

# **BI+AI: A Holistic Approach to Internal Technology Investment Lifecycle Management at PCI**

*YHY  
HD20233085*

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Management accounting skills necessary for the new position



01.

# Case overview

## Case overview

### PCI'S Current Technology Investment Projects

ALB Dept



Independent project

**High-tech  
Industrialization  
Promotion Project of  
ALB Production Line**

IG Dept

Exclusive project

**T1 product line  
intelligent renovation  
project**

- 
- 
1. Inappropriate financial evaluation indicators
2. Budget alignment issue

Ignore the qualitative aspects in investment decision

### Weaknesses identified

MA Dept

Insufficient coordination

Business units

Insufficient integration

Finance

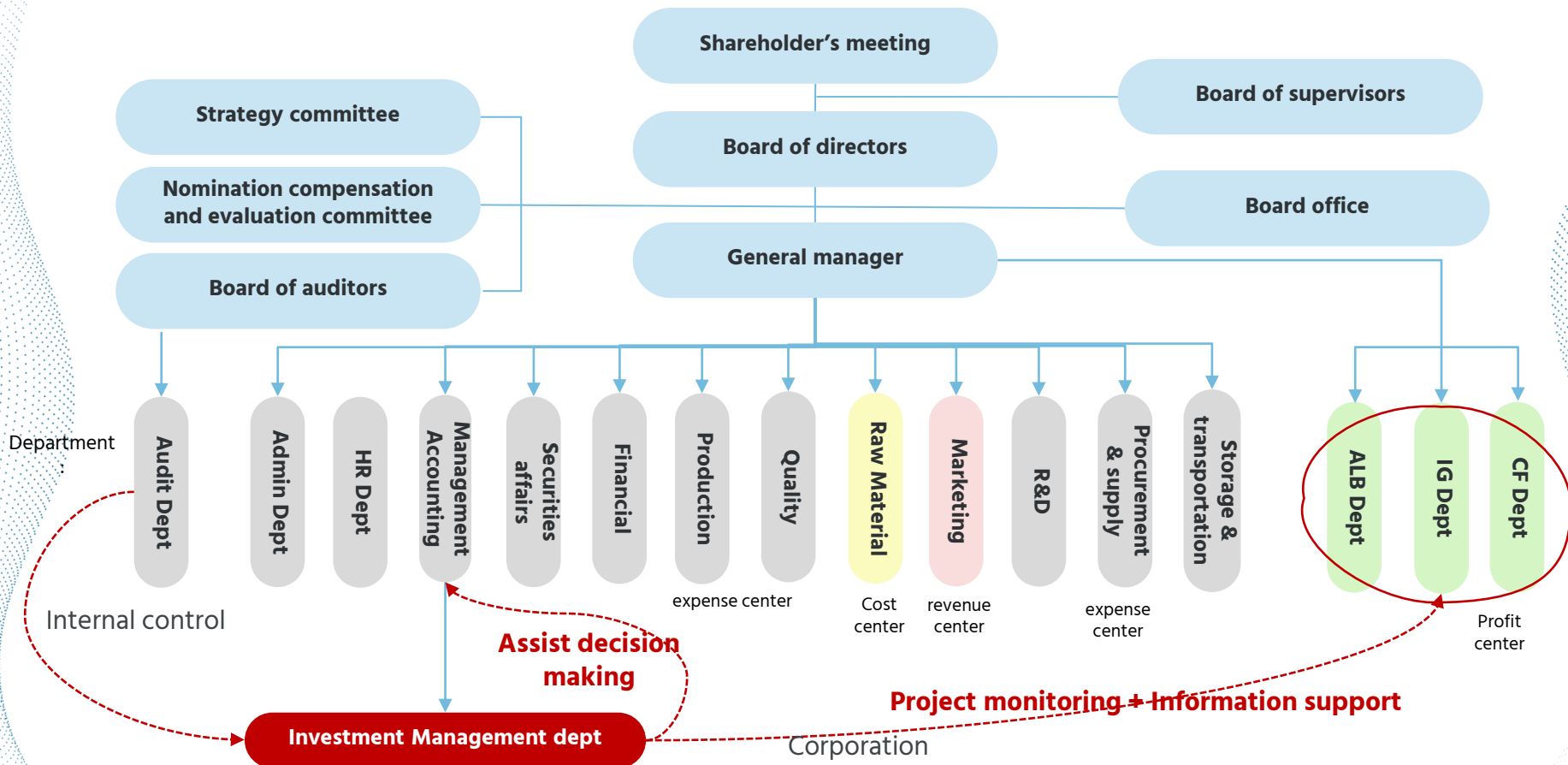
Business

Requirements of  
**digital and intelligent transformation !**

**BI+AI solution**

Efficient, fast, value-maximized  
decision making

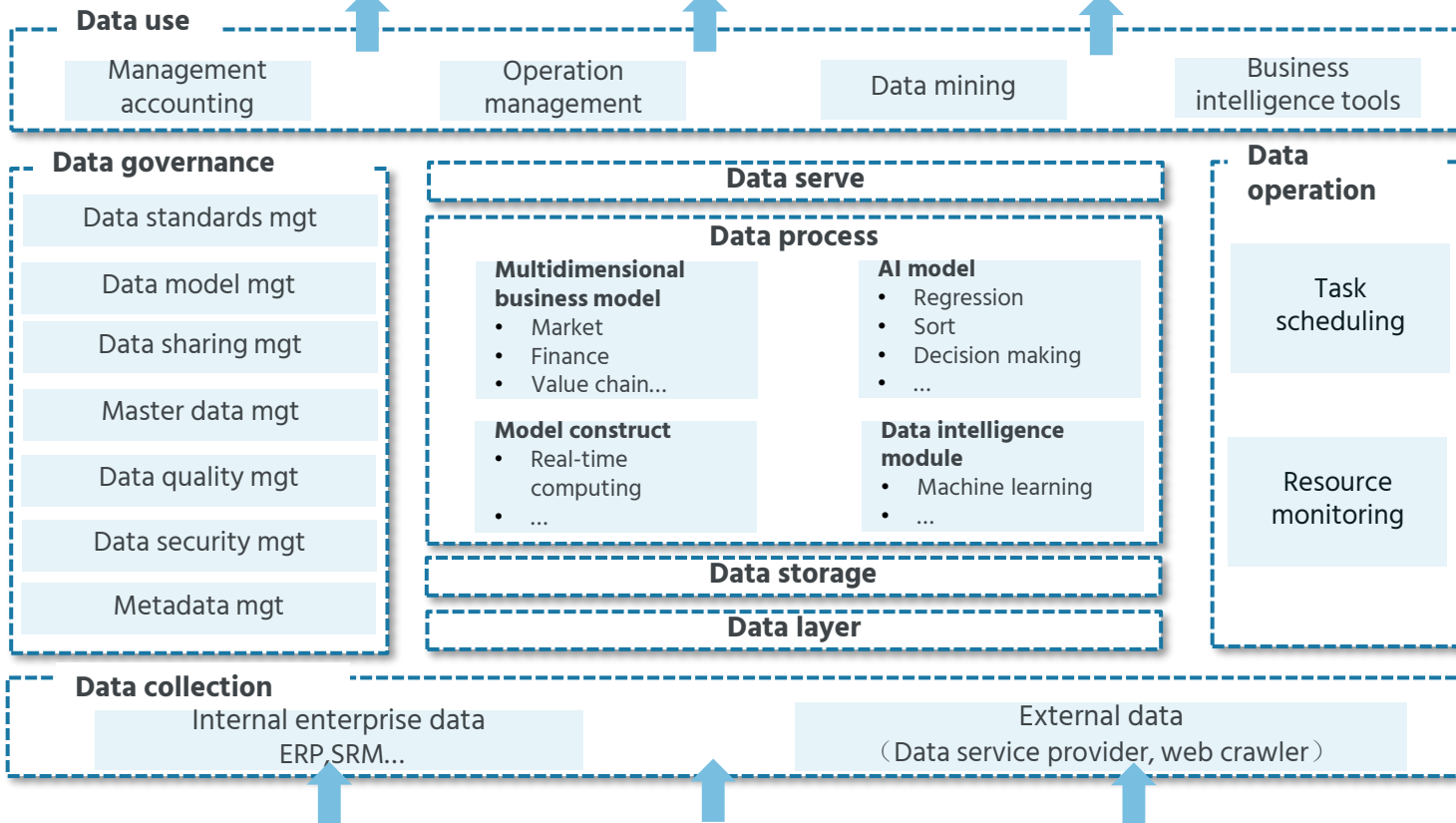
# Low-level yet **CRITICAL** : Investment management department



# BI+AI solution: Data middle platform

Decision maker

Export:



Information gathering: All depts. involved in the project

Data middle platform:

Access party:

# Big picture: integration of business and finance

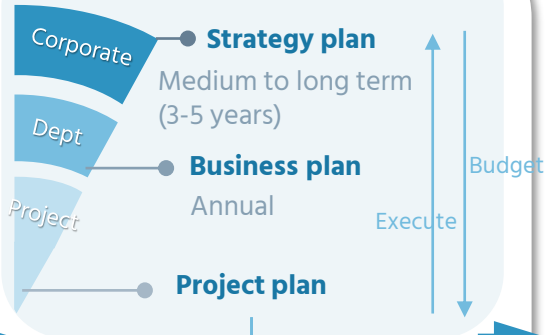
Corporate strategy

Strategy decomposition

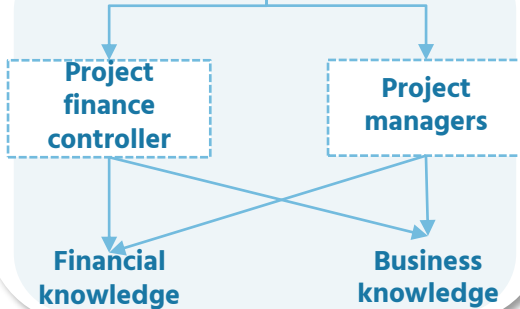
Indicator system

Investment Project management

## Process integration



## Personnel integration



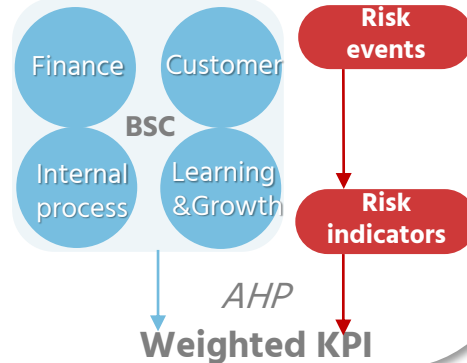
## Balanced scorecard

External environment

Internal competitiveness

Vision Mission goals

Strategy map



## Project lifecycle

*Pre-investment*

Effective decision making

*Post-investment*

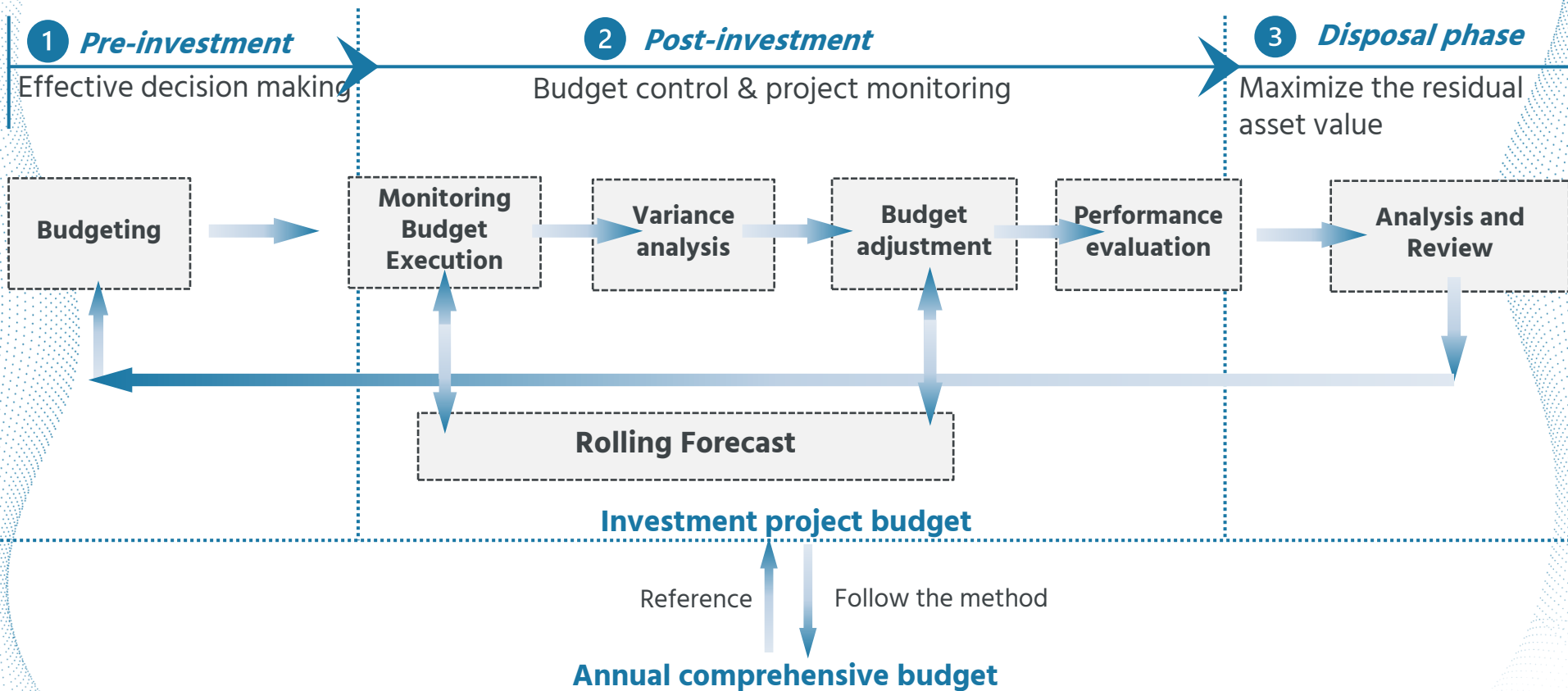
Budget control & project monitoring

*Disposal phase*

Maximize the residual asset value

Vision Mission Goals

# Closed-Loop Management of Comprehensive Budgeting





# End-to-end risk management

## Enterprise risk management (COSO, 2017)



Investment management dept.



Internal audit dept.



### 1 Pre-investment

Effective decision making

Analysis  
business  
context

Risk pre-  
assessment

- Financing risk

### 2 Post-investment

Budget control & project monitoring

Identify  
risk

Assess  
severity of  
risk

Prioritize  
risk

Implement  
risk response

- Cost risks
- Schedule risks
- Delivery quality risks

Mitigate Transfer Share

### 3 Disposal phase

Maximize the residual  
asset value

Supervision  
& improvement

- Inaccurate disposal methods
- Compliance risk

## The Balanced Scorecard

Perspectives	Objectives	Indicators
<b>Financial</b>	Sustainable Growth	Revenue growth rate
	Competitive Profitability Level	Operating margin
	Evaluation criteria for internal investment project (same lifetime)	NPV
		IRR
		DPP
	Evaluation criteria for internal investment project (Different lifetime)	Equivalent annual cost
Assessment by profit center	Asset turnover rate	
<b>Customer/ Stakeholder</b>	Improve Brand Image	Customer satisfaction index
	Market expansion	Market share growth rate
	Energy conservation	Energy consumption
	Emission reduction	Carbon emission
	Protection of donor's security	Safety and interests of blood donors
	Protection of investors' interest	Transparency of information disclosure
<b>Internal Process</b>	Requirement for selection of "Specialized, sophisticated, distinctive, and innovative" enterprises	R&D spending percentage
	Improve production efficiency	Production capability
	Stabilize Product Quality	Product recall frequency
<b>Learning &amp; Growth</b>	Improve Employee expertise	Number of training hours per employee
	Improve Employee satisfaction	Employee satisfaction index
		Employee layoff rate
Expertise density	Proportion of expert talent	

## How does BSC work together with risk management?

Strategy map




Identify the risk events



Quantify the likelihood and consequence



Develop risk indicators

Perspectives	Objectives	Events	Indicators
<b>Financial</b> 	Sustainable Growth	Increasing competition	Increase in percentage of market saturation
	Competitive Profitability Level	Increasing operational costs	Rise in COGS
	Evaluation criteria for internal investment project	Unexpected market volatility	Variance between forecasted and actual figures
	Assessment by profit center	Technological obsolescence	Increase in maintenance costs
<b>Customer/ Stakeholder</b> 	Improve Brand Image	Negative publicity	Increase in customer complaints
	Market expansion	Regulatory barriers	Delay in obtaining regulatory approvals
	Energy conservation	Employee non-compliance to policies	Low participation rates in energy-saving program
	Emission reduction	Lack of proper monitoring	Variability in emission levels
	Protection of donor's security	The plasma collection station is not compliant	Frequency of being fined
	Protection of investors' interest	Lack of transparency in financial reporting or disclosures	Low quality of financial reporting
<b>Internal Process</b> 	Requirement for selection of "Specialized, sophisticated, distinctive, and innovative" enterprises	Rapid change in the requirement	Frequency of change in requirement
	Improve production efficiency	Low Input efficiency: production cost increase	Increase percentage of annual average cost
		Low Output efficiency: Unsteady plasma supply	Low rate of capacity utilization
	Stabilize Product Quality	Insufficient Production technology level	Increase in produce recalls
<b>Learning &amp; Growth</b> 	Improve Employee expertise	Ineffective training programs	Low completion rates for training programs
		Employees being not skilled in operation	Low training hours per employee
	Improve Employee satisfaction	Unsatisfactory employee welfare	Voluntary turnover of employee
	Expertise density	High Turnover of Expertise	Turnover of expertise

## BSC indicators

First Level Index	Weight	Second Level Index	Weight	Comprehensive Weight
Financial	30%	Revenue growth rate	18%	5.4%
		Operating margin	10%	3.0%
		NPV	12%	3.6%
		IRR	16%	4.8%
		DPP	12%	3.6%
		Average annual cost	20%	6.0%
		Asset turnover rate	12%	3.6%
Customer/ Stakeholder	34%	Customer satisfaction index	32%	10.9%
		Market share growth rate	12%	4.1%
		Energy consumption	12%	4.1%
		Carbon emission	13%	4.4%
		Safety and security of blood donors	26%	8.8%
		Transparency of information disclosure	5%	1.7%
Internal Process	30%	R&D spending percentage	50%	15.0%
		Production capability	21%	6.3%
		Product recall frequency	29%	8.7%
Learning & Growth	6%	Number of training hours per employee	6%	0.4%
		Employee satisfaction index	12%	0.7%
		Employee layoff rate	38%	2.3%
		Proportion of expert talent	43%	2.6%

## Risk indicators

First Level Index	Weight	Second Level index	Weight	Comprehensive Weight
Financial	30%	Increase in percentage of market saturation	13%	3.9%
		Rise in COGS	7%	2.0%
		Variance between forecasted and actual figures	20%	6.1%
		Increase in maintenance costs	32%	9.5%
		Increase percentage of annual average cost	28%	8.4%
Customer/ Stakeholder	34%	Increase in customer complaints	15%	5.2%
		Delay in obtaining regulatory approvals	10%	3.5%
		Low participation rates in energy-saving program	22%	7.4%
		Variability in emission levels	29%	9.7%
		Frequency of being fined	18%	6.0%
		Lack of transparency in financial reporting or disclosures	6%	2.1%
Internal Process	30%	Frequency of change in requirement	43%	13.0%
		Low rate of capacity utilization	20%	5.9%
		Increase in produce recalls	37%	11.1%
Learning & Growth	6%	Low completion rates for training programs	33%	2.0%
		Low training hours per employee	13%	0.8%
		Voluntary turnover of employee	27%	1.6%
		Turnover of expertise	27%	1.6%



02.

**Pre-investment phase:**  
Effective decision making

# Investment analysis

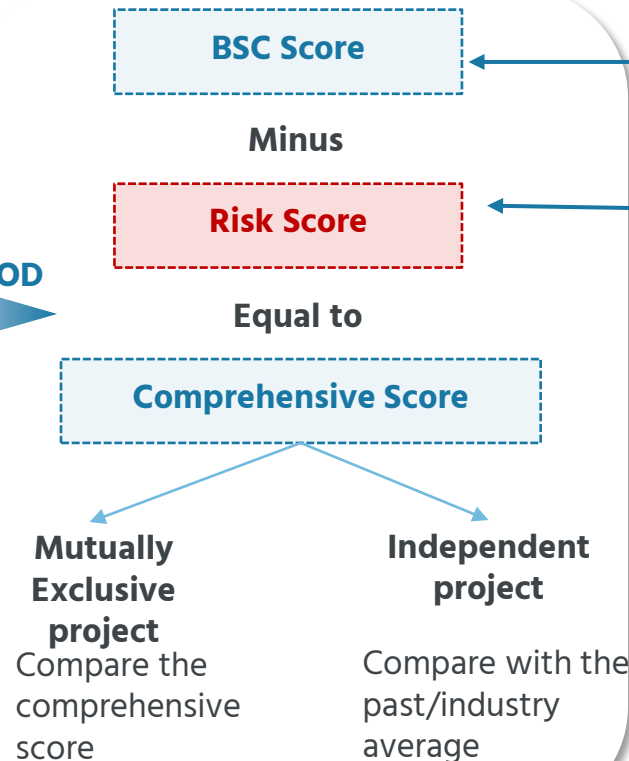
## Effective decision making

Indicator system at corporate level



Score by BOD

Evaluation at project level



Marking rule

$= W_{BSC} \times$   
*Normalized value*<sub>BSC</sub>  
 Higher mark,  
 Better performance

$= W_{Risk} \times$   
*Normalized value*<sub>Risk</sub>  
 Higher mark, Higher risk

Range: 1 –10

• **Normalized value** =  $\frac{\text{Mark}}{10}$

## EXAMPLE: T1 product line intelligent renovation project

Perspectives	Indicator	Medium Mark(PCI)	Traditional	Normalized Value	Intelligent	Normalized Value
Financial	Revenue growth rate	5	5	0.5	5	0.5
	Operating margin	5	20.8%	0.24	19.2%	0.19
	NPV	/	/	/	/	0
	IRR	/	/	/	/	0
	DPP	/	/	/	/	0
	Annual Average Cost	5	6	0.6	5	0.5
	Asset turnover rate	5	/	/	/	0
Customer /Stakeholder	Customer satisfaction index	5	5	0.5	9	0.9
	Market share growth rate	5	5	0.5	5	0.8
	Energy consumption	5	5	0.5	5	0.8
	Carbon emission	5	5	0.4	5	0.8
	Safety and interests of blood donors	5	9	0.9	9	0.9
	Transparency of information disclosure	5	7	0.7	7	0.7
Internal Process	R&D spending percentage	5	3	0.3	8	0.8
	Production capability	5	8	0.8	8	0.8
	Product recall frequency	5	5	0.5	8	0.8
Learning & Growth	Number of training hours per employee per year	5	5	0.5	7	0.6
	Employee satisfaction index	5	6	0.6	6	0.7
	Employee layoff rate	5	8	0.8	4	0.4
	Proportion of expert talent	5	4	0.4	6	0.6

### Score for BSC indicators

Higher COGS

Higher maintenance costs, energy costs

Lead the domestic wave of intelligent transformation, better brand image

R&D spending is expected to increase

The product quality is more stable

Higher requirements on staff expertise

Intelligent transformation may bring layoffs

Need more expert



## EXAMPLE: T1 product line intelligent renovation project

First Level Index	Second Level index	Median Mark(PCI)	Traditional	Normalized Value	Intelligent	Normalized Value
Financial	Increase in percentage of market saturation	5	5	0.5	5	0.5
	Rise in COGS	5	5	0.5	5	0.5
	Variance between forecasted and actual figures	5	5	0.5	5	0.5
	Increase in maintenance costs	5	3	0.3	6	0.6
	Increase percentage of annual average cost	5	5	0.5	5	0.6
Customer/ Stakeholder	Increase in customer complaints	5	6	0.6	4	0.4
	Delay in obtaining regulatory approvals	5	5	0.5	5	0.5
	Energy consumption	5	5	0.5	5	0.5
	Variability in emission levels	5	4	0.4	6	0.6
	Frequency of being fined	5	5	0.5	5	0.5
	Lack of transparency in financial reporting or disclosures	5	5	0.5	5	0.5
Internal Process	Frequency of change in requirement	5	5	0.5	5	0.5
	Low rate of capacity utilization	5	5	0.5	5	0.5
	Increase in produce recalls	5	5	0.5	5	0.5
Learning & Growth	Low completion rates for training programs	5	5	0.5	5	0.5
	Low training hours per employee	5	5	0.5	5	0.5
	Voluntary turnover of employee	5	5	0.5	5	0.5
	Turnover of expertise	5	4	0.4	6	0.6

### Score for risk indicators

High tech production line needs more frequent maintenance

High tech ensures products quality

Greater variation involved with more carbon emission

High-pressure environment of many tech jobs can lead to burnout

# EXAMPLE: T1 product line intelligent renovation project

## Evaluation results

*Comprehensive score*

= *BSC Score* – *Risk Score*

=  $W_{BSC} \times \text{Normalized value}_{BSC} - W_{Risk} \times \text{Normalized value}_{Risk}$

	Traditional	VS	Intelligent
<b>BSC Score</b>	0.448		0.625
Minus			
<b>Risk Score</b>	0.473		0.523
Equal to			
<b>Comprehensive Score</b>	-0.026	<	0.102

# Financing Decisions

## Effective decision making

### Various approaches to project financing

#### Internal financing

##### Retained earning

- Stability in financing
- Control: More flexibility and autonomy in decision-making

- Limited finance resource
- Opportunity cost
- **Reduced contingency costs**

**The main concern:  
Disruption of plasma supply**

#### External financing

##### Equity financing

- Substantial funding
- **Shareholder value long-term benefits**
- Dilution of control
- Market volatility

**Good financing choice for projects like T1 product line renovation!**

##### Debt financing

- Tax benefit
- Maintain control
- Fast
- **Financial risk: especially when the supply chain disrupt**



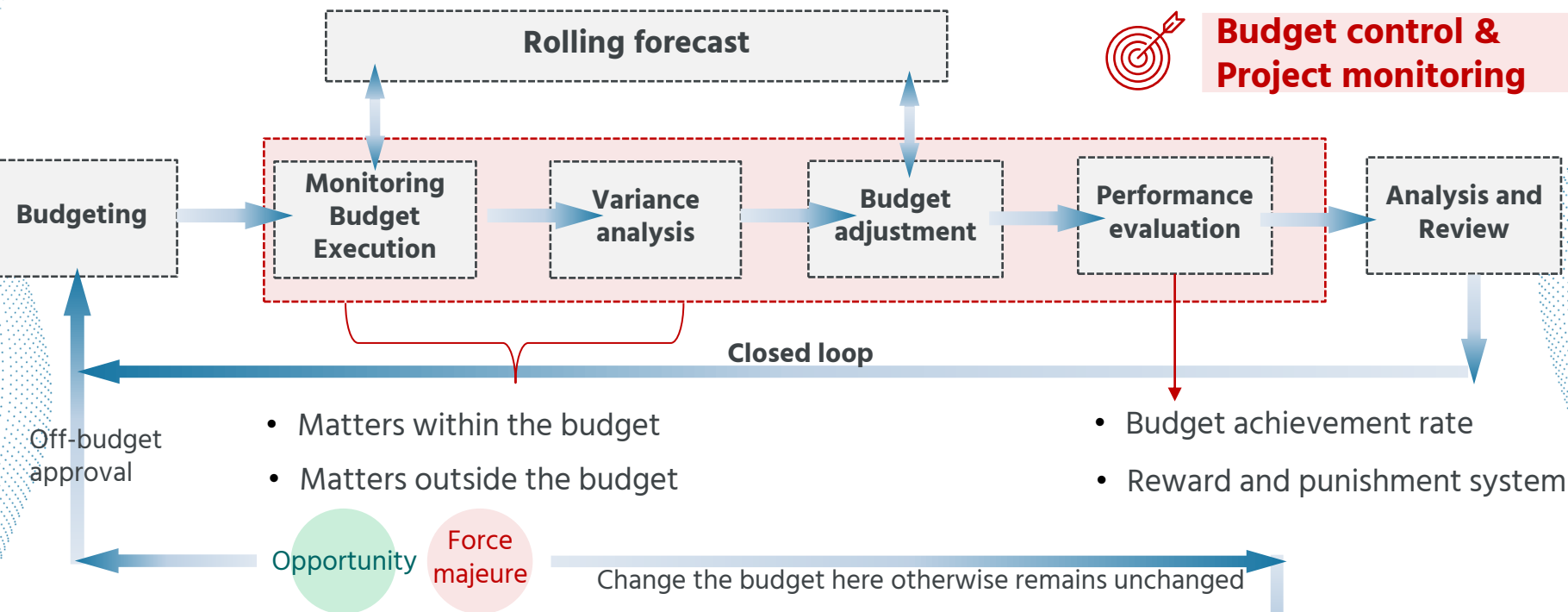
03.

**Post-investment phase:**  
Budget control & Project monitoring

## Budget control



### Budget control & Project monitoring

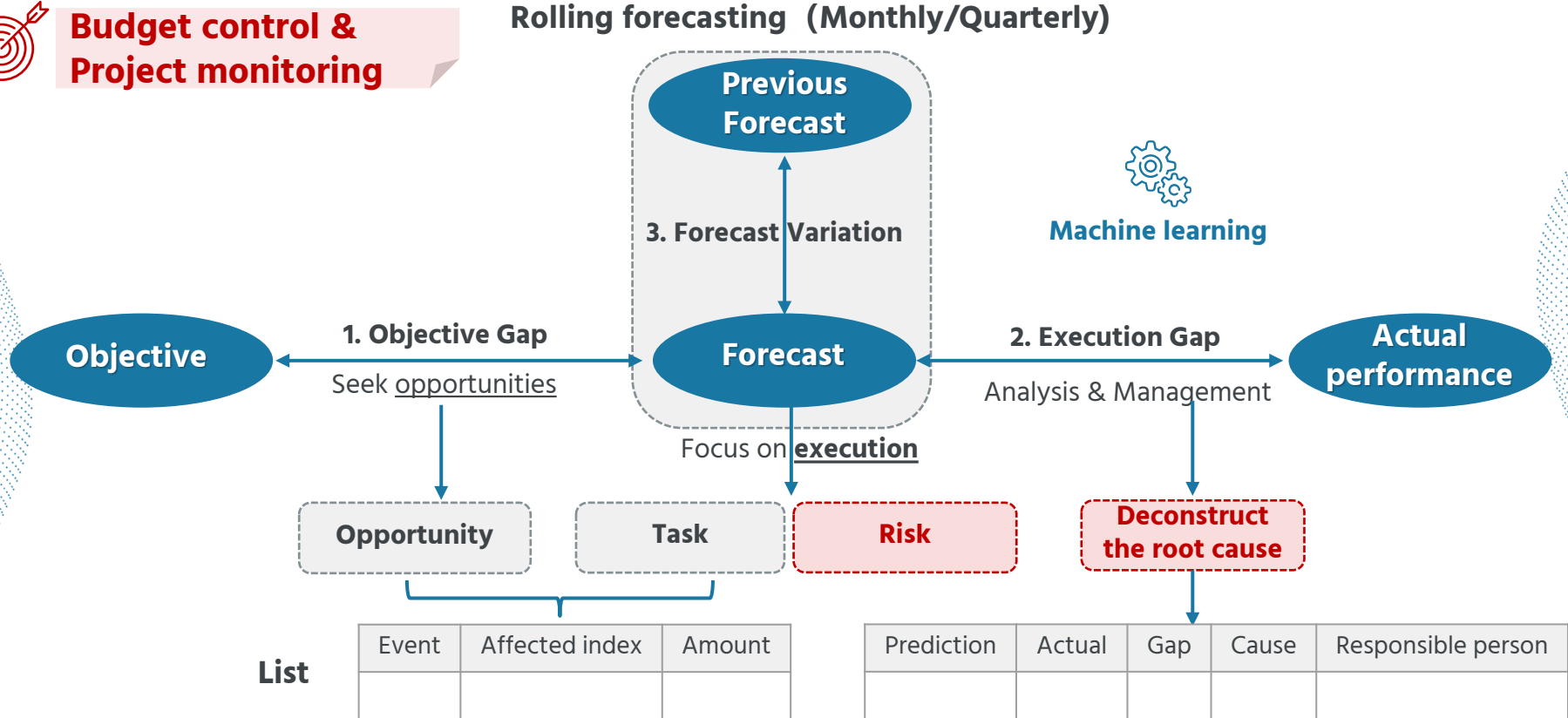


Perspectives	Objectives	Indicators	Actual use	Budget	Overbudget or not

Headers of the previous BSC table

# Progress monitoring

Rolling forecasting (Monthly/Quarterly)



Regular meeting is needed when changes occur → **agile management!**

## Risk control

### 1 Pre-investment

Effective decision making

### 2 Post-investment

Budget control & project monitoring

### 3 Disposal phase

Accurate asset valuation

Analysis  
business  
context

Risk pre-  
assessment

Identify  
risk

Assess  
severity of  
risk

Prioritize  
risk

Implement  
risk response

Supervision  
& improvement

Delivery quality risk

Scope

Project  
Quality

Cost

Time

Cost risks

Schedule risks

### Project Priority Matrix

	Time	Scope	Cost
Constrain		✓	
Enhance	✓		
Accept			✓

### Risk response

Mitigate { Reduce probability  
Reduce the impact

Transfer

Share

Record

Risk event	Response	Contingency plan	Trigger	Who is responsible

# EXAMPLE: T1 product line intelligent renovation project

Annual energy consumption per ton



**Energy costs increase**  
After using intelligent production line

## 1 Identify risk, assess severity of risk

First Level Index	Weight	Second Level Index	Weight	Comprehensive Weight
Financial	30%	Increase in percentage of market saturation	13%	3.9%
		Rise in COGS	7%	2.0%
		Variance between forecasted and actual figures	20%	6.1%
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		Turnover of expertise	27%	1.6%

## 2 Prioritize risk

	Time	Scope	Cost
Constrain		✓	
Enhance	✓		
Accept			✓

T1 focuses on responding to the wave of intelligence

## 3 Risk response

**Mitigate risk by sacrificing cost**  
(AI intelligently analyzes energy consumption, real-time forecast)

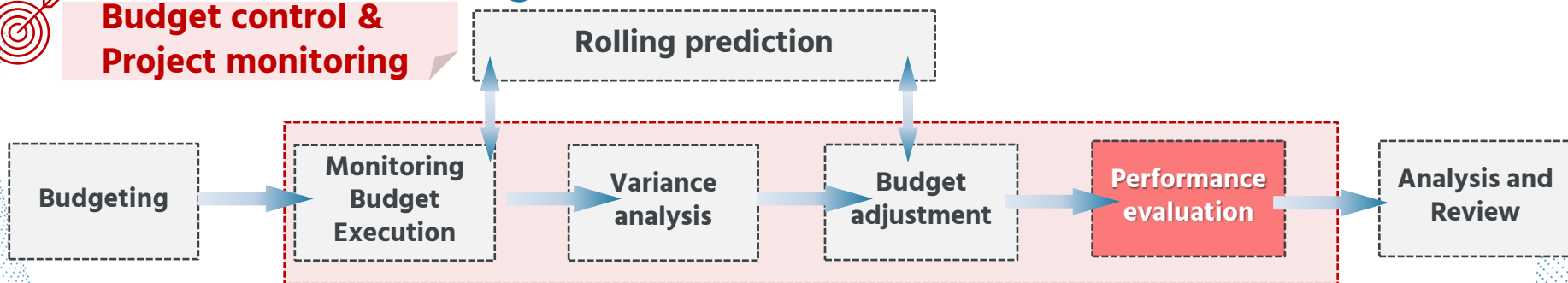
**Reduce the impact of the risk**



## Progress and Performance measurement



**Budget control & Project monitoring**



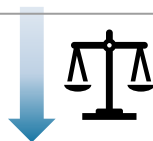
Perspectives	Objectives	Indicators	Actual performance	Forecast performance	Actual & forecast gap	Person in charge (operation & finance staff)

*Headers of the previous BSC table*

Actual & forecast gap >0



**Reward** person in charge



Actual & forecast gap <0



**Punish** person in charge

## Different control patterns: Common Engineering Procurement Construction (EPC)

 *EPC's monitoring mechanism*



Precision  
& legal protection

Evaluation  
methods

Project functional  
descriptions

Preferred  
brands

*drafting the bidding documents*

Initiation

Design

Tendering

Construction

Commission

Risk control for  
Drawing quality

*Besides considering scope, cost, time...*

Assign  
dedicated  
personnel

ESG



04.

**Disposal phase:**

Maximize the residual asset value

## Disposal phase – 3W



**Maximize the residual asset value**

3W	Component
<b>Why</b> to dispose of assets?	Maximize the residual asset value
<b>When</b> to dispose of assets?	Before / After the end of useful life
<b>How</b> to dispose of assets?	Sale / Transfer / Rent

**1** *Pre-investment*

Effective decision making

**2** *Post-investment*


Budget control & project monitoring

**3** *Disposal phase*

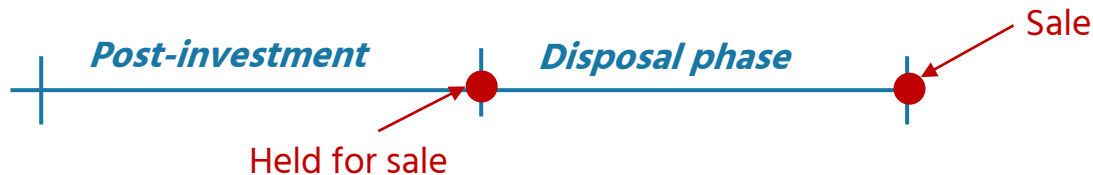
Maximize the residual asset value

## Entire Process of Disposal Period

**Maximize the residual asset value**

Step 1	Step 2	Step 3	Step 4	Step 5	Step 6
Clarify Purposes	<b>Asset Valuation</b>	Disposal Plan	Compliance Check	Cost Control	Review
<ul style="list-style-type: none"> <li>Raise fund</li> <li>Improve capital structure</li> <li>Reduce financial risks</li> </ul>	<ul style="list-style-type: none"> <li>Evaluate the disposal assets</li> <li>Understand the market price</li> <li>External valuation</li> </ul>	<ul style="list-style-type: none"> <li>When to dispose of</li> <li>Disposal method</li> <li>Disposal price</li> <li>Consider the market environment and legal constraints</li> </ul>	<ul style="list-style-type: none"> <li>Ensure the transparency and fairness</li> <li>Avoid the misconduct</li> <li>Obey the policies and law</li> </ul>	<ul style="list-style-type: none"> <li>Monitor the incidental fees: evaluation fees, agency fees, tax fees.</li> </ul>	<ul style="list-style-type: none"> <li>Compare actual performance with projections</li> </ul>
General Manager	Marketing Dept. Investment management Dept. Production Dept.	Audit Dept. Investment management Dept	Audit Dept. Investment management Dept	Investment management Dept	Investment management Dept
					
<b>Department</b>					

## When/How to dispose of assets? Vertical View



### 1 Value in use (continue to use) VS Proceeds



Discounted Cash Flow



Continue to use

Production Dept.  
Investment management Dept.



Research & Estimate



Proceeds (probable)

Marketing Dept.  
Investment management Dept.

### 2

#### Asset held for sale (IFRS 5)

Criteria:

- Available for immediate sale in its present condition
- Management must be committed to a plan to sell the asset
- Active programme to locate a buyer
- Marketed for sale at a price that is reasonable related to current fair value
- Completed sale within one year

**Value in use (continue to use) < Proceeds**



**Must** meet the criteria before classified as asset held for sale

### 3 Identify potential risk involved if criteria are not met:

- Regulatory non-compliance
- Wrong financial statement-additional audit cost
- Improper resource allocation: reduce investment / personnel



### 4 Collaboration between Investment management Dept. & Audit Dept.

- Regular check the status of the asset
- Create the contingency plans for the resource allocation

### 5 Maximize the selling price negotiated



$$= (\text{Proceeds} - \text{continue in use})_{\text{max}} - \text{incidental costs}$$



### 6 Do the post-disposal review

- Compare **KPI** to evaluate the disposal
- BI tools to track and analyze metrics over time

## If there are better alternative asset? Horizontal View

1



All Dept.

Discounted Cash Flow

BSC + Risk Evaluation



Value of assets



Qualitative: Industry trend, ESG

Quantitative: KPI (NPV, Equivalent Annual cost)

2 Identify potential risk involved :

- Regulatory non-compliance
- Financing risks due to repayment obligations
- .Inaccurate performance prediction of new projects

3

Collaboration between Financial Dept. & Audit Dept.

- Routinely implement robust compliance procedures
- Hedging strategies: Interest swap, fixed-rate loans

4

Do the post-disposal review



**EXAMPLE:** T1 product line intelligent renovation project



## How to dispose of assets? (Besides sale)

### 1. Rent



Discounted Cash Flow



Value of assets



Rent payment received



Review

Production Dept.  
Investment management Dept.

### 2. Transfer (Non-current asset transferred to another product line)



Evaluate



Synergy



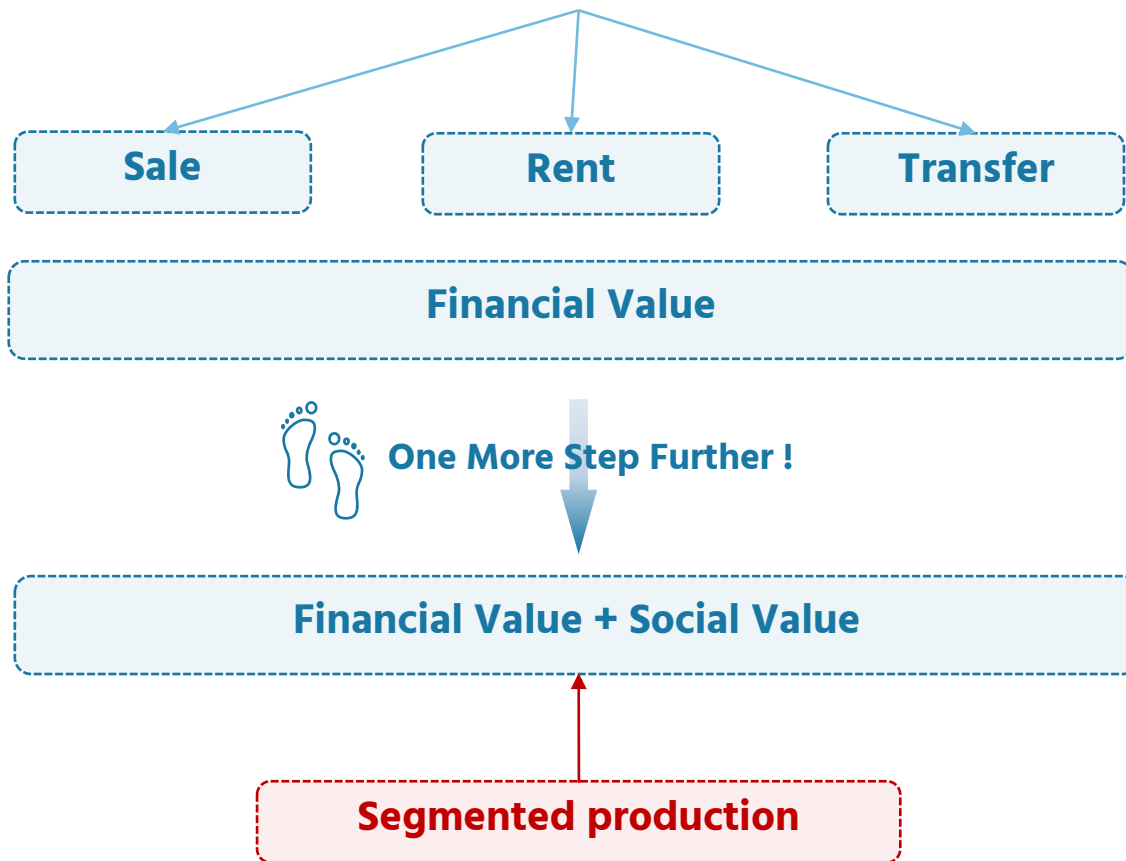
Antagonism



Review

Production Dept.  
Investment management Dept.  
ALB, IG, CF Dept.

## How to dispose of assets?



## A step further: Segmented production

### Working Rational

- 1 Identify and select potential disposal assets
- 2 Examine their production function
- 3 Seek partners to produce collaboratively

**Specialized**

**Cost  
Effective**

**Faster**

Higher probability of being polluted

Improve plasma utilization:  
To solve supply chain issue

**Value added to the  
whole humanity!**

Stabilize supply  
of blood  
products

Traceability &  
transparency of  
the supply  
chain



Reduce carbon  
emission  
Lower energy  
consumption



05.

# Management accounting skills

## Management Accounting Skills

### PMI Talent Triangle



### IMA MA Skills Framework



Soft skill	AI Utilisation
Business knowledge	Risk Control
Innovation	Resource Integration

**Business**



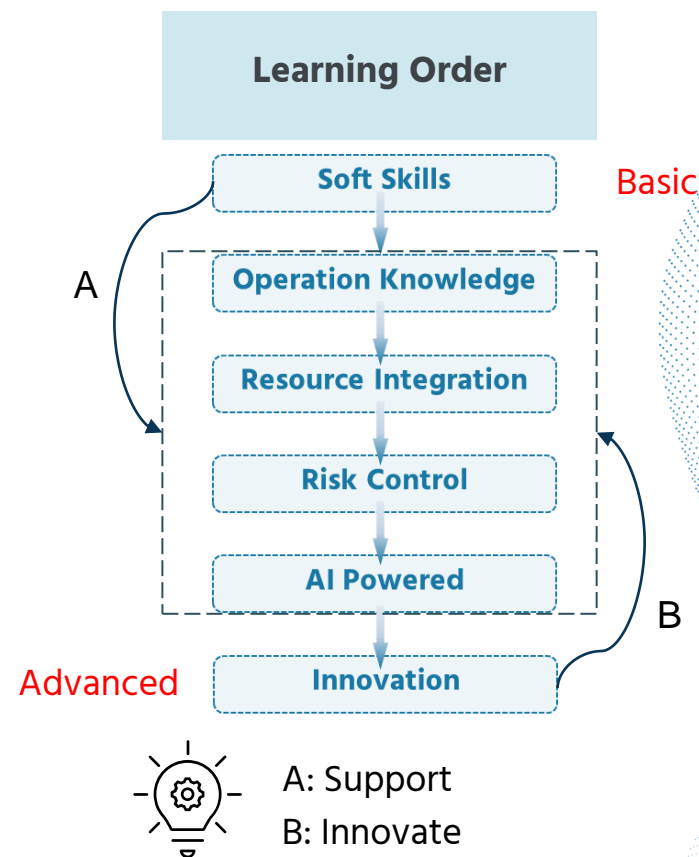
**Integration**



**Finance**

## Management Accounting Skills

MA Integration Skills	Explanation
<b>Soft skill</b>	- Effective communication & leadership matters during the multi-departments' collaboration
<b>Business Knowledge</b>	- Integrate financial practice
<b>Innovation</b>	- Allow adaptation to fast-changing environment
<b>AI Utilisation</b>	- Increase productivity - Reduce cost
<b>Risk Control</b>	- Ensure compliance with accounting standards & regulatory requirements
<b>Resource Integration</b>	- Allocate resource - Create synergy



## Skills Applied in Practices

### AI Utilisation

- Develop an AI-powered data dashboard, providing real-time insights for investment analysis.
- Use AI algorithms to optimize investment portfolios, forecast financial outcomes, and identify potential risks early.

### Business Knowledge

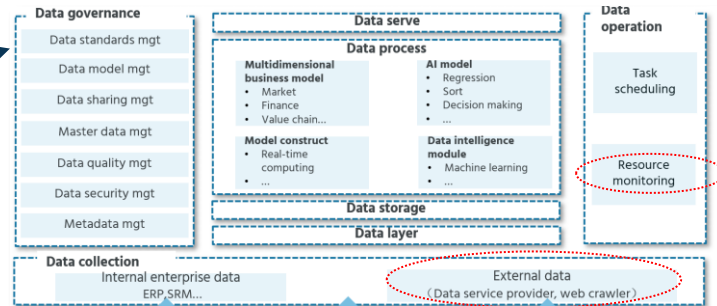
- Gain a stronger business sense and be more sensitive to the industry policy

上证报中国证券网讯 据上海市药品监督管理局3月12日消息,上海市药品监督管理局印发《关于对标改革持续打造药品监管领域一流营商环境的若干措施》(以下简称《措施》)。

《措施》明确,要探索推进生物制品分段生产试点。根据国家药监局总体部署,探索推进生产工艺较为成熟且临床急需的生物制品,或对生产工艺、设施设备有特殊要求的创新生物药采用分段生产试点。研究制定本市生物制品分段生产质量监管工作方案,对分段生产药品质量进行有效监管。

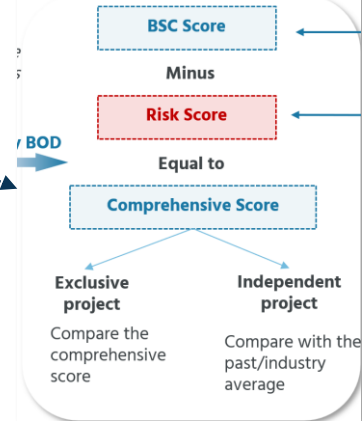
Industry Policy

### Integration



### AI-powered data dashboard

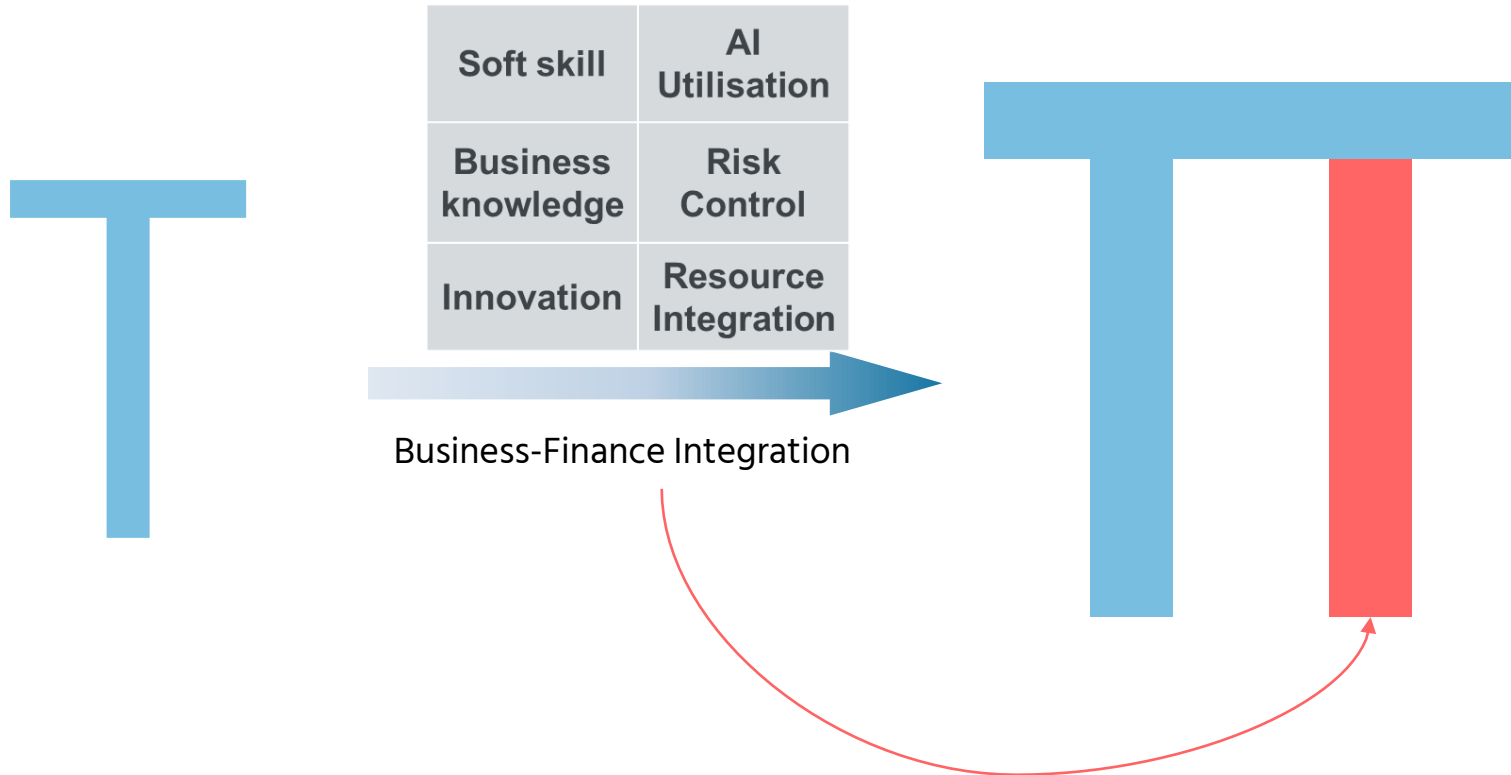
Evaluation at project level



AI Algorithms

## Management Accounting Skills

Transfer from 'T' to 'π'







**Thanks for your listening!**

***YHY***

***HD20233085***