

The 8-cross<sup>®</sup> Business Model

# 8-Cross<sup>®</sup> Business Simulation (P1L1)

Authors: David Jeng , Yu-Wei Hsu & Jaclyn Wang

# 8-Cross<sup>®</sup>



How to read this handbook?	3
<b>01 Background</b>	<b>4</b>
1.1 Learning style and learning effect	5
1.2 Course Structure	6
1.3 8-Cross® Business Simulation	7
<b>02 Simulation Introduction</b>	<b>8</b>
2.1 Business Operation Model and Profit Model	9
2.2 Decision rights and roles assignment	10
2.3 Preparation	12
<b>03 The 8-Cross® Business Model Decisions</b>	<b>20</b>
① Responsibility	22
② Mission	24
③ Vision	25
④ Territory	26
⑤ Relations	32
⑥ Processes	37
⑦ Inputs	42
⑧ Outputs	54

<b>04 Business Intelligence</b>	<b>58</b>
4.1 Business Intelligence (BI) list (L1)	59
4.2 BI: Industry Market Share	60
4.3 BI: Product positioning and CP value	61
4.4 BI: Capability of Production Department	62
4.5 BI: Sales Supporting Capability	63
4.6 BI: Production Yield	64
<b>05 Reminders on participating the 8-Cross® Business Simulation</b>	<b>65</b>
5.1 Score Evaluation in the Simulation	66
5.2 Accountability!	67
5.3 FAQ	68
<b>06 Reflection</b>	<b>71</b>
Reflection	72
<b>07 Appendix</b>	<b>75</b>
7.1 Financial Statements	76
7.2 Accounting formula	77

# How to read this handbook?

There are two types of illustration patterns used in this manual:

- Type 1: Reminders on key learning points or notification for each decision to be made.
- Type 2: Need a decision value to be entered and highlighted with relevant key information.

## Product Price Range:

- Price range maximum is set within the respective Product Value.
- Price range minimum is set no lower than the lowest Product Unit Cost in the same product industry.

Type 1

Supply market	Emerging market	Developed market
Product-A	175.00 ↔ 297.50 Pricing <input type="text"/>	211.75 ↔ 359.98 Pricing <input type="text"/>

💡 Set the price for the respective market within the Product Price Range set.

Type 2

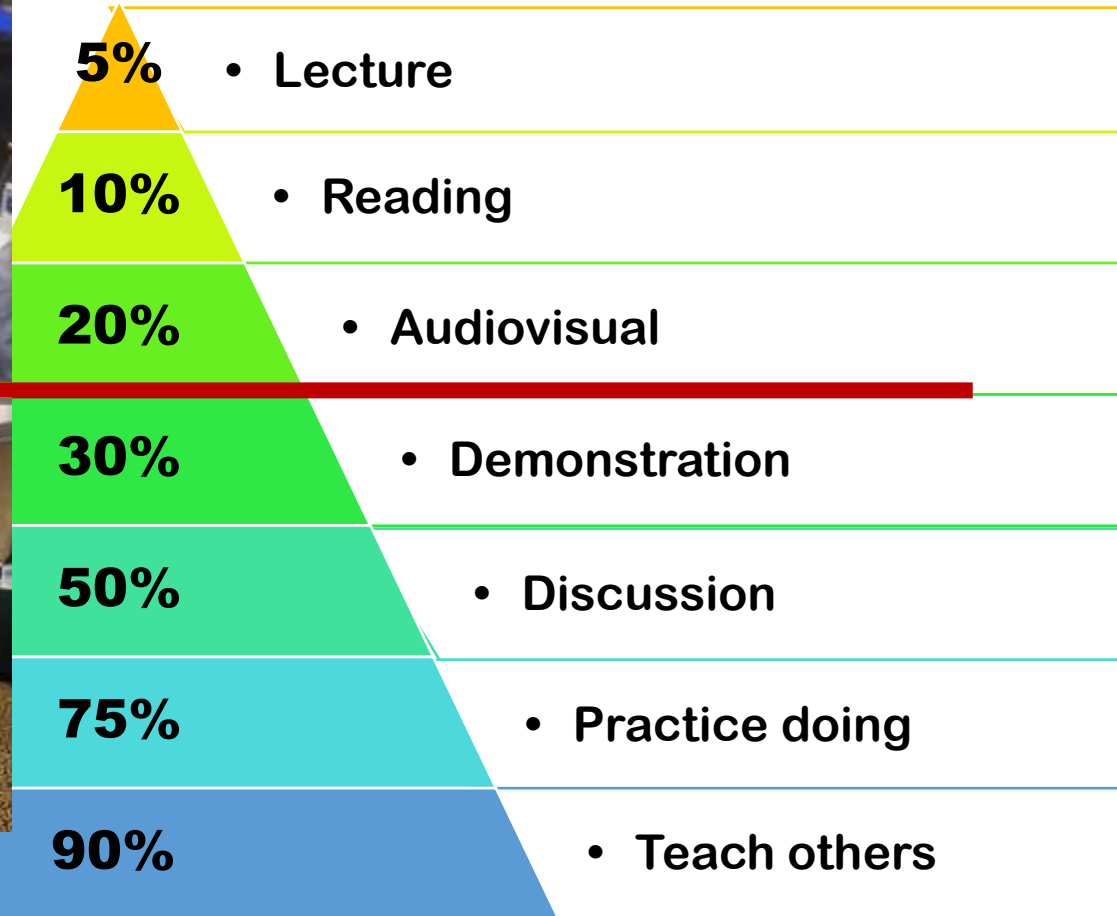


# 01 Background

---

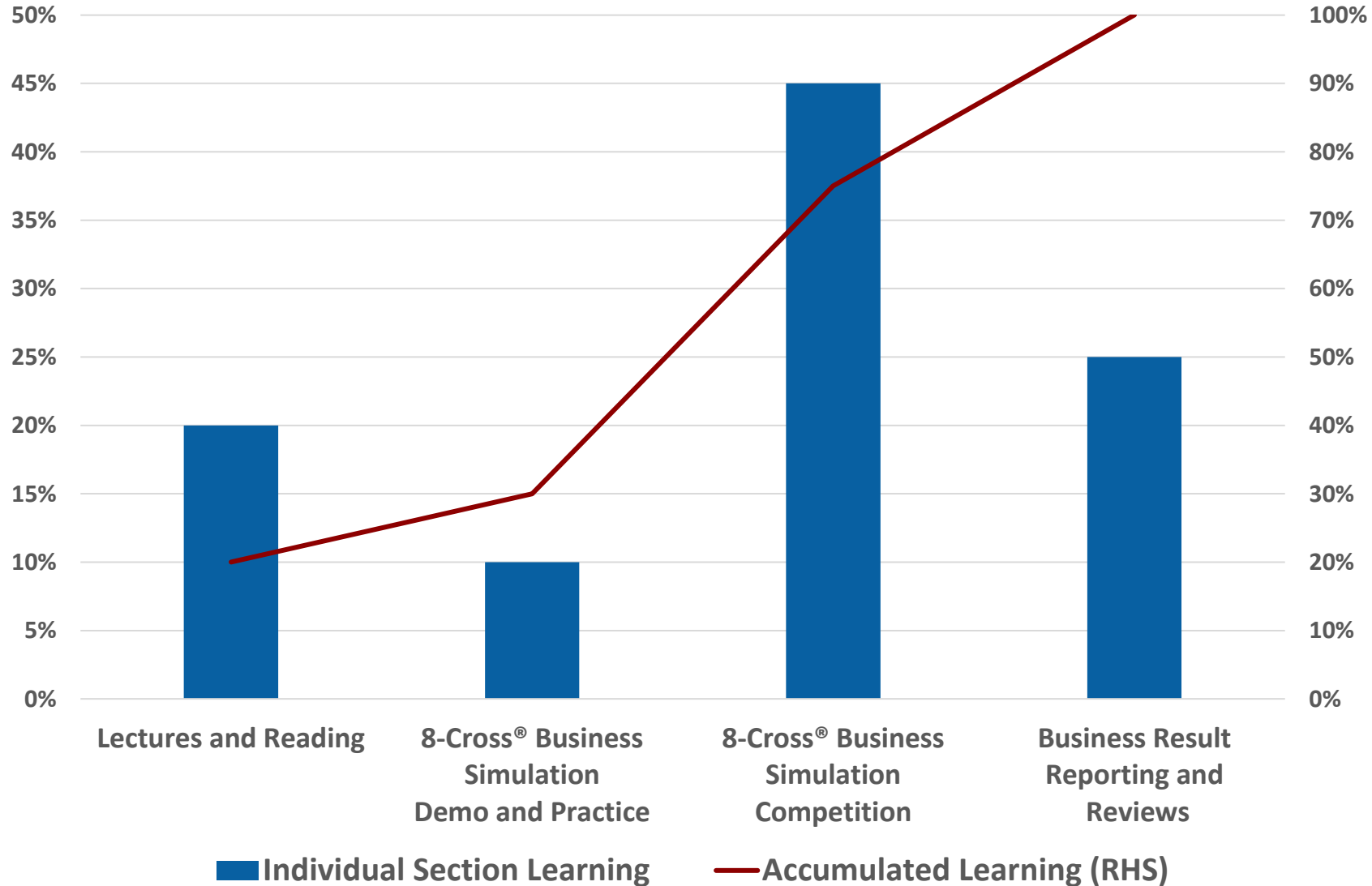
01

# 1.1 Learning style and learning effect



Adapted from National Training Laboratories  
(The Learning Pyramid)

# 1.2 Course Structure

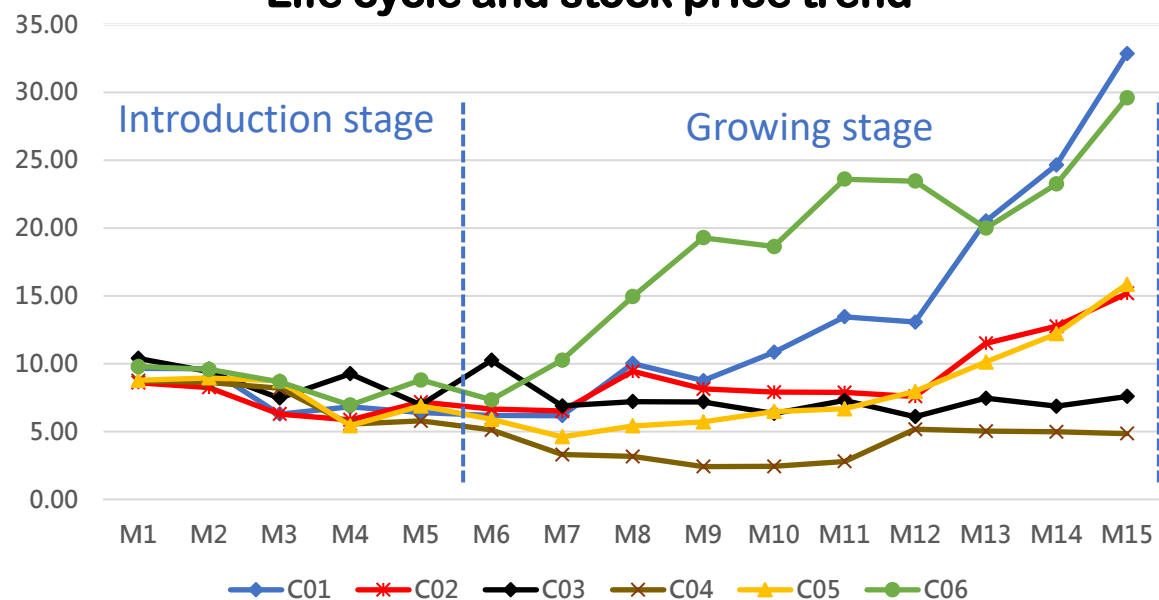




## Team objective alignment and strategic thinking skills:

- Strengthened objective-oriented team interaction which is built on integrated individual member's decision-making traits and personality.
- Enhanced strategic thinking and holistic business acutement of the participants through business simulations that could be tested with the mental models highlighted in Sun Tzu's Art of War.

## Life cycle and stock price trend



## Profit model and product life cycle:

- Master the profit model with “monthly” financials and non-financials updates.
- Build up the experience in responding through the product life cycle as well as fluctuations in market demand.
- Learn how to analyze the company's business performance and strength.
- Be competent to present the business result, understand the key successful and failing factors, and to correspond to managerial reviews.



# 02 Simulation Introduction

8-Cross<sup>®</sup> Decision Making System 4.0

02



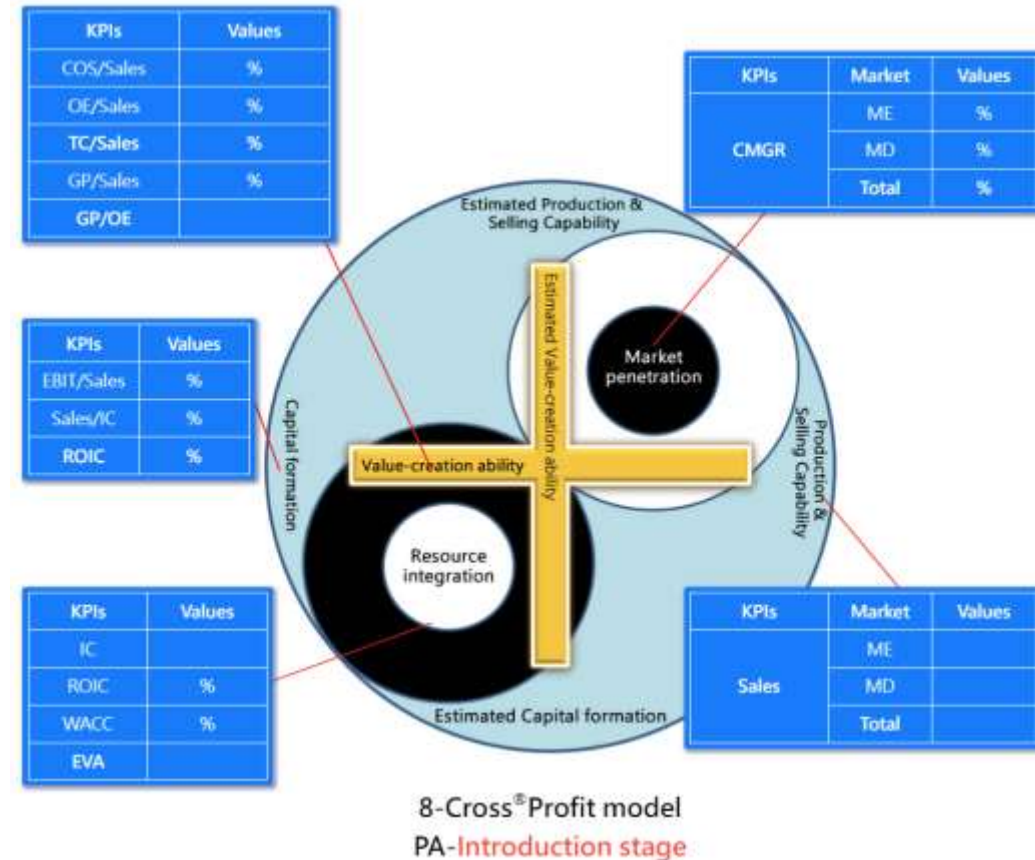
# 2.1 Business Operation Model & Profit Model



## 💡 Business Operation Model: Internal Business Decisions

Business Decision	Home
▶ Responsibility	▶
▶ Mission	▶
▶ Vision	▶
▶ Territory	▶
▶ Relations	▶
▶ Processes	▶
▶ Inputs	▶
▶ Outputs	▶

## 💡 Business Profit Model: External Management Strength



## 2.2 Decision rights and roles assignment (1/2)



- ➔ **Team up:** Each team could consist of 1~5 members but preferably 4~5 members.
- ➔ **Company:** Each team will be running a simulated company. For example, C01 represents Team 1, C02 represents Team 2, and so on.
- ➔ **Role:** Each team should appoint a team leader as the **CEO** (Chief Executive Officer), and the rest will take up one of the following roles:
  - **CFO** – Chief Financials Officer
  - **CMO** – Chief Marketing Officer
  - **COO** – Chief Operating Officer
  - **CPO** – Chief Procurement Officer

*\*For team with less than 5 members, please decide the most suitable roles for the non-CEO members. Will explain on how to shift some of the other decision rights to such members at a later part in this handbook.*

# 2.2 Decision rights and roles assignment (2/2)



## Decision rights assignment

Default setting is shown at the right. Each team can reassign the decision rights in view of the number of members, individual professional background, comparative advantage or decision-making personality.

### CEO's responsibilities:

As the leader of the company, the CEO can execute all the decisions. However, the CEO has greater responsibility to oversee the holistic business result and should be communicating and coordinating the team members to ensure relevant decisions are well implemented by the respective members.

## Management team

**CEO**  
C0101

Start a team online meeting  
(will open new tab)

💡 Default setting on decision rights

**CFO**  
C0102

**COO**  
C0103

**CMO**  
C0104

**CPO**  
C0105

- |   |   |   |  |
|---|---|---|--|
| <ul style="list-style-type: none"> <li>✓ Working Capital Management</li> <li>✓ Approval of CAPEX &amp; Financing Decisions</li> <li>✓ Capital Structure</li> <li>✓ Investor Relations Management</li> </ul> | <ul style="list-style-type: none"> <li>✓ Product Development</li> <li>✓ Employee Recruiting &amp; Termination</li> <li>✓ Deployment of Production Line Labor</li> <li>✓ Production Volume Planning</li> <li>✓ Continuing Improvement of Product Lines</li> <li>✓ Production Process Management</li> <li>✓ Product Quality Management</li> </ul> | <ul style="list-style-type: none"> <li>✓ Distributor Relations Management</li> <li>✓ Service Management</li> <li>✓ Product Pricing</li> <li>✓ Commercial Activities</li> <li>✓ Sales Force Allocation</li> <li>✓ Customer Relations Management</li> </ul> | <ul style="list-style-type: none"> <li>✓ Employee Relations Management</li> <li>✓ Raw Material Sourcing</li> <li>✓ Acquisition &amp; Disposal of Fixed Assets</li> <li>✓ Investment of Information &amp; Automation Systems</li> <li>✓ Supplier Relations Management</li> <li>✓ Paid Reports of Research Study</li> <li>✓ Employee Training</li> </ul> |
|---|---|---|--|



### ➔ Browser and Simulation website

- ④ You may use one of the following browsers to access the simulation system.



- ④ Direct to the provided website of specific simulation:

[xx.awbmi.com](http://xx.awbmi.com)



### ➔ Login to 8 -Cross® Decision Making System 4.0



💡 Click “**Enter**” and select your assigned company code (e.g. C01, C02, C03,...)

#### 8-Cross® Decision Making System

The 8-Cross® Decision Making System is an online learning platform and a web-based management training system. It uses the "8-Cross® Business Model" as the fundamental framework for system design. The main purpose of this system is to provide the participants with a hands-on experience of how a management team needs to counter complex business problems, put up value-creating strategic plans, and implement operating decisions. Working through the 8-Cross® Decision Making Simulation System, the participants will enhance their analytical skills and decision making capability in the following disciplines:

- |                                       |                                   |
|---------------------------------------|-----------------------------------|
| (1) Use of Business Intelligence (BI) | (2) Financial Accounting (FI)     |
| (3) Management Controlling (CO)       | (4) Production Planning (PP)      |
| (5) Material Management (MM)          | (6) Selling and Distribution (SD) |
| (7) Human Resources Management (HR)   | (8) Teamwork Collaboration        |
| (9) Resource Integration              | (10) Business Model               |

## 2.3 Preparation (3/8)



➔ Enter password and your name (optional)

8-Cross® Decision Making System - C01

Please enter the assigned password for your role (only one role) and press "OK" to enter the Simulation.

Company code : B-XX-2000-01-C01

CEO	Password	First name	Last name
CFO	Password	First name	Last name
COO	Password	First name	Last name
CMO	Password	First name	Last name
CPO	Password	First name	Last name

(\* If you have entered your name before, then just enter the password.)

OK Cancel

💡 Make sure you have selected the right company code. (e.g. C01, C02, C03, C04, C05, ...)

💡 Enter the pre-set password of your selected role (just ONE of the roles: CEO, CFO, COO, CMO or CPO).

## 2.3 Preparation (4/8)



➔ The CEO clicks on the accounts of each team to prepare for the competition

💡 The CEO of each team needs to click on their respective company code (the green button). For example, CEO of C02 will have to click on C02 green button.



Please press on your assigned group to enter the simulation platform.

8-Cross® Decision Making System(B-XX-2000-01-C01)>Getting ready for gaming and simulation



## 2.3 Preparation (5/8)



➔ Once ready to participate the simulation, the CEO has to click “Ready to start” button to confirm readiness.

💡 CEO to click “Ready to start”

 Ready to start

(※ If a company's CEO fails to press the above “Ready to start” before the Game is started, his/her Company will be excluded from this gaming!)

Participating companies are listed below. (Those in green have confirmed “Ready to start” . Please wait for others.)

C01 B-XX-2000-01-C01	C02 B-XX-2000-01-C02	C03 B-XX-2000-01-C03	C04 B-XX-2000-01-C04	C05 B-XX-2000-01-C05	C06 B-XX-2000-01-C06
C07 B-XX-2000-01-C07	C08 B-XX-2000-01-C08	C09 B-XX-2000-01-C09	C10 B-XX-2000-01-C10	C11 B-XX-2000-01-C11	C12 B-XX-2000-01-C12

- The CEOs (and only CEO) of all participating companies have to click "Ready to start" before the lecturer initiate the simulation system. *Failing to do so before the initiation, such team will be excluded from the simulation!*
- The market size will be affected by the number of companies that are participating in the system. Therefore, it is suggested to check on the market demand forecast once the system starts.



## 2.3 Preparation (6/8)



➡ Waiting for other groups to be ready for business

💡 **Green** means that the CEO of C01 has clicked the “Ready to start” button. Please wait for the remaining companies that were shown in Gray.

🔄 Ready to start

(※ If a company's CEO fails to press the above “Ready to start” before the Game is started, his/her Company will be excluded from this gaming!)

Participating companies are listed below. (Those in green have confirmed “Ready to start” . Please wait for others.)

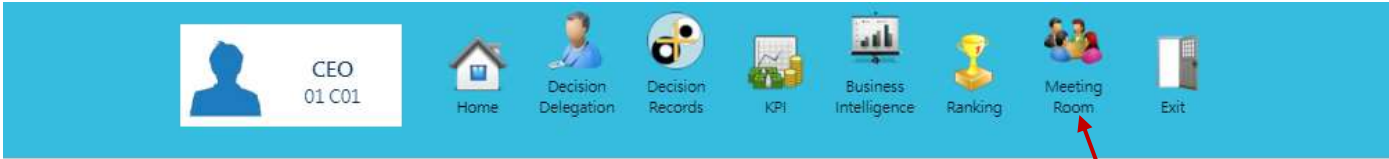
C01 B-XX-2000-01-C01	C02 B-XX-2000-01-C02	C03 B-XX-2000-01-C03	C04 B-XX-2000-01-C04	C05 B-XX-2000-01-C05	C06 B-XX-2000-01-C06
C07 B-XX-2000-01-C07	C08 B-XX-2000-01-C08	C09 B-XX-2000-01-C09	C10 B-XX-2000-01-C10	C11 B-XX-2000-01-C11	C12 B-XX-2000-01-C12

💡 **Gray** means that the responsible CEOs of these groups have not yet clicked the “Ready to start” button.

# 2.3 Preparation (7/8)

➡ After the decision system starts

💡 Countdown on the remaining time for the current simulated month.



System countdown, remaining time  
0 days 00h 27m 49s  
1 year 1 month  
(30 minutes = 1 month)

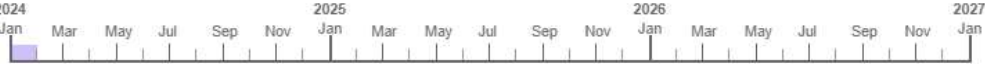
Cash balance(NTD) : 20,000,000  
Exchange rate(NTD/USD) : 29.995

8-Cross® Decision Making System - Simulation code : B-XX-2000-01-C01  
Level : 1  
Company name : C01 Code : B-XX-2000-01-C01

💡 Click this to enter the main meeting room.

💡 Cash balance market rate for the month.

- Business Decision
- Home
- Responsibility
- Mission
- Vision
- Territory
- Relations
- Processes
- Inputs
- Outputs



💡 Click to enter your individual team meeting room.

Management team

CEO C0101

Start a team online meeting (will open new tab)

CFO C0102

- Working Capital Management
- Approval of CAPEX & Financing Decisions
- Capital Structure
- Investor Relations Management

COO C0104

- Product Development
- Employee Recruiting & Termination
- Deployment of Production Line Labor
- Production Volume Planning
- Continuing Improvement of Product Lines
- Production Process Management
- Product Quality Management

CMO C0103

- Distributor Relations Management
- Service Management
- Product Pricing
- Commercial Activities
- Sales Force Allocation
- Customer Relations Management

📌 Note: The availability of the online meeting rooms depend on whether they are being set up in your participating session.

## 2.3 Preparation (8/8)



➔ Other key buttons on the main page

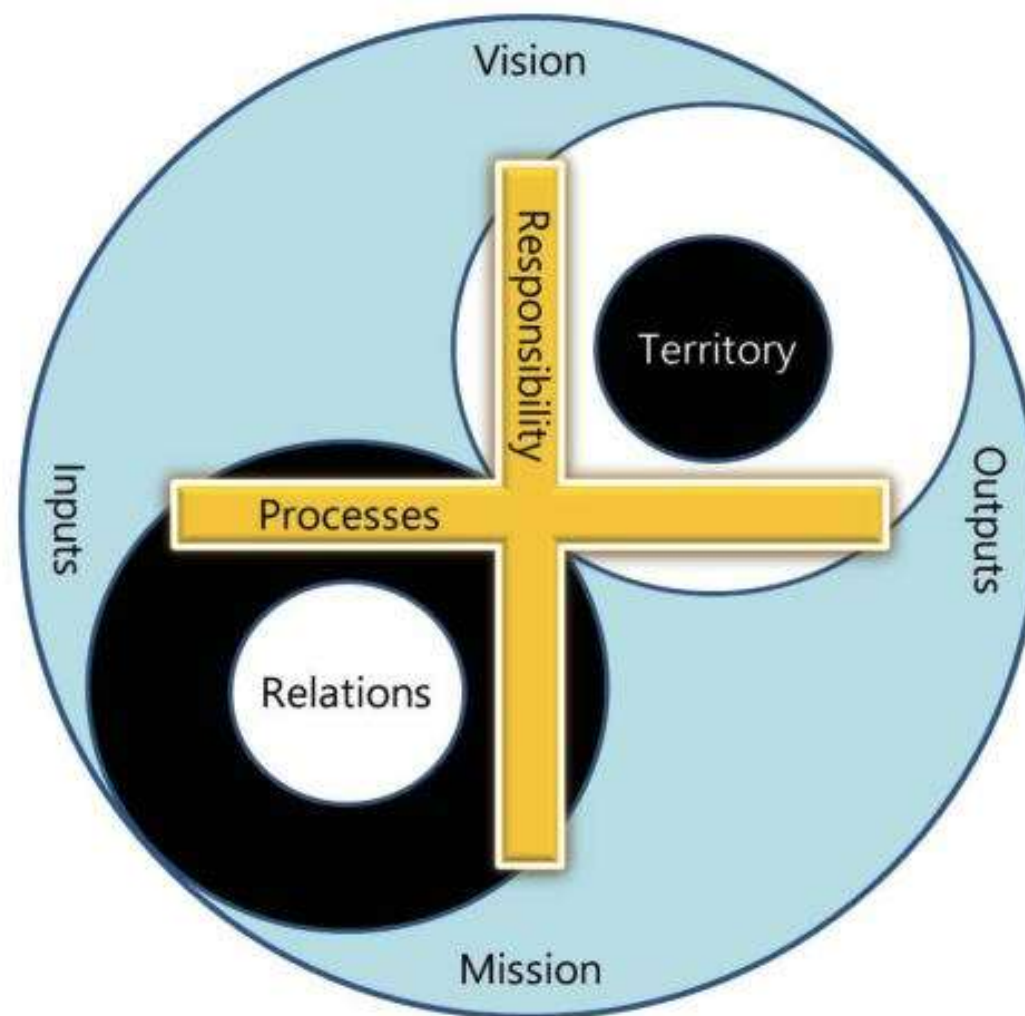




# 03 The 8-Cross<sup>®</sup> Business Model Decisions

---

03



**The 8 -Cross® Business Model**

# ① Responsibility- Decision Rights Delegation(1/2)








## CEO's responsibilities

- Full decision rights
- Sole decision rights on the three strategic 8-Cross® Decisions:  
**Responsibility, Mission and Vision.**

## Teamwork and the Roles & Responsibilities alignment






- What is the overall goal of the company?
- What are the individual decision rights for each member?
- What is the contribution of the individual decision rights to their respective departmental goals and company overall goals?
- How would the team implement the decision-making discussions? What is the process?
- What are the key updates to be owned by each member?

## Organizational Structure and Decision Delegation

 C0101 CEO	All decision items assigned			
<b>Decision item</b>	 C0102 CFO	 C0103 COO	 C0104 CMO	 C0105 CPO
<b>Responsibility</b>				
<b>Organizational Structure and Decision Delegation</b>	CEO ' s decision rights and responsibilities			
<b>Mission</b>				
<b>Mission Statement</b>	CEO ' s decision rights and responsibilities			
<b>Vision</b>				
<b>Vision Statement</b>	CEO ' s decision rights and responsibilities			

# ① Responsibility- Decision Rights Delegation(2/2)

## Organizational Structure and Decision Delegation

 C0101 CEO All decision items assigned				
Decision item	 C0102 CFO	 C0103 COO	 C0104 CMO	 C0105 CPO
<b>Responsibility</b>	CEO ' s decision rights and responsibilities			
Organizational Structure and Decision Delegation	CEO ' s decision rights and responsibilities			
<b>Mission</b>	CEO ' s decision rights and responsibilities			
Mission Statement	CEO ' s decision rights and responsibilities			
<b>Vision</b>	CEO ' s decision rights and responsibilities			
Vision Statement	CEO ' s decision rights and responsibilities			
<b>Territory</b>				
Customer Relations Management	X	✓	X	X
Distributor Relations Management	X	X	✓	X

## Delegation/Assignment of decision rights

- The team and the CEO will have to discuss and decide the roles of each member and set the decision rights accordingly:
  - CEO: Overlook company wide decisions
  - CFO: Finance related decisions
  - COO: Production related decisions
  - CMO: Sales related decisions
  - CPO: Procurement related decisions
- Decision rights can still be adjusted at any months (if needed).
- Each decision can be solely assigned on one member only (however, CEO automatically has all access).
- The “Decision Records” function keeps track on all decisions and the relevant decision makers.

💡 Only the CEO can assign (“tick”) the specific decision rights to the designated members.





### Mission Statement



The **CEO** of each team is responsible for setting the mission statement on how the management team will create value for the shareholders as well as the other stakeholders.





## Vision Statement

The **CEO** of each team is responsible for setting the company's vision statement.

Every year the **CEO** should formulate and align with the team on the following:

- Product selection
- Market segments
- Revenue targets

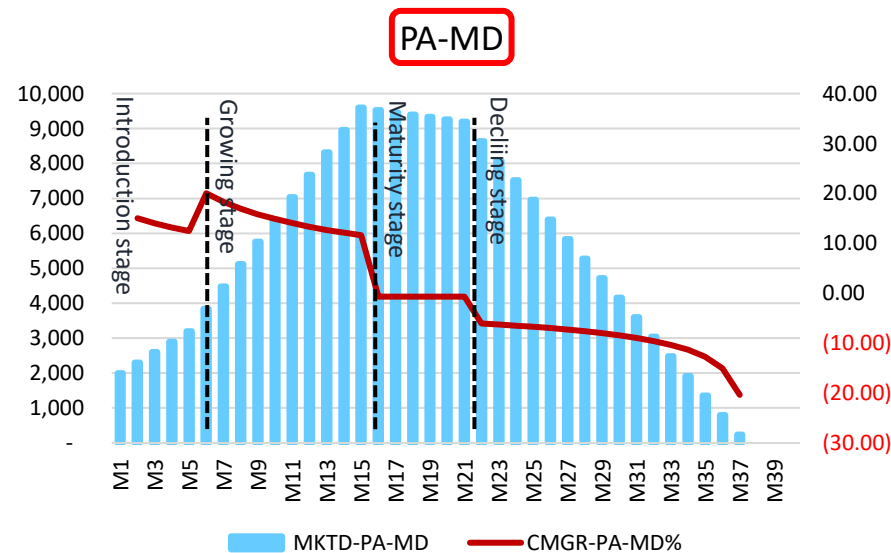
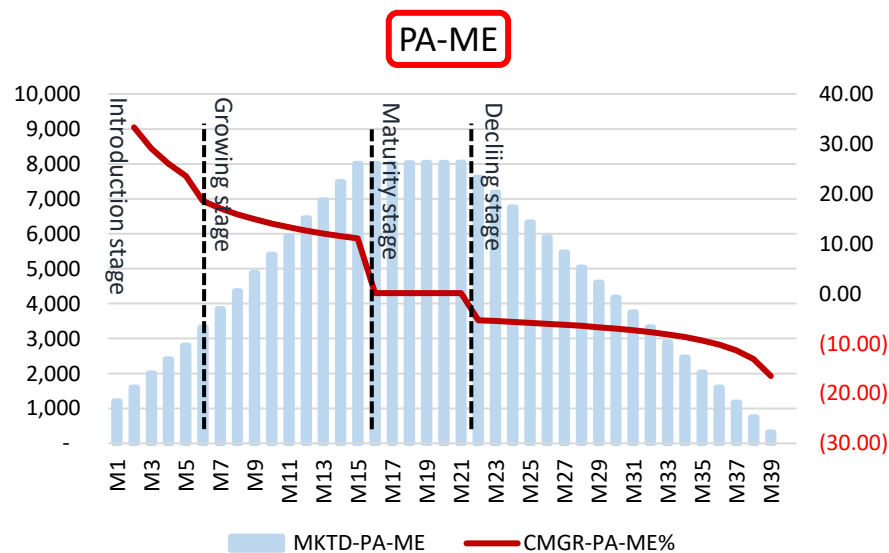
# ④ Territory- Forecast of Market Demand

## Product Lifecycle:

- Each product has four lifecycle stages:
  - Introduction stage [5 months]
  - Growing stage [10 months]
  - Maturity stage [6 months]
  - Declining stage [10-12 months]
- Each lifecycle stage needs different approach in its operating models and profit models.

## Product market segments:

- One Product: This course (L1) focus on the production and sales of Product A (PA).
- Two Markets: Emerging Markets (ME) and Developed Markets (MD); Both markets perform differently on their revenue growth rates.
- Each company needs to be strategic in deciding its own market position and targeted markets.



# ④ Territory- Customer orders for product markets



## Assessment on the market demand:

- It is necessary to evaluate the product demand of the targeted market segments prior to putting together the overall production plan which covers Raw Material Sourcing, Production Volume Planning and the Deployment of Production Line Labor.
- Customers in Emerging Market and Developed Market have different product demands.

## Factors that affect customer orders:

- Value for Money index of the product
- Index of Customer Relations
- Index of Distributor Relations


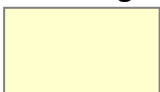
Company	Emerging market				Developed market			
	Product-A				Product-A			
	Customer order	Sales volume	Unit cost	Product price	Customer order	Sales volume	Unit cost	Product price
C01	296	-	-	122	392	2,843	110	254
C02	459	31	-	160	609	3	-	150
C03	129	-	-	122	392	4	-	162.2
C04	42	-	-	122	55	821	108	254
C05	42	661	133	268	55	2,187	143	254.9
C06	879	252	102	161	1166	2,274	90	162.2
C07	45	-	-	122	60	-	-	115.9
<b>Total</b>	<b>1,892</b>	<b>2,475</b>			<b>2,729</b>	<b>14,518</b>		

# ④ Territory- Product Pricing



💡 Pricing in USD.

(Currency : USD)

Supply market	Emerging market	Developed market
Product-A	175.00 ↔ 297.50 Pricing 	211.75 ↔ 359.98 Pricing 

💡 Select market pricing for both Emerging Markets (ME) and Developed Markets (MD) in accordance your product pricing strategy within the Product Price Range set.

## Product Price Range:

- Price range maximum is set within the respective Product Value.
- Price range minimum is set no lower than the lowest Product Unit Cost in the same product industry.
- Such maximum and minimum will be affected by the evolving production technology and market competition as we proceed.

## Product Unit Cost includes:

- Raw material cost, labor cost, manufacturing overhead cost

## Factors that affect the Product Unit Cost:

- Raw material prices, employee ability value (or production efficiency), production yield rate, production scale, developed level of the information and automation technology system.

# ④ Territory- Sales Force Allocation



By product	Prod sales capability allocation	Market	Mkt sales capability allocation / Prod-Mkt sales capability allocation
Product-A	80%	Emerging market	% / %
		Developed market	60 % / 48 %

💡 In accordance to your product supply strategy, input the sales force distribution of Product A (PA)

✖ Reset sales allocation

💡 Click the button to clear the previously set allocation for reassignment.

**Sales force allocation:**

**1) By Product**

- The total sales force allocation for the products is capped at 100%. *\*For P1L1 with Product A only, you should simply set Product A at 100%.*

**2) By Market within the Product**

- After the overall Product allocation ratio is set, you have to allocate the ratio for Emerging Market (ME) and Developed Market (MD). *\*If these are left blanks, no sales force will be allocated which will result in zero sales made!*

By product	Prod sales capability allocation	Market	Mkt sales capability allocation
Product-A	100 %	Emerging market	40 %
		Developed market	60 %

💡 Then, to set the respective ratio within Product A, enter the sales force allocation for Emerging Market (ME) and Developed Market (MD). Both should add up to 100%.

# ④ Territory- Commercial Activities



💡 Commercial Activities cost in USD.

(Currency : USD)

💡 Enter the level of spending for the Commercial Activities for the respective markets (in accordance to your marketing strategy).

Supply market	Emerging market	Developed market
Product-A	Prior month Level : 0 <input type="text" value="No"/>	Prior month Level : 0 <input type="text" value="No"/>

## The effects of Commercial Activities on brand value:

- In emerging markets (ME) and developed markets (MD), the customers have different perceptions on product brand value and therefore both markets perform differently on the price elasticity of demand.
- The higher the level of the investment in Commercial Activities, the greater the commercial cost, the higher the brand value is promoted, and therefore, has the potential to raise the product value of the related product.

Advertising fees and promotional activity fees at various levels.			
Commercial Activities expenses	PA	PB	PC
ME-Lvl 1	5,000	10,000	20,000
ME-Lvl 2	10,000	20,000	40,000
ME-Lvl 3	15,000	30,000	60,000
MD-Lvl 1	10,000	20,000	40,000
MD-Lvl 2	20,000	40,000	80,000
MD-Lvl 3	30,000	60,000	120,000

# ④ Territory - Service Management

💡 Enter the level and expense of Service Management in Emerging Market (ME) and Developed Market (MD) (in accordance to your marketing strategy).

Supply market	Emerging market	Developed market
Product-A	Prior month Level : 0 No <input type="checkbox"/>	Prior month Level : 0 No <input type="checkbox"/>

## The demand on Service Management:

In emerging markets (ME) and developed markets (MD), customers have different levels of demand for Service Management.

## The effects of Service Management on product value:

The higher the level of investment in Service Management, the greater the sales cost, the greater the customers' satisfaction is achieved, and therefore, has the potential to raise the product value as well.

Sales service management fee for each level.			
Service Management expenses	PA	PB	PC
ME-Lvl 1	100,000	100,000	100,000
ME-Lvl 2	200,000	200,000	200,000
ME-Lvl 3	300,000	300,000	300,000
MD-Lvl 1	150,000	150,000	150,000
MD-Lvl 2	300,000	300,000	300,000
MD-Lvl 3	450,000	450,000	450,000

# ⑤ Relations- Customer Relations Management



💡 Enter the level of Customer Relations Management for Emerging Market (ME) and Developed Market (MD) based on the aligned company relations strategy.

Customer Relations	Emerging market	Developed market
Product-A	Prior month Level : 0 <input type="text" value="No"/>	Prior month Level : 0 <input type="text" value="No"/>

## Customer Relations Management (CRM) and the market:

In emerging markets and developed markets, the effectiveness of Customer Relations Management could be different.

## The effects of CRM to the market demand retention:

The higher the level of the company's efforts on CRM, the greater the management costs, the greater the demand retention of the customers' demand, and therefore result in more sustainable company's product demand.

Customer Relations expenses	PA	PB	PC
ME-Lvl 1	100,000	150,000	200,000
ME-Lvl 2	150,000	200,000	250,000
ME-Lvl 3	200,000	250,000	300,000
MD-Lvl 1	110,000	165,000	220,000
MD-Lvl 2	165,000	220,000	275,000
MD-Lvl 3	220,000	275,000	330,000



# ⑤ Relations- Distributor Relations Management

Payment terms	Current month	1 M after delivery(AR)	3 M after delivery(AR)	Bad debt ratio
Distributor payment terms 1	70%	30%	0%	1%
Distributor payment terms 2	50%	50%	0%	2%
Distributor payment terms 3	20%	80%	0%	3%
Distributor payment terms 4	0%	70%	30%	4%
Distributor payment terms 5	0%	50%	50%	5%

Distributor payment terms Distributor payment terms 3 ▾

Supply market	Emerging market	Developed market
Product-A	Commission (% of Sales) <span style="border: 1px solid black; padding: 2px;">0.5</span>	Commission (% of Sales) <span style="border: 1px solid black; padding: 2px;">1.0</span>

**Payment terms for distributors:**

- The more favorable payment condition for distributor, the higher the sales volume of the products, the higher the probability of bad debts. This works in the opposite manner if a more unfavorable payment condition is set.
- The distributor payment terms affects company cash flow (account receivable) as well as the Index of Distributor Relations.

**Distributor commission:**

The higher the commission given to the distributor, the higher the product sales volume, and vice versa.

💡 Enter the sales commission percentages for Emerging Markets (ME) and Developed Markets (MD) based on the aligned company relations strategy.

💡 Select the distributor payment terms accordingly.

# ⑤ Relations- Employee Relations Management



💡 Enter employee benefits and bonuses as a percentage of salary based on the aligned company's relations strategy (or HR strategy).

Department	Welfare (% salary)	Bonus (% salary)
Production department	0.8	1
Marketing department	0.8	1
Finance department	0.8	1
Management Department	0.8	1
Technical department	0.8	1

## Employee Welfare and Bonus:

Employee Welfare (benefits) and bonuses are based on the percentages over the total salary of each department.

### The effects of Employee Welfare and Bonus on new employees' onboard rate and employees' turnover rate:

The better the company's Employee Welfare and Bonus, the stronger the relationship between employees and the company which results in higher new employee's onboard rate and lower employee's turnover rate.

# ⑤ Relations- Investor Relations Management



💡 Enter Investor Relations Management Level

Only in Jan, Apr, Jul and Oct

Investor Relations Management Level	No
-------------------------------------	----

Restriction of cash dividends: Shareholder equity must be greater than capital of common stock  
Opening shareholder equity:13,213,811 Outstanding shares:2,000,000 share

Warning: Shareholder equity is less than capital of common stock 56,754,673

Pay out cash dividends	Total :	
------------------------	---------	--

Pay out cash dividends : Only Yr2 onwards in Jan, Apr, Jul and Oct

💡 The total amount of cash dividends is distributed using the company's excess cash position and surplus. Please note that it is the total amount and not on per share basis.

Investor relationship management fees for each level	
Investor Relations Management	Expenses
Lvl 1	200,000
Lvl 2	400,000
Lvl 3	600,000
Lvl 4	800,000
Lvl 5	1,000,000

**Investor Relations Management**  
The higher the company's level of investment in investor relationship management, the greater the management costs, the higher the investor's faith to the company, and the lower the required return on equity ( $R_E$ ).

**Pay out cash dividends**  
The more cash dividends the company distributes, the higher the rate of return to investors and the better the relations with the investors. However, the distribution of cash dividends will cause shareholders' equity to decline, resulting in a smaller net value per share and a larger debt ratio. The cost of debt ( $R_D$ ) will rise.

# ⑤ Relations- Supplier Relations Management



Payment terms	Prepayment	Payment 1M after delivery (AP)	Payment 3M after delivery (AP)
Payment terms 1	70%	30%	0%
Payment terms 2	50%	50%	0%
Payment terms 3	30%	70%	0%
Payment terms 4	20%	80%	0%
Payment terms 5	0%	70%	30%
Payment terms 6	0%	50%	50%
Payment terms 7	0%	30%	70%

Payment terms	Payment terms 4 ▾
---------------	-------------------

💡 Select Supplier payment terms

## Supplier payment terms:

Changing the supplier's payment terms will not only change the company's cash flow, but also change the Index of Vendor Relations and affects the raw material acquisition rate.

## Raw material acquisition rate:

The more favorable the payment terms to the supplier, the higher the raw material acquisition rate. This means the higher likelihood for the company to source raw materials.

# ⑥ Processes- Deployment of Production Line Labor (1/2)

Total number of manpower : **72** , Number of manpower idled : **2**

Deploy/Level of employees	Level 1	Level 2	Level 3	Total
Idle	<b>2</b>	<b>0</b>	<b>0</b>	<b>2</b>
Deploy	<b>70</b>	<b>0</b>	<b>0</b>	<b>70</b>

Product-A : **70** , Product-B : **0** , Product-C : **0**

💡 Click on “Reset deployment” button to reassign the deployment.

✗ Reset deployment

✗ **Reminder: Need to deploy manpower each month (even it is the same against prior month)** ✗

Prod/Operators	Level 1	Level 2	Level 3	Total
Product-A	Deploy : 0 <b>70</b>	Deploy : 0 □	Deploy : 0 □	Deploy : <b>70</b>

💡 According to the production capacity planning, all kinds of manpower are allocated to the production line.

## Productivity:

- The productivity of the production department is determined by the number of employees in the production department, the average employee ability value and the production yield.
- Investment in Information and Automation Systems affects production yield and available-for-sale quantity.

## Idled manpower and idling cost:

- Undeployed employees to any production lines in the current month are considered “idled manpower”.
- Each production line needs to have production manpower deployed.
- However, if only manpower is deployed while raw material is insufficient or not sourced, such manpower will be considered “idling cost”.



# ⑥ Processes- Deployment of Production Line Labor (2/2)



💡 The Decision Provisional List shows the number of employees to be deployed in the respective product production line.

## Decisions pending list

Product-A Production lines Level 1 Deployment : 23 : 70

2022-02-21 10:18

C0101



💡 By the end of the current month countdown, you may click the X to cancel the provisional decision.

## Property List

Asset type	Number	Capacity
Plants	1units	Max production lines per plant : 10lines Upper limit : 10lines
Product-A Production lines	7lines	Basic productivity per month : 500 Max number of manpower per line : 10 Upper limit : 70
Warehouses	1units	Inventory space per w/h/units : 5000 Upper limit : 5000 Inventory Finished goods : 649 Raw materials : 6008 Total : 6657

### Basic capacity of PA production line:

- Maximum deployment for each production line is 10 workers. For Product A (PA), the basic productivity per month is 500 units of PA finished products (monthly nameplate capacity if 10 workers are deployed).

# ⑥ Processes- Production Volume Planning

※ **Warning! Deploy manpower BEFORE implementing Volume Planning here** ※  
 ※ **No estimation is provided unless relevant raw materials feed is entered below.** ※

Products / Materials	Raw materials- (Low quality)	Raw materials- (high quality)	Estimations
Product-A	(Opening inventory : 3,006) A01: <input type="text"/>	(Opening inventory : 3,002) A02: <input type="text"/>	FP inventory : <b>649</b> EOL : <b>2,027</b> EOM : <b>2,020</b> L/H RM ratio : <b>50%:50%</b> Estimated outputs : <b>2020</b> ※Product-A could consume more!

💡 Input the production quantity of high and low quality raw materials in accordance to your production plan.

## Production Volume Planning:

- Raw material feeding, manpower allocation, and yield rate affects the production volume.
- The output estimations at the right are for reference only. Factors such as Production Process Management will also affect the actual output.
- The feeding ratio between the two quality levels (low and high) of the raw materials (L/H RM ratio) affects the quality of finished products.
- Warning will show up in the Estimations for over feeding and under feeding of raw materials:
  - Under feeding: higher unit cost
  - Over feeding: excessive raw materials will be automatically returned to the warehouse.

*\*Some of the features in Estimations are available upon certain level of Information and Automation System.*



# ⑥ Processes- Production line manpower deployment vs Productivity



Production department	Basic output per person per month	Production line deployed manpower	Weighted average ability value	Production yield	Production quantity estimated	Safety stock required quantity
	50	70	0.6	0.85	1,785	71
	Production quantity available for sale	Beginning finished products inventory	The total quantity available for sale	Average price (TWD)	Productivity estimated (TWD)	
	1,714	300	2,014	10,285	20,709,876	

## Production line manpower deployment vs Productivity:

- **Production line deployed manpower**  
Maximum deployable = number of production lines \* 10
- **Production quantity estimated**  
= Basic output per person per month \* Production line deployed manpower \* Production yield
- **Production quantity available for sale**  
= Estimated production quantity - Safety stock required quantity
- **Total quantity available for sale**  
= Production quantity available for sale + Beginning finished products inventory
- **Productivity estimated**  
= total quantity available for sale \* average pricing



# ⑥ Processes- Production Process Management



💡 Select the level and cost of Production process management and Production line management.

Product	Production process management	Production line management
Product-A	Prior month Level : 1 No <input type="button" value="v"/>	Prior month Level : 1 No <input type="button" value="v"/>

All levels of production process management and production line management and costs.	
Production management Expenses	PA
Production process management-Lvl1	100,000
Production process management-Lvl2	200,000
Production process management-Lvl3	300,000
Production line management-Lvl1	125,000
Production line management-Lvl2	250,000
Production line management-Lvl3	375,000

## Production process management:

- To improve production efficiency through the process optimizing and waste elimination in the process.
- Need to make the right judgement to balance between the cost and its benefits.

## Production line management:

- To improve production efficiency through optimizing the manufacturing layout within limited space and remove work that has less economic added value.
- Similarly, need to balance between the cost and its benefits.

# ⑦ Inputs- Approval of CAPEX & Financing Decisions



## Decisions Pending list

<input checked="" type="checkbox"/>	<input type="checkbox"/>	Short-term investments : 3,000,000	2022-02-21 10:18	C0101
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Add Number of Warehouses : 1 units, Cost : 1,000,000	2022-02-21 10:24	C0101
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Current Level: 2, Apply Level 3, at the cost of : 5,000,000	2022-02-21 11:39	C0101

💡 Click on the “Tick” to approve; otherwise click on the “X” to disagree to approve. Fail to click anything means pending approval. Only approved decisions will be shown in the Decision Records in later months.

💡 The pending decision list shows the items and the amounts needed.

💡 Indications on when these pending items were submitted and by whom.

### Capital Expenditure (CAPEX) Items subjected to approval:

- Developing new product
- Short-term borrowing
- Short-term investment
- Long term loan
- Cash capital increase or treasury stock transaction
- Acquisition or disposal of fixed assets:
  - Plant
  - Production Line
  - Warehouse
- Information and automation technology investment

# ⑦ Inputs- Capital Structure

💡 Plan and execute the decisions under Capital Structure at the appropriate month(s) in considering optimized capital structure and lowest cost of capital.

Opening invested capital (IC) : **52,619,369** Total interest-bearing debt (Di) : **5,000,000** Di/IC : **9.5%**

Long term borrowing	Amount : <input type="text"/> Long term borrowing : From second year, it can be executed every January
Repayment of long-term loans	Amount : <input type="text"/> ✓ Repayment of long-term loans : From 3rd year, it can be executed every January
Increase Common stock for cash	Amount : <input type="text"/> Increase Common stock for cash : From second year, it can be executed every January
Buy back treasury shares	Shares : <input type="text"/> share Buy back treasury shares : From second year, it can be executed every February, May, August, and November Current share price : <b>38.68 元</b>
Sale of treasury shares	Shares : <input type="text"/> share Sale of treasury shares : From second year, it can be executed every February, May, August, and November Beginning shares of treasury stock : 0 Stock, average cost per share

## Cash capital increase (Increase Common stock for cash):

The system will increase the number of shares by dividing cash capital to increased over current stock price per share.

\*Be reminded each capital structure decision can be implemented on certain months starting from certain year.

### Formula:

Please refer to the appendix section for the accounting formula on the component of Interest debt ratio (**Di/IC**): Interest Bearing Debt (**Di**) and Invested Capital (**IC**).



## Short-term investments

Short-term investment must not exceed **40%** of total shareholder: **185,136,822**

interest rate	term	Amount
3 %	6 Month	<input type="text"/>

※ The interest and invested amount will be injected back after investment term ended

(Short-term investment: not executable Yr1 M1)

💡 Enter the amount of short-term investment or short-term borrowing according to your working capital management policy.

## Short-term borrowing

Opening invested capital (IC) : **52,619,369** Total interest-bearing debt (Di) : **5,000,000**  
Di/IC : **9.5%**

interest rate	term	Amount
5 %	6 Month	<input type="text"/>

※ Interest will be deducted initially while loan to be paid after loan term ended

(Short-term borrowing: not executable Yr1 M1)

## Working capital management decisions:

- Short-term investments
- Short-term borrowing

Be reminded that these can be implemented only after Y1 M1 and that you submitted your request in the appropriate box (e.g. not to be mistakenly submitted amount to be borrowed onto the amount to be invested!)

### Short-term investments

- 6 month investment period. Listed under “financial assets measured at fair value through profit or loss – current” in financial balance sheet.

### Short-term borrowing

- Short-term loans due in 6 months. The full interest charges is deducted from the loan amount when it is issued.

# ⑦ Inputs- Acquisition & Disposal of Fixed Assets (1/2)



Acquisition

Disposal

Asset type	Number	Add/Expansion
Plants	1 units	Unit cost : <b>1,000,000</b> Monthly maintenance expenses : <b>20,000</b> /units <input type="text"/> units
Product-A Production lines	8 lines	Unit cost : <b>400,000</b> Monthly maintenance expenses : <b>40,000</b> /lines <input type="text"/> lines
Warehouses	2 units	cost : <b>1,000,000</b> /units Monthly maintenance expenses : <b>20,000</b> /units <input type="text"/> units

## Asset add/expansion:

Capacity limitation:

- 1 Plant can hold at most 10 Production lines.
- 1 Warehouse can store up to a total of 5,000 units inclusive of raw materials and finished products.
- Warehouse storage fee is NTD10 per unit.
- External logistics center will be leased at extra cost of NTD30 per unit beyond warehouse capacity.

# ⑦ Inputs- Acquisition & Disposal of Fixed Assets (2/2)

Acquisition **Disposal**

## Property List

### Plants

Number : 1 units

Plants	Property number : <b>P1409</b> , Acquisition cost : <b>1,000,000</b> , acquisition date : 1 Yr 1 Month	<b>Disposal</b>
--------	--	-----------------

### Product-A Production lines Number : 3 lines

Product-A Production lines	Property number : <b>L1518</b> , Acquisition cost : <b>400,000</b> , acquisition date : 1 Yr 2 Month	<b>Disposal</b>
Product-A Production lines	Property number : <b>L1050</b> , Acquisition cost : <b>400,000</b> , acquisition date : 1 Yr 2 Month	<b>Disposal</b>
Product-A Production lines	Property number : <b>L9531</b> , Acquisition cost : <b>400,000</b> , acquisition date : 1 Yr 3 Month	<b>Disposal</b>

### Warehouses

Number : 2 units

Warehouses	Property number : <b>W232</b> , Acquisition cost : <b>1,000,000</b> , acquisition date : 1 Yr 1Month	<b>Disposal</b>
------------	--	-----------------

💡 Click "Disposal" button to dispose the designated fixed asset.

### Fixed assets disposal:

- When disposing a plant, it is necessary to confirm whether remaining plant can accommodate the existing Production lines.
- Every disposal initiated this month will take effect next month.

### Losses on fixed asset disposal:

Disposed assets will be sold at a discount rated on top of their book value:

- Book value = purchase cost minus accumulated depreciation.
- Plant: 20% discount rate.
- Warehouse: 20% discount rate.
- Production line: 30% discount rate.



# ⑦ Inputs- Employee Recruiting & Termination (1/2)

Enter the number of employees of the specific levels in each department to be recruited. However, actual onboard numbers could be less.

## 《 Recruiting 》

Department / Salary level	Level 1	Level 2	Level 3
Production department	Salary : 28,000 Current : 78 <input type="text"/>	Salary : 35,000 Current : 0 <input type="text"/>	Salary : 52,500 Current : 0 <input type="text"/>
Marketing department	Salary : 28,000 Current : 23 <input type="text"/>	Salary : 35,000 Current : 0 <input type="text"/>	Salary : 52,500 Current : 0 <input type="text"/>
Finance department	Salary : 30,000 Current : 10 <input type="text"/>	Salary : 37,500 Current : 0 <input type="text"/>	Salary : 56,500 Current : 0 <input type="text"/>
Management Department	Salary : 28,000 Current : 16 <input type="text"/>	Salary : 35,000 Current : 0 <input type="text"/>	Salary : 52,500 Current : 0 <input type="text"/>
Technical department	Salary : 32,000 Current : 20 <input type="text"/>	Salary : 40,000 Current : 0 <input type="text"/>	Salary : 60,000 Current : 0 <input type="text"/>

Total salary : 4,216,000

Pending changes : 0

### Basic ability value of various employees:

- Initial basic ability value: Level1 at 0.5, Level2 at 0.6 and Level3 at 0.7.

### Production and marketing capacity:

- New employee onboard rate and existing employees turnover rate affect the eventual number of employees in the organization.
- Production department should recruit enough employees to maintain sufficient productivity (max 10 people per production line).
- Sales supporting capability cap of non-production departments set the limit of the overall sales amount of the company.
- Always seek the best judgement for the right balance between Sales and Production capability.
- Sales and Production capability is capped at the lower value of sales force capability and production capability.
- Then, such capability set the ceiling of operating income of current period.



# ⑦ Inputs- Employee Recruiting & Termination (2/2)

## 《Termination》

Department / Salary level	Level 1	Level 2	Level 3
Production department	Salary : 28,000 Current : 78 <input type="text"/>	Salary : 35,000 Current : 0 <input type="text"/>	Salary : 52,500 Current : 0 <input type="text"/>
Marketing department	Salary : 28,000 Current : 23 <input type="text"/>	Salary : 35,000 Current : 0 <input type="text"/>	Salary : 52,500 Current : 0 <input type="text"/>
Finance department	Salary : 30,000 Current : 10 <input type="text"/>	Salary : 37,500 Current : 0 <input type="text"/>	Salary : 56,500 Current : 0 <input type="text"/>
Management Department	Salary : 28,000 Current : 16 <input type="text"/>	Salary : 35,000 Current : 0 <input type="text"/>	Salary : 52,500 Current : 0 <input type="text"/>
Technical department	Salary : 32,000 Current : 20 <input type="text"/>	Salary : 40,000 Current : 0 <input type="text"/>	Salary : 60,000 Current : 0 <input type="text"/>

### Termination of employees:

- When laying off employees, beware of potential turnover rate of the remaining employees that may affect the eventual numbers.
- Three-month severance package is needed in laying off employees.
- Again, in implementing termination, need to seek the best judgement for the right balance between Sales and Production capability .

Enter the number of terminations for the specific levels in each department.



# ⑦ Inputs- Sales Supporting Capability Cap (Bottleneck)

Department	Sales Supporting Capability per person per month	number of people	Weighted Average Ability Index	Department Sales Supporting Capability
Marketing	1,680,000	23	0.6	23,184,000
Finance	4,200,000	7	0.6	17,640,000
Management	2,520,000	15	0.6	22,680,000
Technical	2,016,000	19	0.6	22,982,400

## Department Sales Supporting Capability Cap (the bottleneck of sales revenue):

- Department sales supporting capability = Number of people in the department \* Sales Supporting Capability per person per month \* Weighted Average Ability Index
- Sales Supporting Capability Cap: The sales revenue that could be achieved in that specific month is capped by the lowest Sales Supporting Capability in any of the four departments (Marketing, Finance, Management and Technical) but not involving Production department.
- For example, in the table at the left, the Sales Supporting Capability of the Finance department (17,640,000) is the lowest and therefore that sets the maximum sales revenue that could be achieved in that month.

## Ways to increase the Cap:

Potential ways to increase the Capability Cap:

- Increase the number of people.
- Consider hiring employees with higher competency (higher levels).
- Provide training to the employees.



# ⑦ Inputs- Employee Training



Department/Cost	Training cost
Production department	No <input type="checkbox"/>
Marketing department	No <input type="checkbox"/>
Finance department	No <input type="checkbox"/>
Management Department	No <input type="checkbox"/>
Technical department	No <input type="checkbox"/>

Select the level and cost of training the employees of each department.

### Employee Training

- Employee training can improve the ability index of employees. For each training, the indices for levels 1, 2 and 3 of the employees will improve in the magnitudes of 0.05, 0.06, and 0.07 respectively.
- Maximum indices that could be reached are at 1.00, 1.20, and 1.40 respectively for the levels 1, 2 and 3 of employees.
- The training cost is charged at a lumpsum cost regardless of the number of employees. Therefore, it is suggested to consider the economic scale and its benefits. Employees that joined at different timing, at different cost will reach different ability indices. However, the weighted average of all the employees in the same department will be used in evaluating the Sales Supporting Capability.

Training expenses for employees at various levels of each department.			
Employee Training Expenses	Lvl 1	Lvl 2	Lvl 3
Production department	100,000	200,000	300,000
Marketing department	200,000	300,000	500,000
Finance department	150,000	200,000	250,000
Management Department	150,000	200,000	250,000
Technical department	200,000	300,000	500,000

# ⑦ Inputs- Investment of Information & Automation Systems

Level	System investment cost	Duration (months)	Product yield increase (%)	Time of system upgrade	Status
Level 1	2,000,000	3	1	# 1 Yr 1 Month	✓ completed
Level 2	3,000,000	3	3	# 1 Yr 4 Month	🕒 Undergoing
Level 3	5,000,000	5	7	# 1 Yr 10 Month	🕒 Undergoing
Level 4	10,000,000	5	10		

Current Level : 1

Upgrade Level	<input type="text" value="3"/>
---------------	--------------------------------

💡 Enter the investment level for Information and Automation Technology to be invested.

## Information and Automation Systems establishment duration:

- The higher the investment level of Information and Automation Systems, the longer the required establishment duration and the higher the investment cost.
- The upgrading of the Systems need to progress through the levels one by one, e.g. only after Level 1 is completed, the establishment process of Level 2 can be started, and it needs another 3 months.

## The benefits of the Systems:

- Increase the efficiency of the Resource Integration.
- Increase production yield rate (in another words, lower consumption rate on raw materials).
- Decrease the required finished products safety stock volume.

# ⑦ Inputs- Raw Material Sourcing



💡 Enter the purchase quantity of Low Quality and High Quality raw materials in accordance to your sales & operation plan.

By product	Raw material - (Low Quality)	Raw material - (High Quality)
Product-A	<p>Cost of raw materials : <b>983</b></p> <p>Available quantity : <b>5,608</b></p> <p>A01: <input type="text"/></p> <p>Opening inventory : <b>4,106</b></p>	<p>Cost of raw materials : <b>1179</b></p> <p>Available quantity : <b>5,608</b></p> <p>A02: <input type="text"/></p> <p>Opening inventory : <b>4,102</b></p>

### Raw Material Sourcing

- The cost of raw materials will change in responding to the market supply demand dynamics and your accumulated purchased quantity.
- The Index of Vendor Relations of your company and your company size (accumulated purchase quantity) affects the quantity available to your company.

# ⑦ Inputs- Paid Reports of Research Study



💡 Select the external research reports to be purchased for this month.

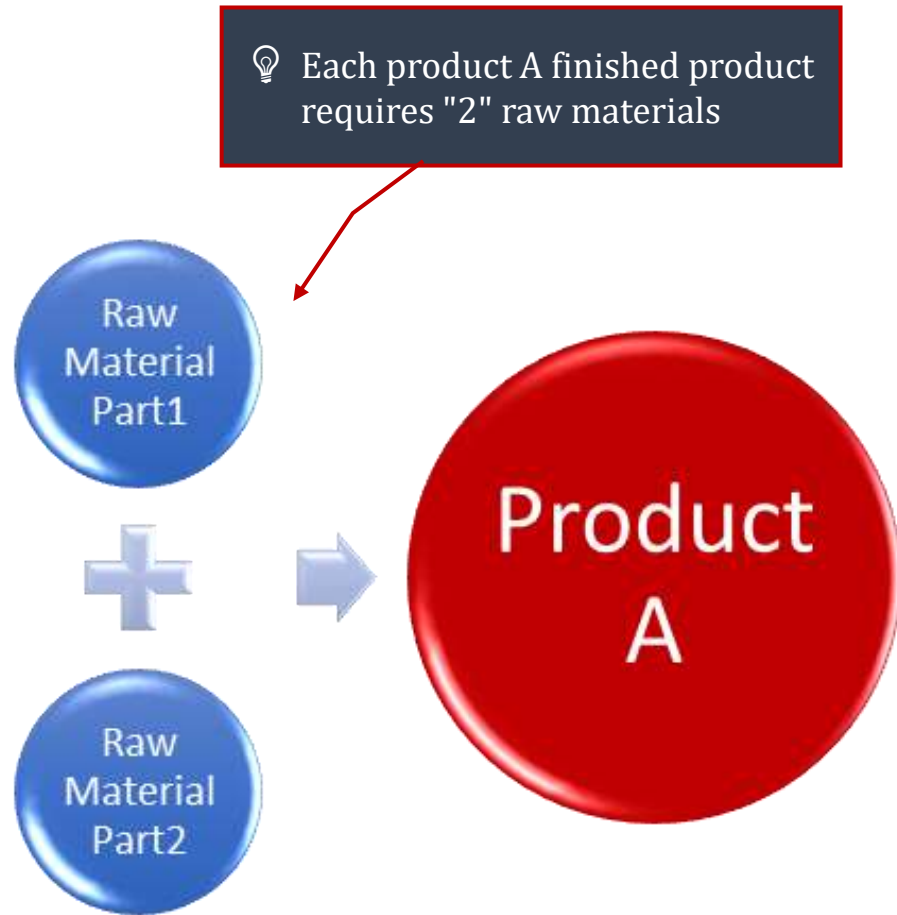
Employee capability & departmental selling power	<input type="checkbox"/> Cost : 50,000
Market share	<input type="checkbox"/> Cost : 50,000
Product positioning and CP value	<input type="checkbox"/> Cost : 50,000
Product cost and product value	<input type="checkbox"/> Cost : 100,000

## Paid Reports of Research Study

- External research reports are available for your purchase depends on the need to understand better on some market information.
- These reports will be available to you as part of the Business Intelligence reports only at the later month (one month subscription).

*Note: the names of the reports listed in the Business Intelligence list might be slightly different!*

# ⑧ Outputs- Product Development (1/2)



💡 Each product A finished product requires "2" raw materials

💡 Research & Development of Product A: Development cost, R&D duration and R&D technical requirement level.

R&D expenses of new product	1,000,000
R&D duration	3 Months
R&D technical requirement	Low

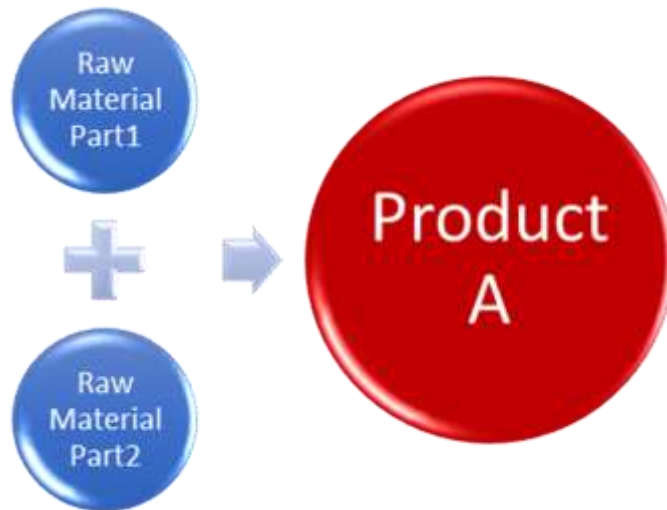
Expedite Product-A R&D 1 month, cost: 500,000

💡 The R&D process of Product A can be expedited by 1 month (from 3 months down to 2 months) at additional cost of \$500,000.

# ⑧ Outputs- Product Development (2/2)



Product	R&D expenses	Development time (month)	Technical requirement	Start R&D time	Status
Product-A	1,000,000	3 Months	Low	# 1 Yr 1 Month	🕒 Undergoing



R&D expenses of new product	1,000,000
R&D duration	3Months
R&D technical requirement	Low

Initiated at 1Yr 1 Month

💡 Product A start R&D time and R&D status

Developing new products is considered CAPEX (Capital Expenditure) and therefore needs to be approved under "Approval of CAPEX & Financing Decisions"

# ⑧ Outputs- Product Quality Management



💡 Enter the level of Product Quality Management in accordance to your product positioning strategy.

By product	Level
Product-A	Prior month Level : <b>2</b> <input type="text" value="No"/>

**Product Quality Management**  
Product Quality Management improves product quality which helps to increase product value, and then helps to increase the opportunity to raise product pricing.

Product quality management fees for Product A	
Product Quality Management Expenses	PA
Lvl 1	100,000
Lvl 2	200,000
Lvl 3	300,000



# ⑧ Outputs- Continuing Improvement of Finished Products



💡 Enter the level of Continuing Improvement of Finished Products in accordance to your product positioning strategy.

By product	Level
Product-A	Prior month Level : 2 <input type="text" value="No"/> ▼

## Continuing Improvement of Finished Products :

Continuing Improvement of Finished Products improves product functionality which helps to increase product value, and then helps to increase the opportunity to raise product pricing.

Continuing Improvement of Finished Products: Product A	
Continuing Improvement of Product Lines Expenses	PA
Lvl 1	200,000
Lvl 2	400,000
Lvl 3	600,000



# 04 Business Intelligence

04

# 4.1 Business Intelligence (BI) list (L1)



Category	Business Intelligence Reports
Responsibility	Organizational Structure and Decision Delegation
Mission	Mission Statement
Vision	Vision Statement
Territory	Forecast of Market Demand
	Industry Market Shares **
	Product positioning and CP value **
	Product Pricing and Average Market Price
Processes	Utilization Rate of Production Capacity
	Production Yield
	Deployment of Production Line Labor
Inputs	Raw Materials Inventory and Cost
	Sales Supporting Capability **
	Capability of Production Department
	Production Facility List

\*\* Paid Reports – need to purchase these Research Study Reports.

Category	Business Intelligence Reports
Outputs	Product development schedule
	Changes of Volume and Cost of Finished Goods
	Product Cost and Product Value **
Profit model	Sales and Growth of Sales
	Accounts Receivable and Accounts Receivable Turnover Rate
	Accounts Payable and Accounts Payable Turnover Rate
	Inventory and Inventory Turnover Rate
	Journal
Financial Reports	Ledger
	Balance Sheet
	Income Statement
	Statement of Cash Flows
Other	Decision Records
	Stock Valuation
	Ranking

# 4.2 BI: Industry Market Share



Product-A Emerging market						
Company name	Apr		May		Jun	
	Sales volume	%	Sales volume	%	Sales volume	%
C01	513	16.16	460	12.40	654	14.58
C02	156	4.91	228	6.14	211	4.70
C03	270	8.50	333	8.97	494	11.01
C04	432	13.61	499	13.45	605	13.48
C05	341	10.74	387	10.43	377	8.40
C06	336	10.58	492	13.26	594	13.24
Total	3,175	100.00	3,711	100.00	4,487	100.00
Product-A Developed market						
Company name	Apr		May		Jun	
	Sales volume	%	Sales volume	%	Sales volume	%
C01	513	16.16	460	12.40	654	14.58
C02	156	4.91	228	6.14	211	4.70
C03	270	8.50	333	8.97	494	11.01
C04	432	13.61	499	13.45	605	13.48
C05	341	10.74	387	10.43	377	8.40
C06	336	10.58	492	13.26	594	13.24
Total	3,175	100.00	3,711	100.00	4,487	100.00

# 4.3 BI: Product positioning and CP value



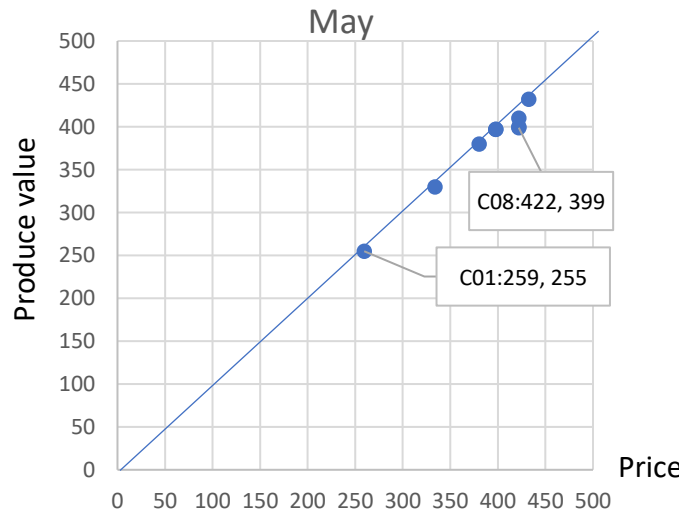
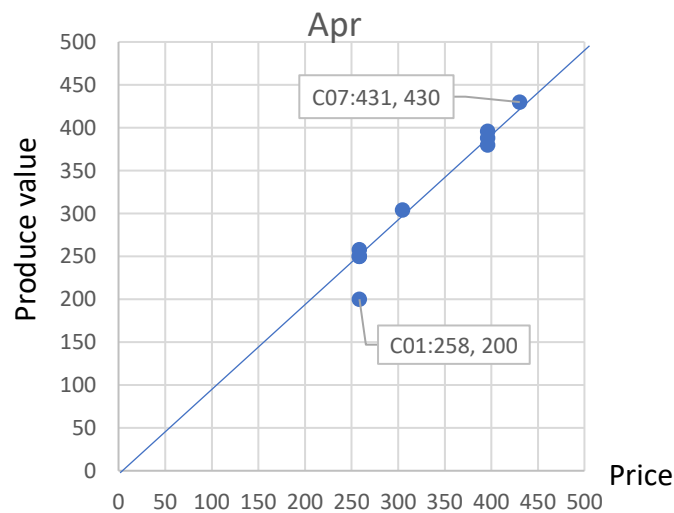
Company	Apr				May			
	Value for Money index	%	Product value	Price	Value for Money index	%	Product value	Price
C01	129.15	13.70	258	200	101.73	11.10	259	255
C02	103.32	11.00	258	250	100.18	10.90	398	397
C03	103.32	11.00	258	250	100.11	10.90	380	380
C04	102.09	10.80	396	388	105.47	11.50	422	400
C05	100.26	10.60	305	304	101.12	11.00	334	330
C06	104.24	11.10	396	380	102.90	11.20	422	410
C07	100.12	10.60	431	430	100.06	10.90	432	432
C08	100.03	10.60	396	396	105.74	11.50	422	399
C09	100.12	10.60	258	258	100.18	10.90	398	397
Total	942.65	100.00			917.49	100.00		

## Product CP value (Value for Money Index) :

- Product CP value = Product Value / Product price.
- Products with high CP value attracts consumers' preference.
- You may need to spend higher costs / expenses to push up Product Value or otherwise you may need to lower the price to obtain high CP value.

## Market positioning:

- Companies can decide their product positioning in view of their target customer groups.
- For example, C01 tends to target low-value & low-price customer groups.
- Basically, product pricing should not be higher than Product Value.



# 4.4 BI: Capability of Production Department

April and May examples

Salary level		C01		C02		C03	
		Apr	May	Apr	May	Apr	May
Level 1	Average employee ability index	0.5	0.53	-	-	-	-
	Number of people	29	28	-	-	-	-
Level 2	Average employee ability index	0.6	0.64	0.6	0.6	0.62	0.62
	Number of people	13	13	9	18	26	30
Level 3	Average employee ability index	-	-	-	-	-	-
	Number of people	-	-	-	-	-	-
Total production department	Average employee ability index	0.53	0.57	0.6	0.6	0.62	0.62
	Number of people	42	41	9	18	26	30

*NOTE: C01, C02 and C03 are shown here for illustration purpose. In the system, only the details of your company is shown.*

## Capability of Production Department:

- The ability indices of the Production Department for new employees will begin at 0.5, 0.6 and 0.7 for Level 1, 2 and 3 employees respectively.
- Training the employees will improve their ability index by 0.05, 0.06 and 0.07 respectively for the 3 different levels.
- When recruiting new employees at a later stage, they will still be starting from the initial ability indices value.
- The weighted average of the ability indices in the different levels of employees will be calculated individually. Then the overall weighted average employee ability of the whole Production Department will be calculated based on such numbers.



# 4.5 BI: Sales Supporting Capability

September examples

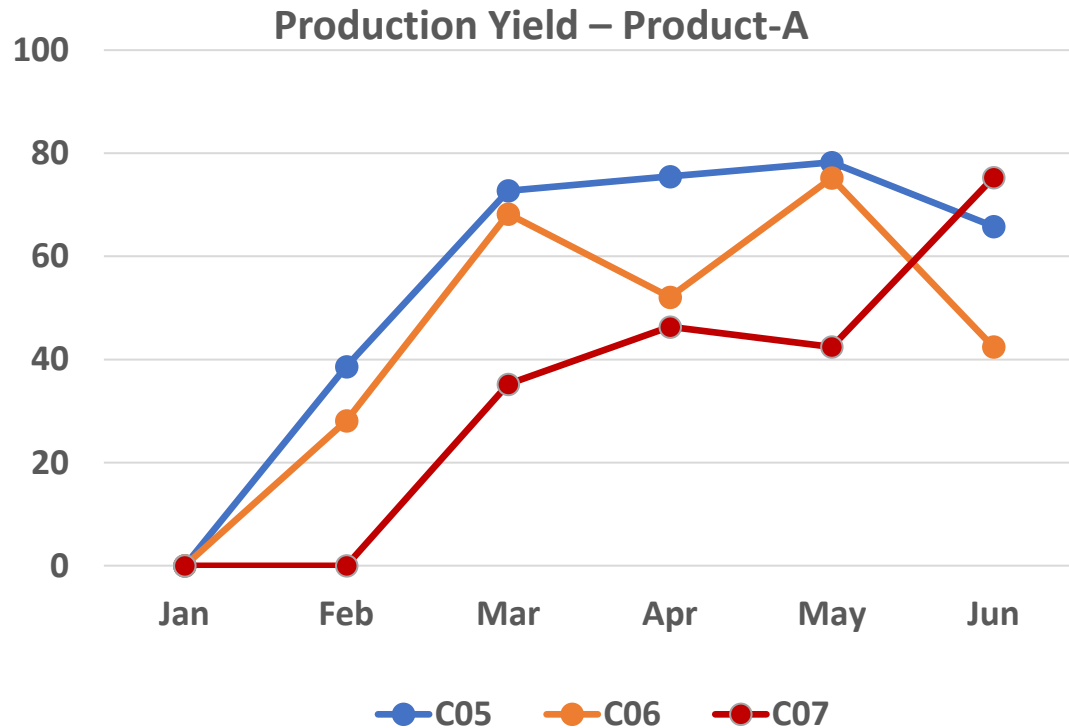
Department / Salary level		C05	C06	C07	
Marketing department	Level 1	Average employee ability index	-	0.58	0.7
		Sales capability(K)	-	3,500	17,803
		Number of people	-	4	17
	Level 2	Average employee ability index	0.60	0.70	0.78
		Sales capability(K)	23,400	6,300	5,850
		Number of people	25	6	5
	Level 3	Average employee ability index	-	-	-
		Sales capability(K)	-	-	-
		Number of people	-	-	-
	Subtotal	Average employee ability index	0.60	0.65	0.72
		Sales capability(K)	23,400	9,800	23,653
		Number of people	25	10	22

*NOTE: C05, C06 and C07 are shown here for illustration purpose. In the system, you can see the details of your company only.*

## Sales Supporting Capability of non-production departments:

- The initial ability index is set at 0.5, 0.6 and 0.7 for Level 1, 2 and 3 respectively regardless of Marketing, Finance, Management or Technical department.
- Training the employees will improve their ability index by 0.05, 0.06 and 0.07 respectively for the 3 different levels.
- Newly recruited employees will start from the initial ability index value.
- The weighted average of the ability indices in the different levels of employees will be calculated individually. Then the overall weighted average employee ability of the whole department will be calculated based on such numbers. These numbers are shown as “Average employee ability index” under the “Subtotal” line at each departmental section.
- Sales Supporting Capability is capped by the lowest Sales capabilities among the four departments (Marketing, Finance, Management and Technical).





*NOTE: C05, C06 and C07 are shown here for illustration purpose. In the system, you can see the details of your company only.*

## Factors affecting Production Yield:

### Investment of Information & Automation Systems:

- The yield rate will be improved starting from 1% at Level 1, to 3% at Level 2, 7% at Level 3 and 10% at Level 4 of the levels established on Information & Automation Systems.

### Raw materials:

- Different quality levels of the raw materials (low-quality and high-quality) fed to the production lines affect the yield rate at the factors of 1.0 and 1.2 respectively. Weighted average of the factors will be used.

### Product Quality Management:

- Sustaining spending on Quality Management Level improves yield rate.

### Ability index of Production employees:

- Higher Production employees' ability index (Capability) result in higher yield rate.





# 05 Reminders on participating the 8-Cross<sup>®</sup> Business Simulation

05



## Three categories evaluated in the Simulation Score:

### ● **Insolvency times:**

- Maximum score is set as the number of companies competing in the simulation. For each insolvency case, 2 points will be deducted. Lowest score is zero.

### ● **Total Shareholders' Return (TSR):**

- Also known as Investor rate of return.
- $TSR = \{ \text{current share price} - \text{base period share price} + \sum (\text{cash dividend} / \text{number of outstanding shares}) \} / \text{base period share price}$ .
- The company with highest TSR will be graded the maximum score (equivalent to number of competing companies). Then the others will be graded in descending order in view of their TSR's with 1 point less in each order.

### ● **Economic Value Added (EVA):**

- $EVA = IC \text{ annual average value} * (ROIC - WACC \text{ annual average value})$ .
- Similar to TSR, the company with highest EVA will be graded the maximum score while the others will be graded in descending order in view of their EVA's with 1 point less in each order.






## Ranking (over Total Score):

- Total Score is the sum of the scores in three categories. The company with higher Total Score will be ranked as the champion. And then the others will be ranked in descending order in view of their Total Score.
- For companies with same Total Score, the EVA value will be used to decide the ranking among them in descending order. The rationale is TSR is a short-term performance indicator while EVA is on the long-term.



# 5.2 Accountability!



-  Decision#1
  - ... ..
  - ... ..
-  Decision#2
  - ... ..
  - ... ..
-  Decision#3
  - ... ..
  - ... ..
-  Decision#4
  - ... ..
  - ... ..
-  Decision#5
  - ... ..
  - ... ..



**Be accountable in making sure that you do implement the decisions assigned to you!**

Always check and verify that the decisions made are correctly submitted and highlighted in the Pending Lists of related Decision pages!



#### A. Why sales volume is lower than expected?

- Check or evaluate the Sales Supporting Capability of each non-production department (i.e. Marketing, Finance, Management and Technical). Which department is at the lowest capability and therefore being capped at such Capability level?
- Check Sales Force allocation to ensure the allocated Sales Supporting Capability for the specific markets (Emerging as well as Developed Market) are enough.
- Assess your product pricing strategy over the market competition (i.e. How other competitors set their price and how your product value is positioned.).
- Assess the quantity of finished products that is available for selling to the market:  
The available quantity = Beginning inventory + Actual finished products made – Required safety stock inventory



#### **B. Why produced volume is lower than expected?**

- Recruitment decided for current month and only have newly employed people get onboard in the subsequent month.
- Beware of the turnover rate and the new recruitment onboard rate. Such changes may be happening when crossing to the subsequent month.
- Check and verify that the production manpower deployed is correctly set for the production lines. The deployment has to be set on monthly basis otherwise no manpower will be deployed that no production will be made.
- Check verify the quantity of raw materials fed to production lines are correctly managed in the Production Volume Planning.



### C. Why the EVA value is negative?

- The company should maintain a certain level of cash balance. When the cash balance is too low, the company should consider financing activities such as increasing Cash Capital or increasing long-term or short-term loans.
- When the company's cash balance is less than zero, the system will automatically handle cash capital increase so that the company's cash balance returns to initial cash balance (NT\$20 million\*). The number of insolvency cases will be recorded.
- However, when cash balance is too excessive, it will have impacts on ROIC due to inflated IC. Financial measures should be carried out to lower down the cash balance.

*\*NOTE: Depends on how your simulation session is set. The initial cash balance may be set at a lower amount.*



# 06 Reflection

---

06

# Reflection- Knowledge

What are the observations and the changes made?



A large, empty rectangular box with a thin blue border, intended for writing observations and changes.



# Reflection- Skills

## What are the observations and the changes made?



# Reflection- Behavior/Attitude

What are the observations and the changes made?



A large, empty rectangular box with a thin blue border, intended for handwritten or typed notes and reflections.



# 07 Appendix

---

07



## 1. Income Statement:

- Summarize the business performance of an enterprise in an accounting period.

## 2. Balance Sheet:

- Summarize the status of assets, liabilities, and shareholders' equity of an enterprise at the end of an accounting period.

## 3. Statement of Cash Flow:

- Explain the changes in the cash balance of an enterprise due to business activities, investment activities and financing activities during an accounting period.

## 4. Statement of Changes in Equity:

- Explain the changes in equity of an enterprise due to operating profit and loss, and equity transactions during an accounting period.



## ➤ Revenue growth rate

Compounded Monthly Growth Rate(**CMGR**)

$$\text{Sales}_N = \text{Sales}_0 * (1 + \text{CMGR})^N$$

Sales<sub>N</sub>: Operating income for the Nth month

Sales<sub>0</sub>: Operating income for month 0



## ➤ Gross Profits

Gross Profits(**GP**) =  
Sales  
- Cost of Sales(**COS**)

$$GP = Sales - COS$$

## ➤ Earnings Before Interests

Earnings Before Interests & Taxes (**EBIT**) =  
Gross Profits (**GP**)  
- Operating Expenses (**OE**)

$$EBIT = GP - OE$$



## ➤ Operating expenses

Operating expenses (**OE**) =  
General & Administrative Exp. (**G&A**)  
+ Marketing & Selling Exp. (**M&S**)  
+ Research & Development Exp. (**R&D**)

$$OE = G\&A + M\&S + R\&D$$

## ➤ Net Income

Net Income (**NI**) =  
EBIT  
- Interest Income (**II**)  
- Financial Costs (**FC**)  
- Income Tax Expenses (**T**)

$$NI = EBIT + II - FC - T$$



## ➤ Assets

Assets (**A**) =  
Liabilities or Debt(**D**) + Stockholders' Equity(**E**)

$$A = D + E$$

Assets (**A**) =  
Current Assets (**CA**)  
+ Long-Term Investment (**LI**)  
+ Properties, Plants & Equipment (**PPE**)  
+ Other Operating Assets (**OOA**)  
+ Non-Operating Assets (**NOA**)

$$A = CA + LI + PPE + OOA + NOA$$





## ➤ Invested Capital

Invested Capital (**IC**) =  
Working Capital (**WC**)  
+ Long-term Investment (**LI**)  
+ Properties, Plants & Equipment (**PPE**)  
+ Other Operating Assets (**OOA**)  
+ Other Operating Assets (**NOA**)

$$\text{IC} = \text{WC} + \text{LI} + \text{PPE} + \text{OOA} + \text{NOA}$$

## ➤ Capital Employed

Capital Employed (**CE**) =  
Working Capital (**WC**)  
+ Long-term Investment (**LI**)  
+ Properties, Plants & Equipment (**PPE**)  
+ Other Operating Assets (**OOA**)

$$\text{CE} = \text{WC} + \text{LI} + \text{PPE} + \text{OOA}$$

$$\text{CE} = \text{A} - \text{NOA}$$



## ➤ Invested Capital

Invested Capital (**IC**) =

Interests Bearing Debt (**Di**) + Stockholders' Equity (**E**)

$$\mathbf{IC = Di + E}$$

- Interest Bearing Debt (**Di**) =

Short-term borrowing + Long term borrowing + corporate bonds

- Non-Interest Bearing Debt (**NDi**) =

Accounts payable + Payroll to employees + Deposit Margin

$$\mathbf{Di = D - NDi}$$

$$\mathbf{IC = A - NDi}$$



## Return on Invested Capital

Return on Invested Capital (**ROIC**)

= Earnings Before Interests & Taxes (**EBIT**) / Invested Capital (**IC**)

= (EBIT / Sales) \* (Sales / IC)

$$ROIC = \frac{EBIT}{IC} = \frac{EBIT}{Sales} * \frac{Sales}{IC}$$

Profitability

Income generating capability

# 7.2 Accounting formula



$$\begin{aligned} \text{FCF}_t &= \text{EBIT} * (1 - \tau) - \Delta \text{IC} \\ &= \text{EBIT} * (1 - \tau) - \Delta \text{WC} - \Delta \text{PPE} - \Delta \text{OOA} \end{aligned}$$

Statement of Cash Flows

Income Statement

Balance Sheet

**FCF<sub>t</sub>**: Free Cash Flows at a certain period t

**EBIT**: Operating Profit)

**τ**: Income tax rate

**Δ**: Amount of changes at a certain period t

**WC**: Working Capital, WC)

**PPE**: Property, Plants, & Equipment

**OOA**: Other Operating Assets



The 8-cross<sup>®</sup> Business Model

# **Business Simulation (P1L1)**

**Authors:** David Jeng , Yu-Wei Hsu & Jaclyn Wang

# 8-Cross<sup>®</sup>



[som.awbmi.com](http://som.awbmi.com)

In accordance to the principles of the 8-Cross<sup>®</sup> Business Model, we provide the following services:

Systems Thinking Management Course

Teamwork Skills through Business Simulations

Prompt and Effective Corporate Integrity Assessment

Value Creation Consulting Service

Entrelistic, our partner, works on English sessions in Taiwan and global.

