EPS as dividend

4. EPS workings

EPS of Combined Co. = PAT of Combined / No. of Eq Sh Of Acq + Shares of Target × Exch Ratio

Accretion / Dilution (in ₹ & in %) ⇒ Acq = Post Merger EPS − Pre merger EPS

Target = Post merger EPS × Exch ratio − Pre merger EPS

[% = Δ / Pre Value × 100]

If Exch ratio is in the ratio of EPS ⇒ There will be no accretion/dilution.

5. MPS workings

• MPS of Combined Co. = EPS of Combined × P/E Ratio (Acq Co.)

• MV of Combined Co. = MPS Combined × (No of Sh of Acq Co. + No. of Sh of Target × Exch Ratio)

• Acc/Dilution Acq Co. ⇒ Post merger MV (Combined MPS × Old No. of Shares) − Pre merger Value

Target Co. ⇒ Post merger MV (Combined MPS × Old No. of Sh × Exch Ratio) − Pre merger Value

6. Post merger Equity Ownership

Distribution

Acq: No. of shares pre merger / Total shares post merger

Target: No. of shares allotted as per exch ratio / Total shares post merger