Environmental Analysis

Co-Sub

21102052 Lee Jeong-yun | 21102044 Oh Seyeon | 21102050 Lee Insun

Contents

Our Item : Co-Sub

21102052 Lee Jeong-yun | 21102044 Oh Seyeon | 21102050 Lee Insun

About Co-Sub

Motivation

What is personal color?

: Color that best matches the color of the individual's body
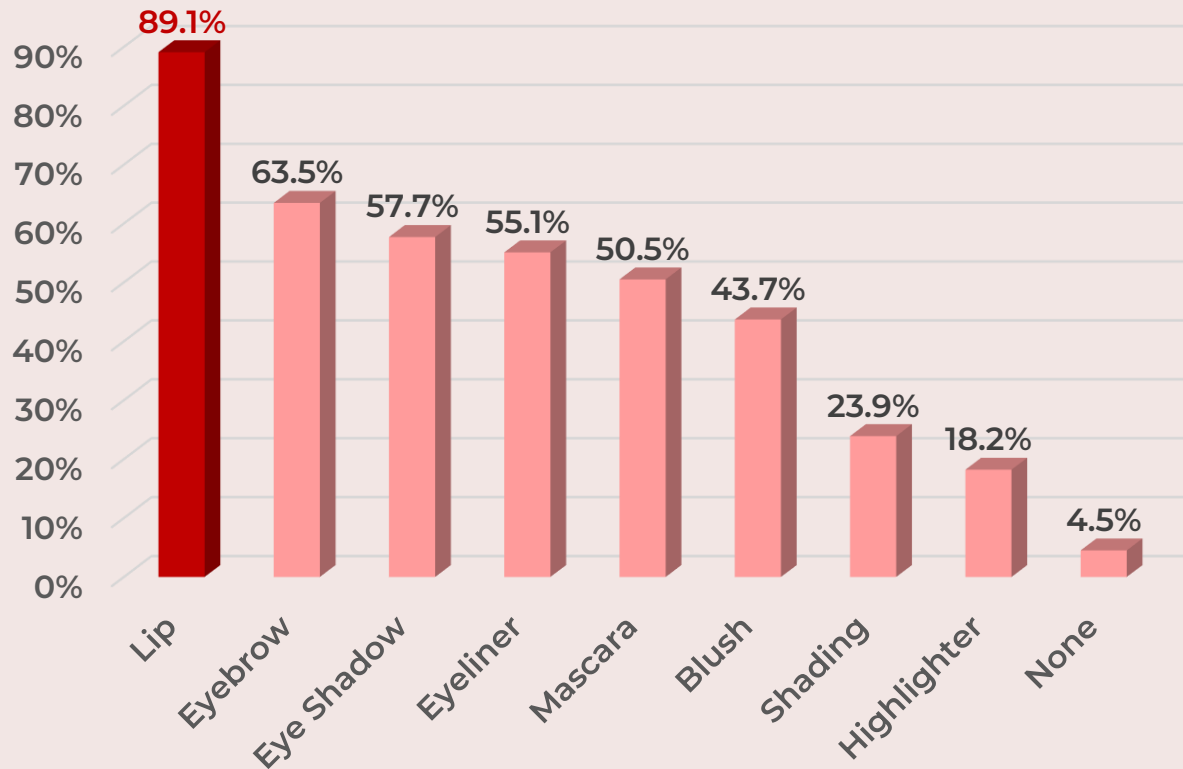
About Co-Sub

Motivation

Personal color can help people to **makeup very suitable**.

About Co-Sub

Motivation

What You Focus the Most on Makeup?

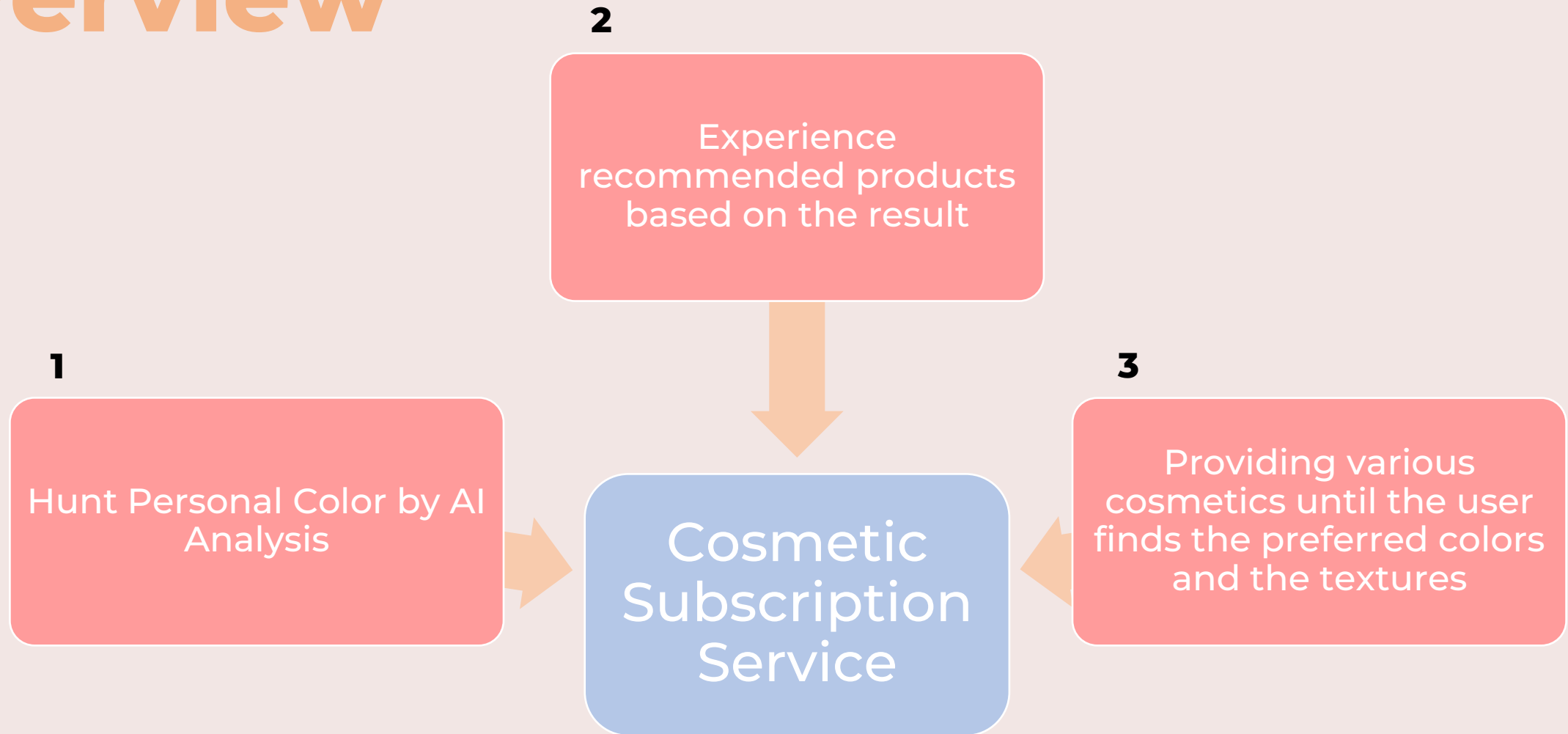| Average Number of Color Cosmetics	20s	30s	40s
	5.2	3.8	3.1

People value the 'Lip' as the Most Important Part of Makeup!

2040 여성들 색조 화장품 평균 4개 사용... 입술 화장 증시, Beautynuri, 2019, Https://www.beautynury.com/m/news/view/83430

About Co-Sub

Overview

2

Experience recommended products based on the result

1

Hunt Personal Color by AI Analysis

3

Providing various cosmetics until the user finds the preferred colors and the textures

Cosmetic Subscription Service
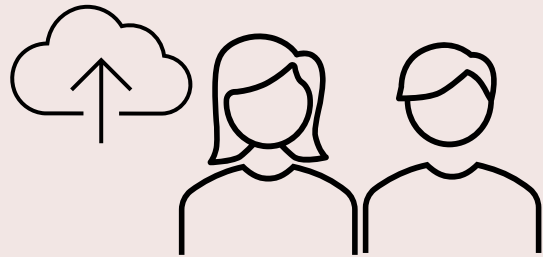
About Co-Sub

Target Group

People who haven't
Found the Proper Lip Color and Texture for them.

About Co-Sub

What Services?

1) Cosmetic Subscription Service Based on AI

Uploading Selfie
Without Makeup

Analysis of Personal Color
and Lip Color Based on AI
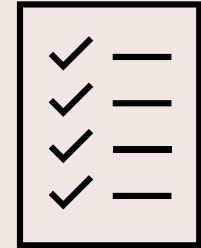
Select the Product from
the List of Recommended Products
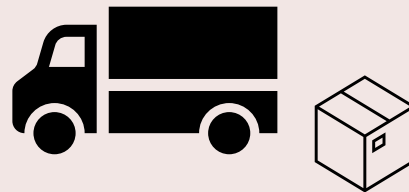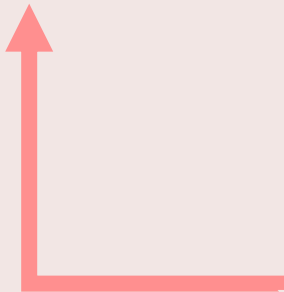
Delivery and Experience the Products
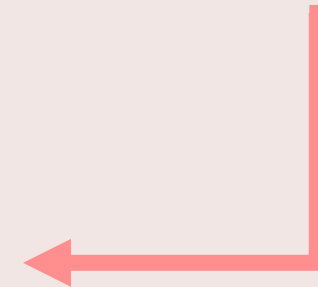
Perspective of Analysis

Virtual Company, ' Co-Sub '

Co-Sub	Make an **Economic Profit** by subscription fee from user
Our Partners	Can **Promote** their products
Users	Can find **Fit Cosmetic Products** **Get Information** about cosmetics from the **Community**

Adopted Technologies

AI Analysis

Big-data Analysis

Current Status

Q8. 포인트 색조화장품에서 가장 성장이 높을 것으로 예상되는 품목은?
예시 단일 선택(복수 응답), N=543

예시 항목	빈도수	백분율
립 틴트	94	17.3%
립스틱	84	15.5%
립 밤	79	14.5%
메이크업 픽서	59	10.9%
치크/불연지	59	10.9%
립 라이너/펜슬	47	8.7%
아이섀도 팔레트	46	8.5%
모노 아이섀도	44	8.1%
립글로스	43	7.9%
아이브로	42	7.7%
아이라이너	30	5.5%
마스카라	25	4.6%
네일컬러/에나멜	14	2.6%
아이M. 리무버	7	1.3%
응답 계	673	–
응답자 수	543	

Bar chart values:
- 립 틴트: 94
- 립스틱: 84
- 립 밤: 79
- 메이크업 픽서: 59
- 치크/불연지: 59
- 립 라이너/펜슬: 47
- 아이섀도 팔레트: 46
- 모노 아이섀도: 44
- 립글로스: 43
- 아이브로: 42
- 아이라이너: 30
- 마스카라: 25
- 네일컬러/에나멜: 14
- 아이M. 리무버: 7
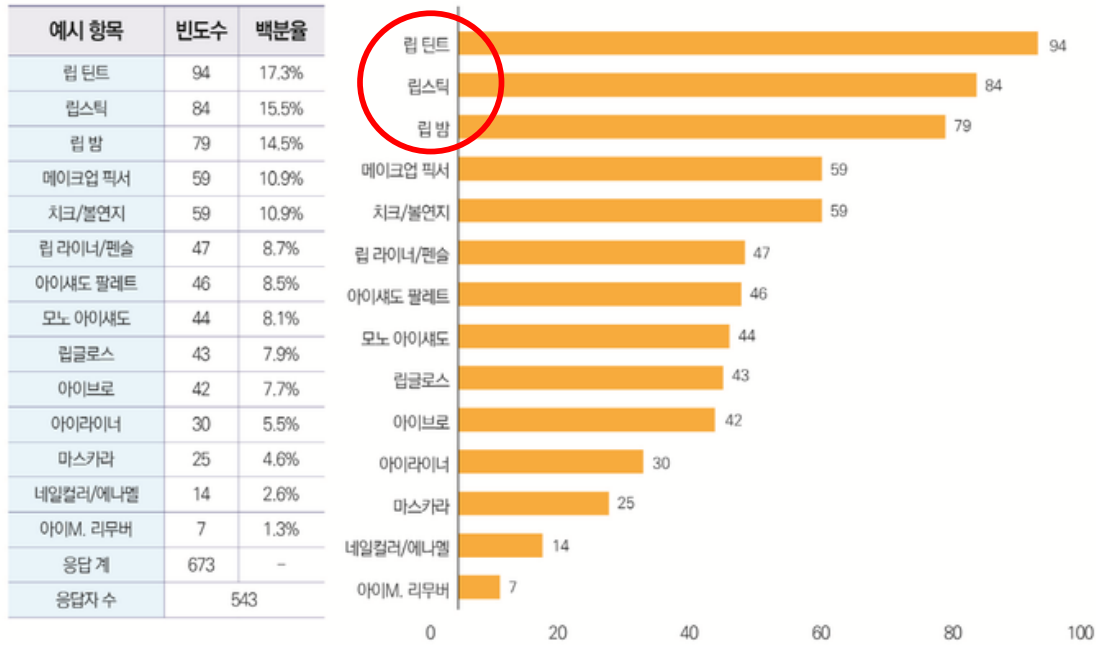
Lip Products Have High Growth Potential

[2022 신년특집] 2022년 화장품업계 트렌드와 이슈는? (cosinkorea.com)
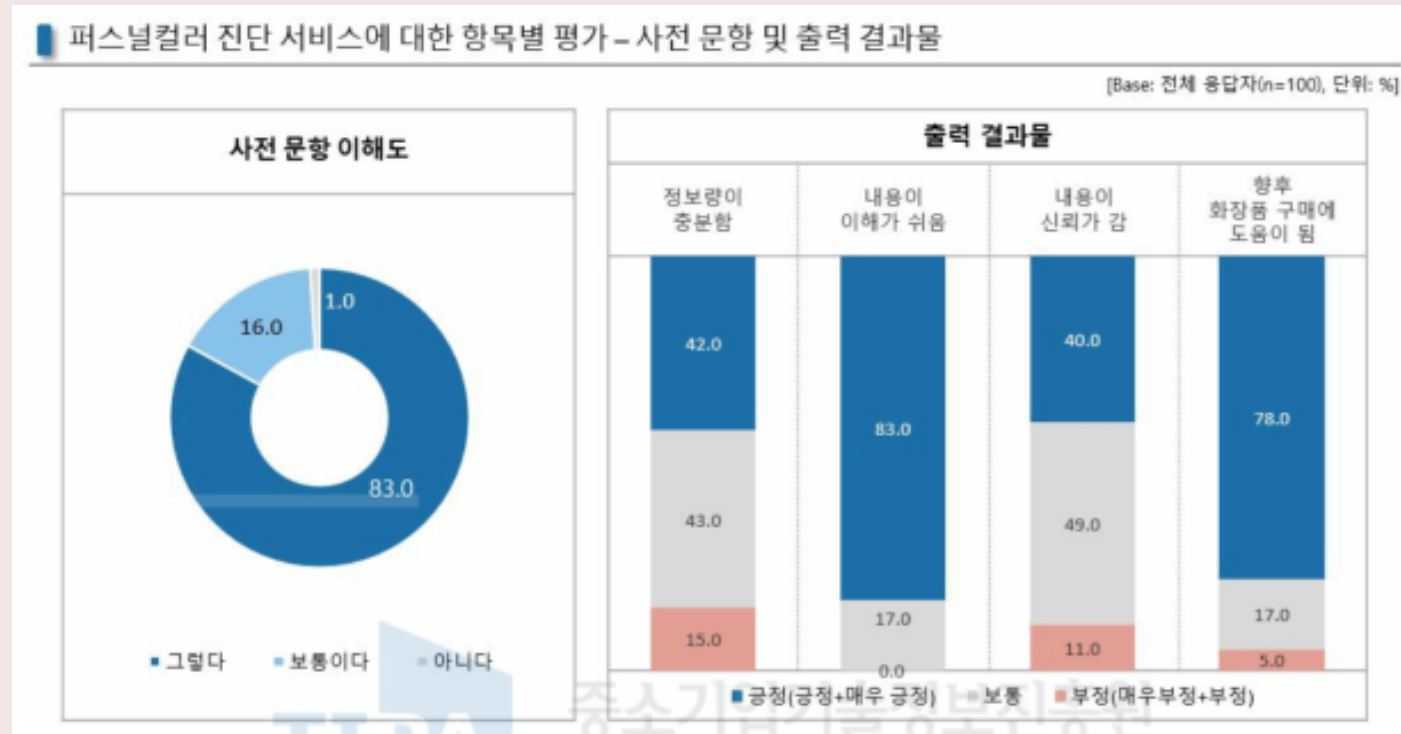
Prospects

[보고서]AR기반의 스마트미러 장치를 활용한 퍼스널 컬러 진단 및 제품 추천 서비스 (kisti.re.kr)

→ Personal Color Helps People Select Cosmetics

Prospects

Personal Color Diagnostics Cost in Seoul

G	₩140,000
F	₩80,000
E	₩100,000
D	₩65,000
C	₩105,000
B	₩88,000
A	₩68,000
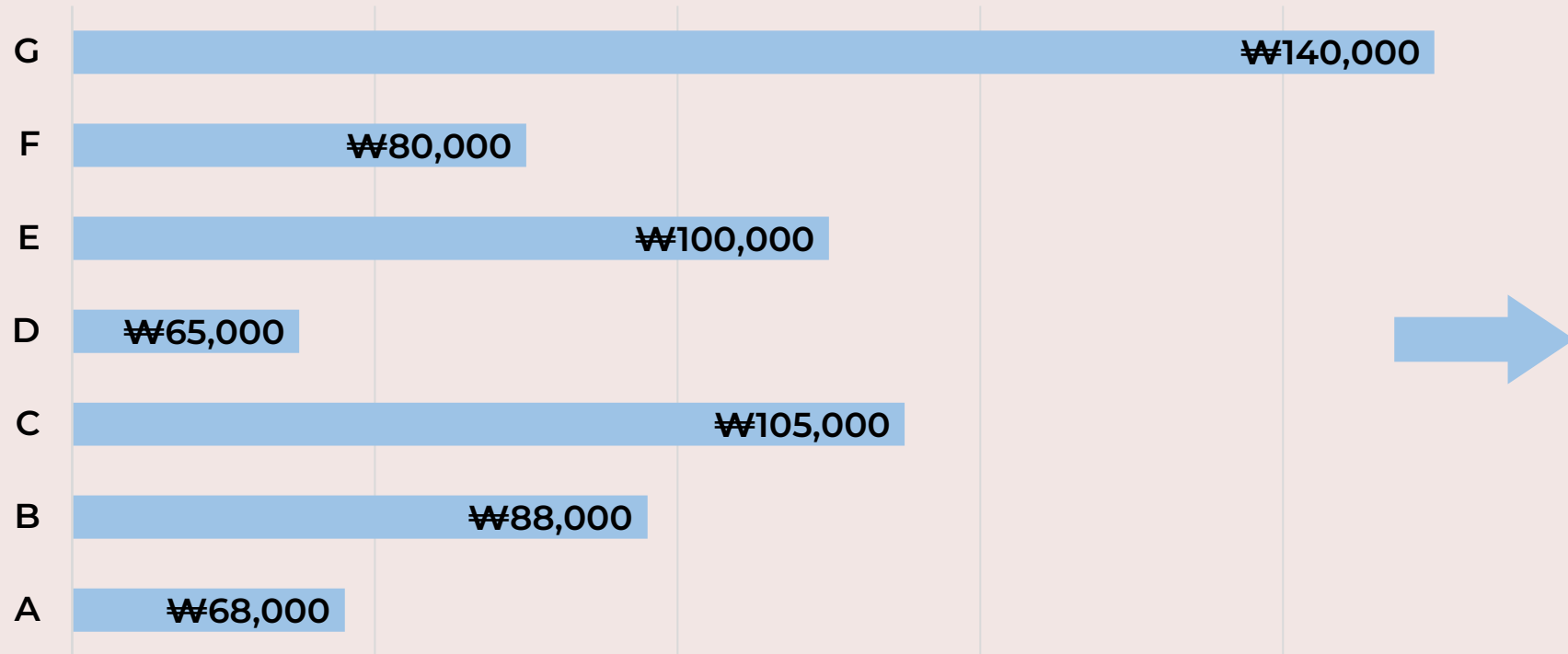
→ Average Cost = 92258.5 Won

→ Expensive Test from the Human Experts

Prospects

Result :

'Co-Sub'

Selecting Lip Products with the **Highest Growth Potential**

Reducing the cost of hunting personal colors

Market

21102052 Lee Jeong-yun | 21102044 Oh Seyeon | 21102050 Lee Insun

Consumer Analysis

Purpose

Period : 2022. 09.26~2022.10.01
A Number of participants : 68

1) To find out the number of people who experience personal color experience.

2) To find out the number of people who experienced a fail to buy color cosmetics online .

3) To find out our service demand.

💄 화장품 구독 서비스 고객 분석 💄

안녕하세요 서울과학기술대학교 ITM전공에서 IT investment analysis를 수강하고 있는 이인선, 오세연, 이정윤입니다☺

빅데이터 분석과 AI기술을 바탕으로 퍼스널컬러를 진단받고
이를 바탕으로 추천 받은 립 제품들💄(립스틱, 틴트) 을 체험해볼 수 있는 화장품 구독 서비스를 기획하는 중입니다!

서비스를 런칭하기에 앞서, 수요를 파악하고자 설문조사를 진행합니다~!

짧은 투표에 응해주신다면 정말 감사드리겠습니다😊👍 :)

Consumer Analysis

Result

1. Have you ever been diagnosed with personal color?

23.1%

76.9%
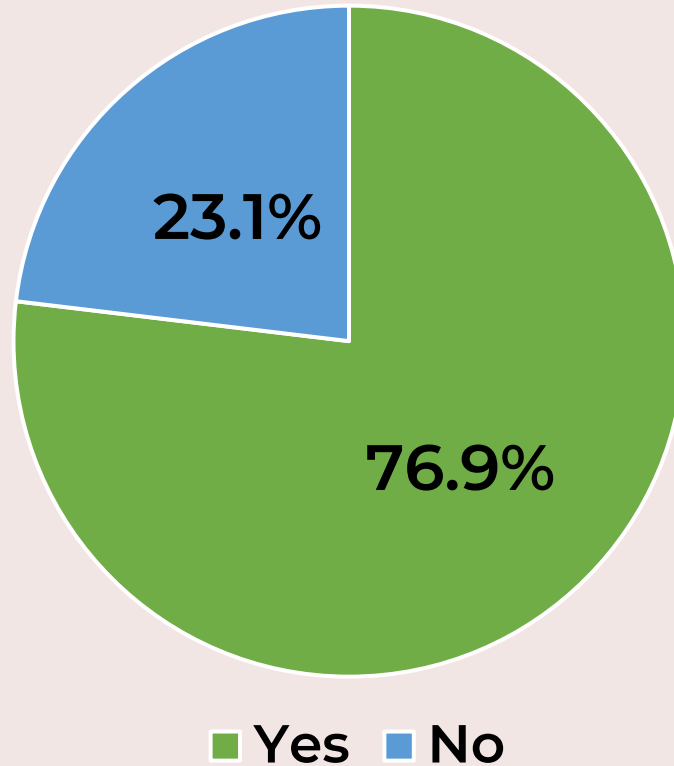
■ Yes ■ No

Consumer Analysis

Result

2. When you bought color cosmetics online, have you ever received a **different color than you expected**?

25.6%

74.4%
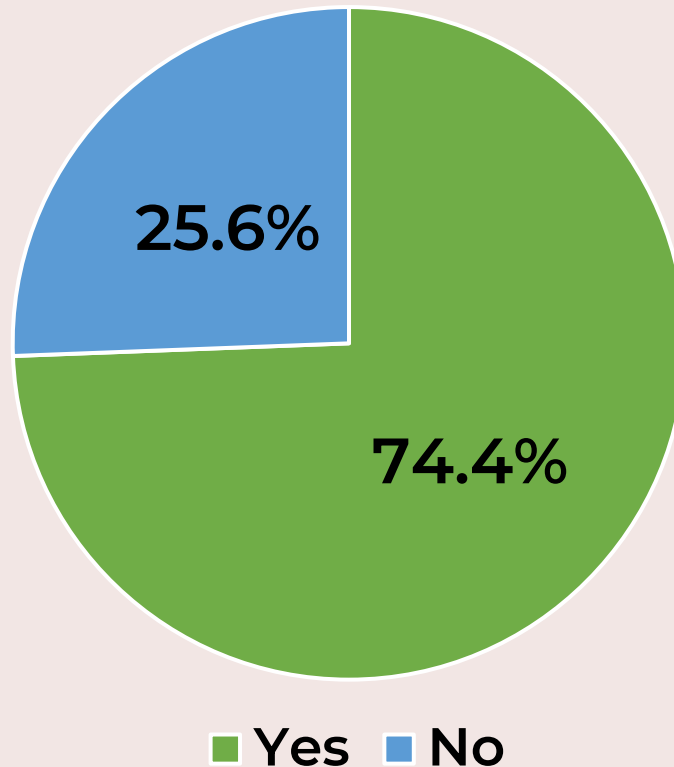
■ Yes ■ No

Consumer Analysis

Result

3. Are you willing to use ' *Co-Sub* '?

15.4%

84.6%
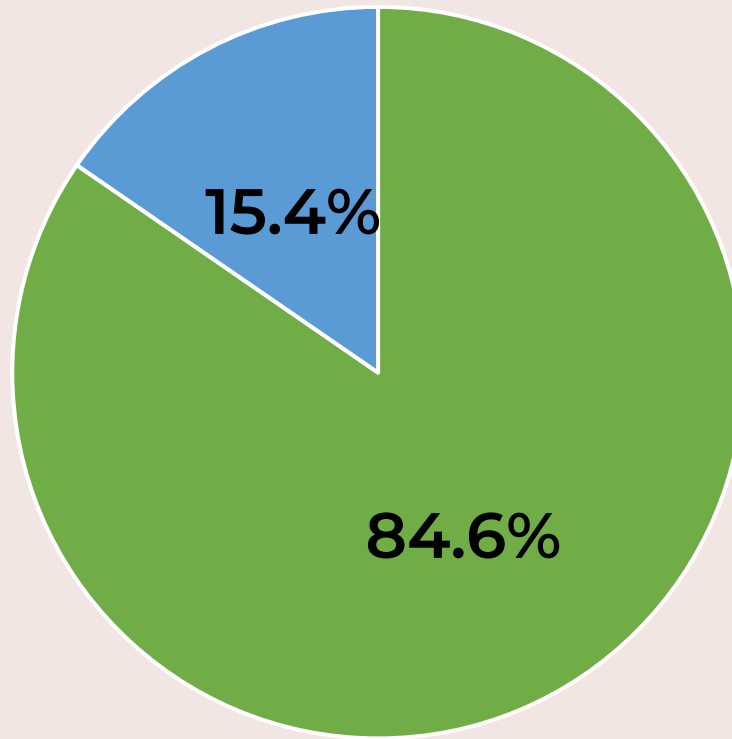
■ Yes ■ No

Competitors Analysis

	OLIVE YOUNG	Hwahae	Zamface	Co-Sub
# Users	100M	100M	10M	Unpredictable
Cost	13,310 Won (Average of TOP 10 Lip)	9,940 Won (Average of Top 10 Lip)	10,105 Won (Average of Top 10 Lip)	Under 9,940 Won per Quarter
How to Experience	Offline Shop	X	X	Regular Delivery
Personal Color	X	X	O	O

Market Analysis

Positioning Map
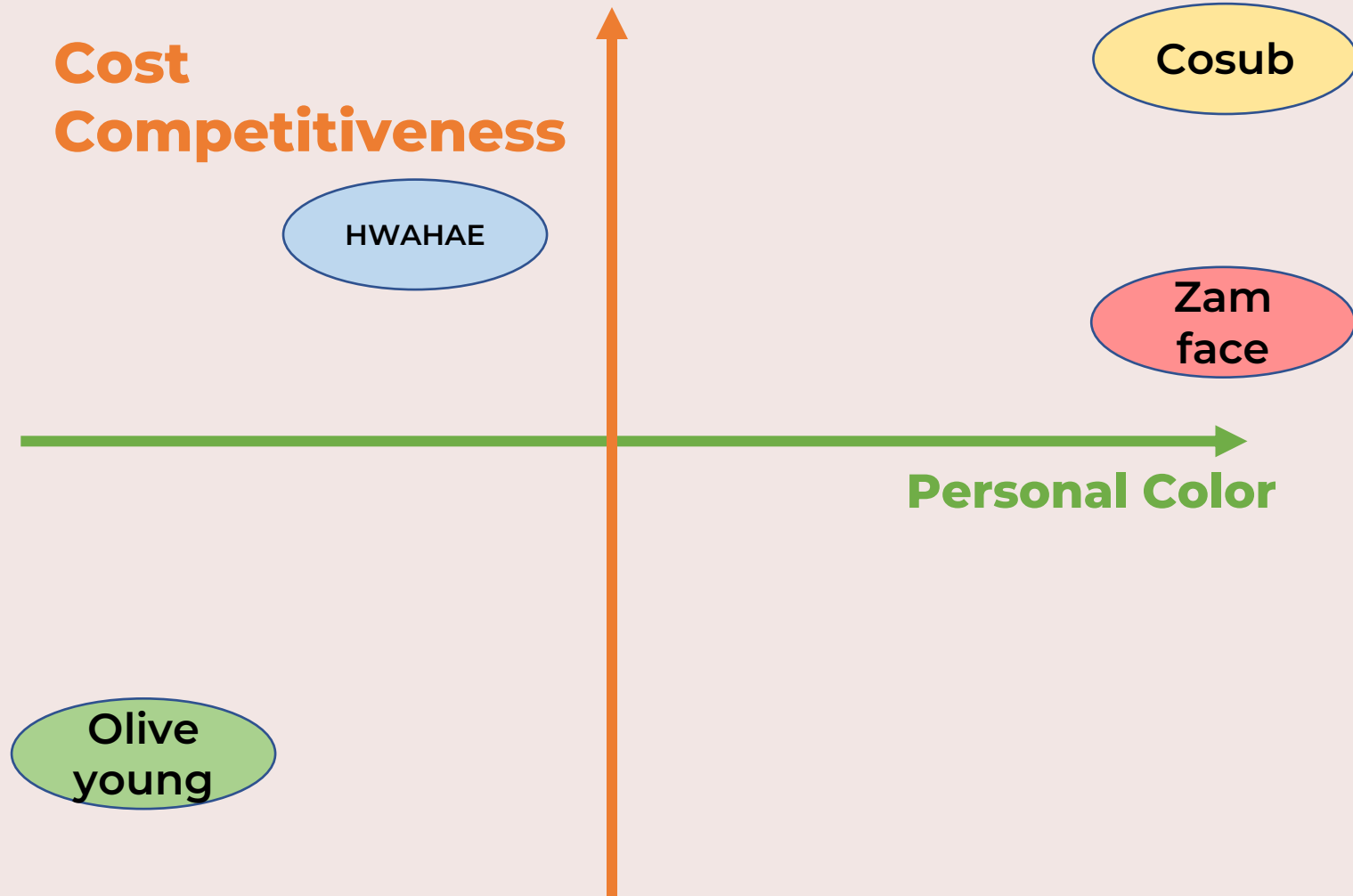
Cost Competitiveness

Cosub

HWAHAE

Zam face

Personal Color

Olive young

Market Analysis

Five Force's Model

Market Analysis

Five Force's Model

```
              ┌─────────────┐
              │  Threats of │
              │  new entry  │
              └─────────────┘
                     ▲
                     │
┌──────────┐   ┌─────────────┐   ┌──────────┐
│ Supplier │ ◄ │ Competitive │ ► │  Buyer   │
│  power   │   │   Rivalry   │   │  power   │
└──────────┘   └─────────────┘   └──────────┘
                     │
                     ▼
              ┌─────────────┐
              │  Threats of │
              │ substitutes │
              └─────────────┘
```
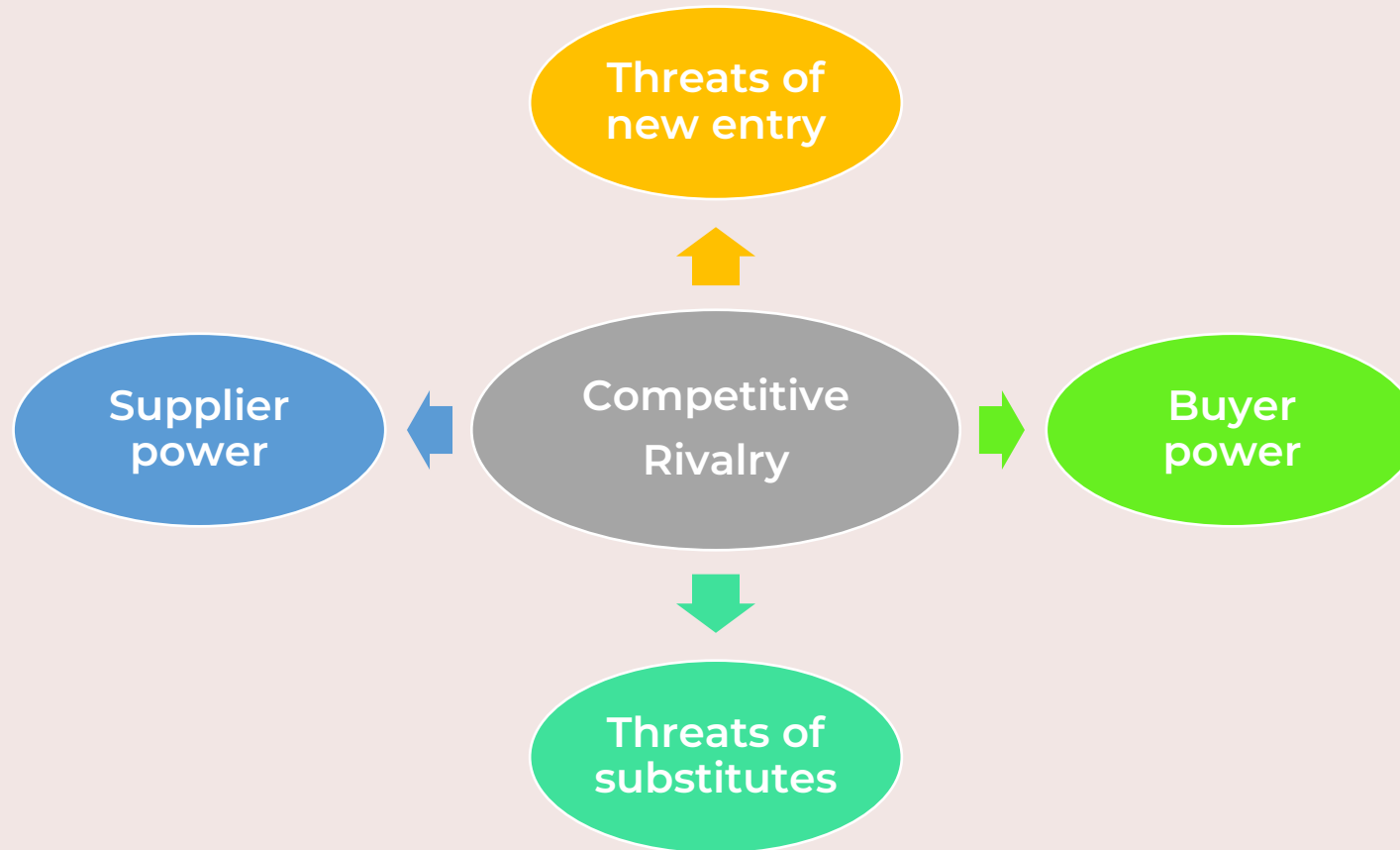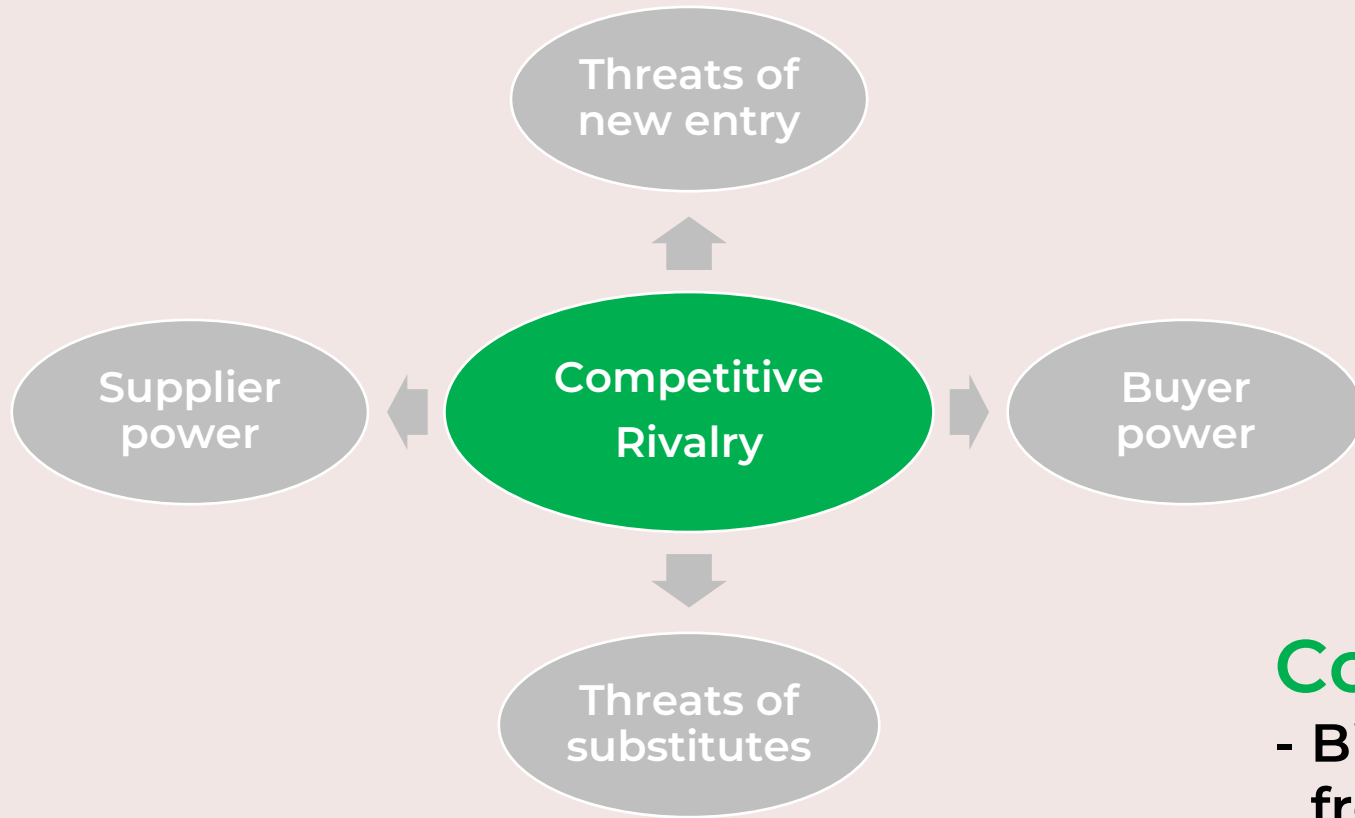
Competitive Rivalry

- Big difference in the way of experience from existing cosmetics companies

→ Low competition

Market Analysis
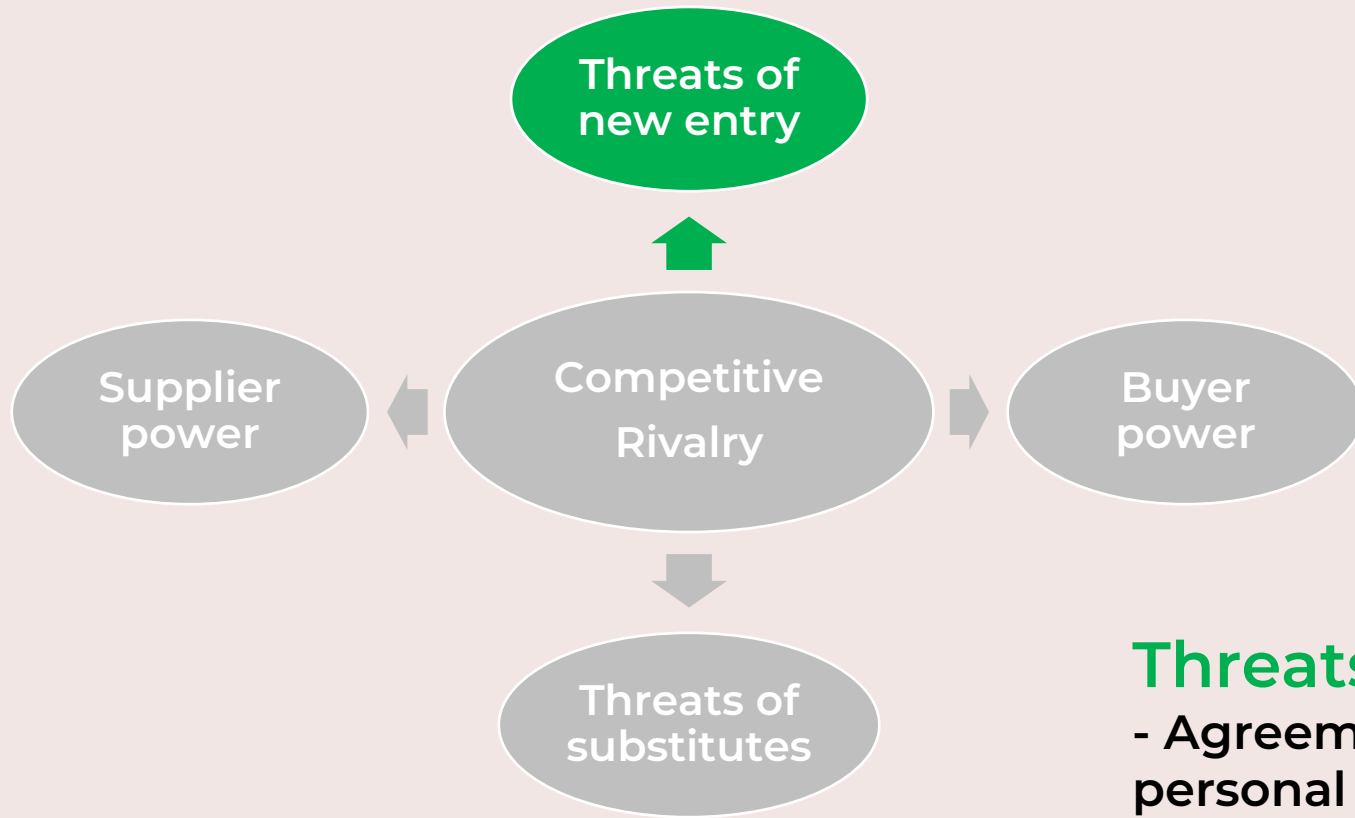
Five Force's Model

Threats of new entry

- Agreements with various cosmetics brands, data on personal color analysis, and AI development costs are required → High entry barriers

Market Analysis

Five Force's Model


```
        Threats of
        new entry
            ↑
Supplier ←  Competitive  →  Buyer
 power      Rivalry          power
            ↓
        Threats of
        substitutes
```
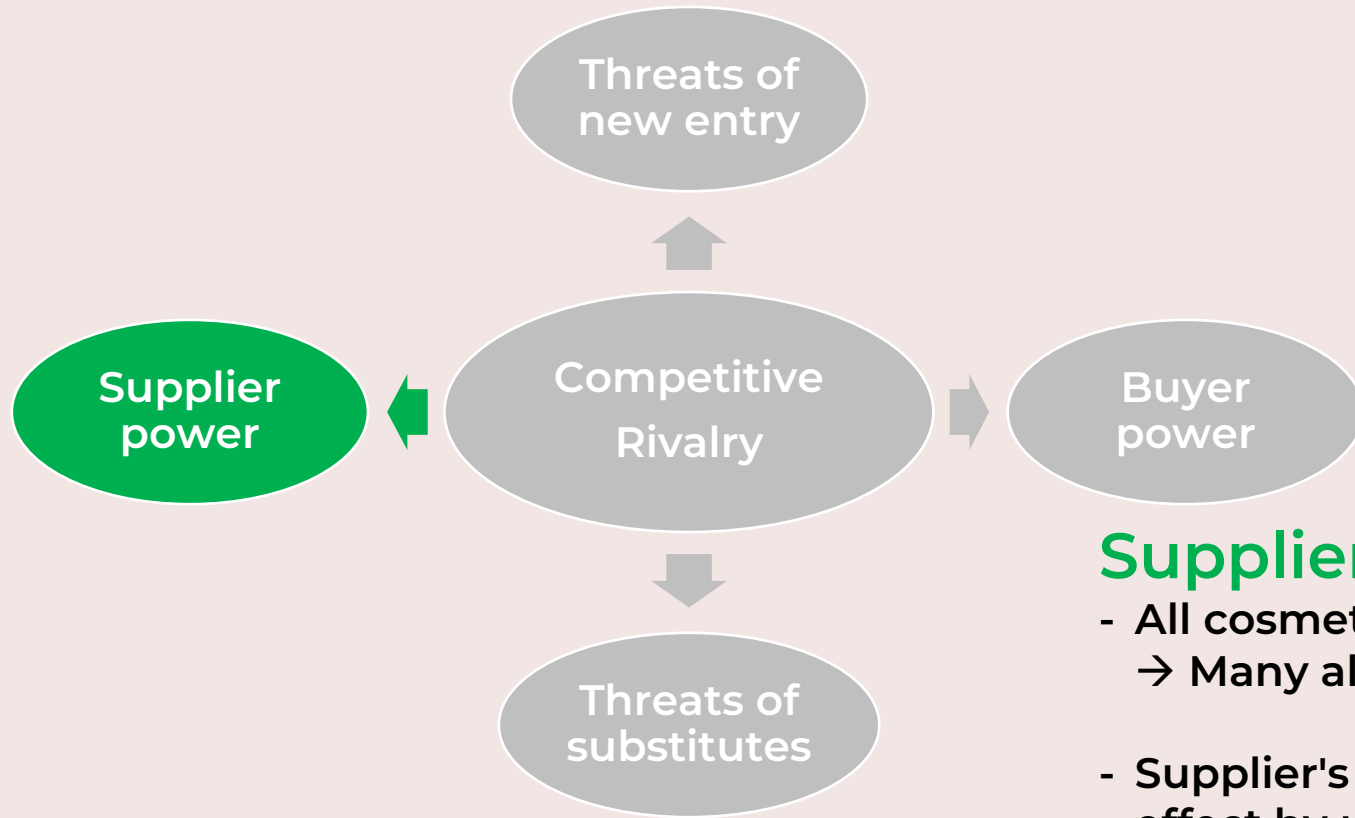
Supplier power

- All cosmetics companies that sell lip products are suppliers
  → Many alternative suppliers

- Supplier's sales can increase due to product promotion effect by using 'COSUB' -> Supplier engagement is high

- Excluding inflation, the price of cosmetics sold is constant
  → Low possibility of change in unit price of supply products

Market Analysis

Five Force's Model

- Threats of new entry
- Supplier power
- Competitive Rivalry
- Buyer power
- Threats of substitutes
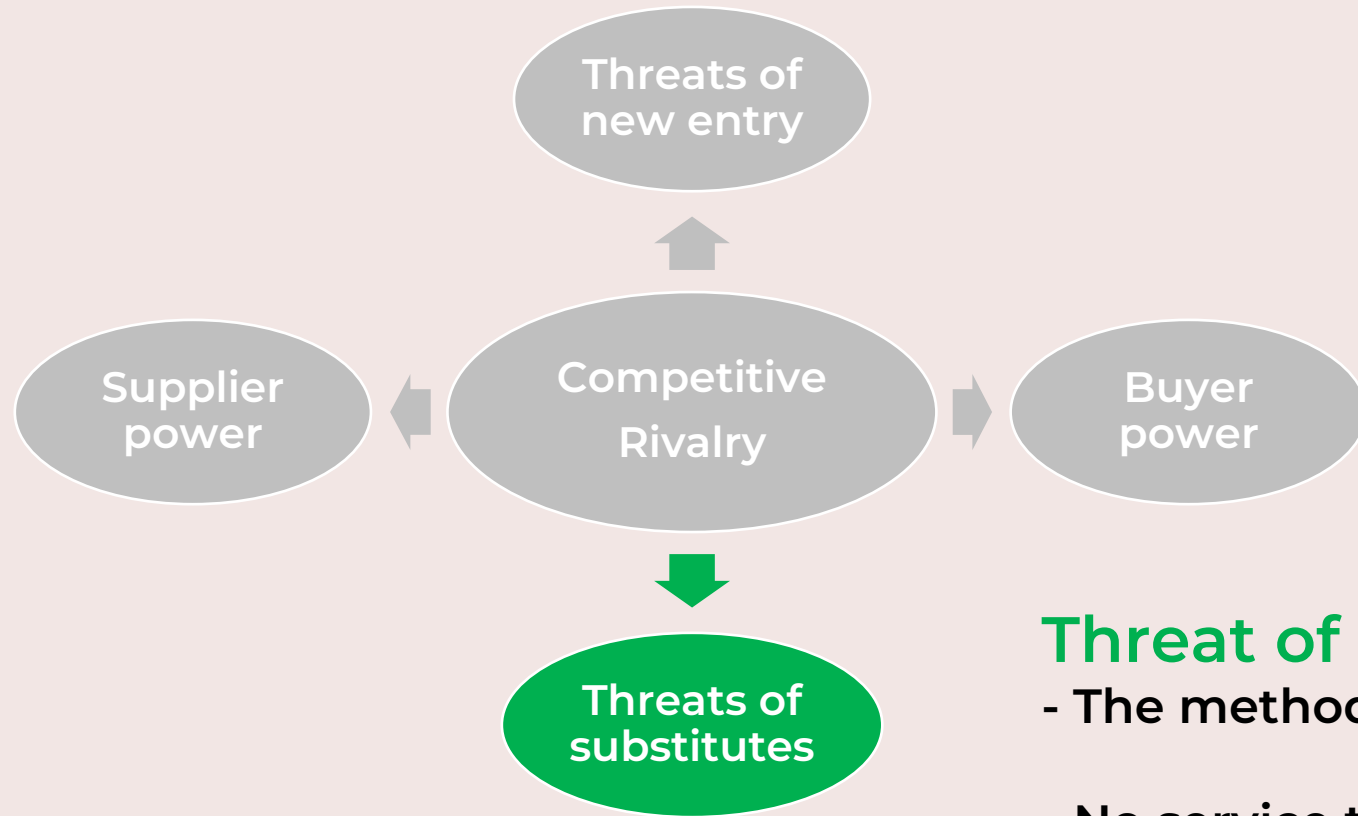
Threat of substitute

- The method of offline lip color testing requires effort

- No service to completely replace the experience subscription service of 'COSUB'.

Market Analysis

Five Force's Model

Threats of new entry

Supplier power

Competitive Rivalry

Buyer power

Threats of substitutes
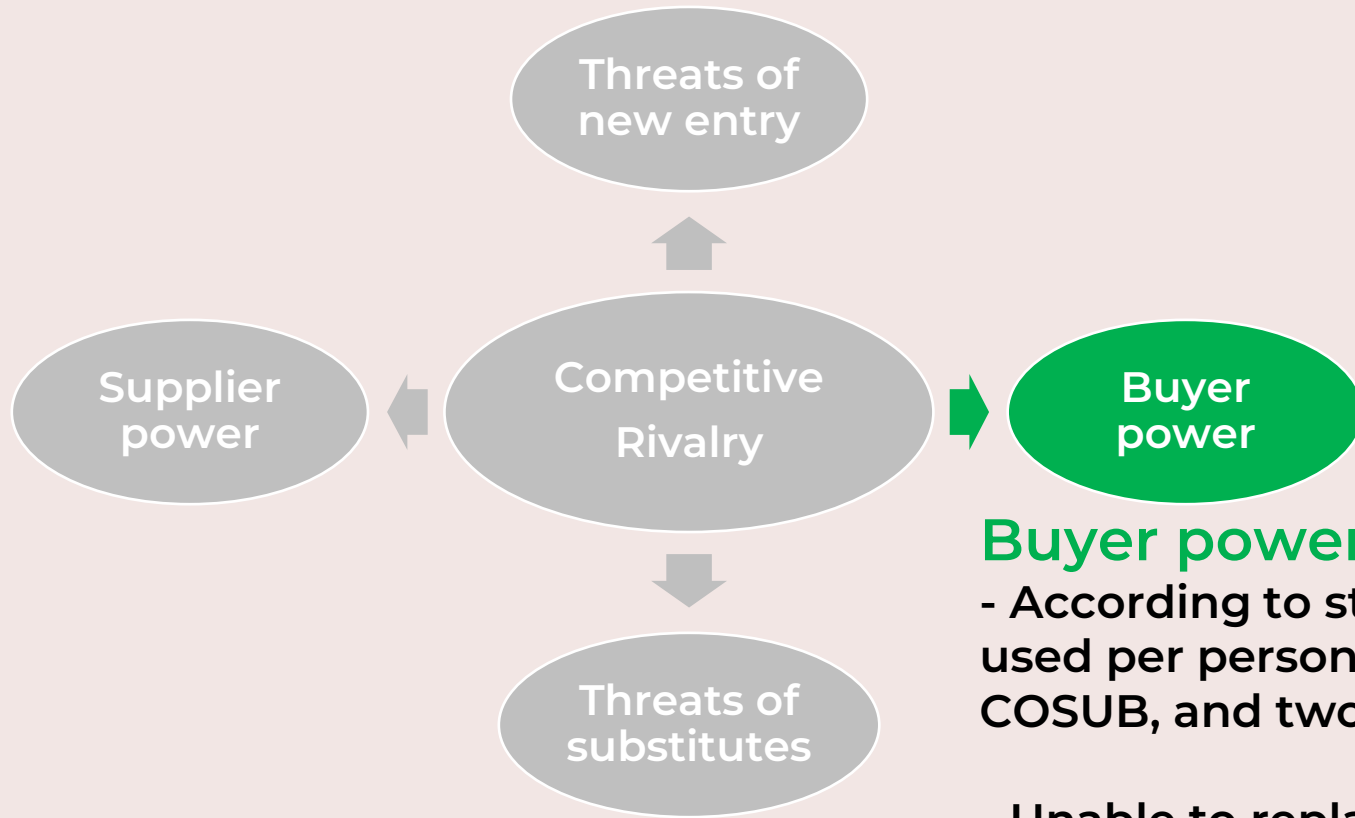
Buyer power

- According to statistics that an average of four lip products are used per person, two products are used for one subscription to COSUB, and two subscriptions are expected per person

- Unable to replace 'COSUB' from the buyer's point of view

- Experiencing a variety of colors at the same price
→ Having a value to pay price from the buyer's point of view

Market Analysis - SWOT

Strength

- Having Price Superiority
- Lower Cost of Checking Personal Color
- Personal Data Based Recommendation

Weakness

- Lower Awareness than the Competitors
- New Demands Except for Lip Products
- Secure Various Brands and Products

Opportunity

- Steep Development of the Cosmetic Industry
- Vogue for Individualized Makeup
- Popularized Subscription Services

Threat

- Similar Service from Cosmetic Makers
- Continuous Increase in Distribution Cost
- Pressure by Existing Retail Business

Regulations

Cosmetic Regulatory Framework in Korea. (2020). MFDS.

Ministry of Food and Drug Safety

Cosmetics Act

Enforcement Decree of Cosmetics Act

Enforcement Rule of Cosmetics Act

MFDS Notification

Cosmetics Responsible Person Registration

Compliance with Labeling Rules

Ensuring Post-marketing Safety Management

Substantiation of Advertisement

Cost and Benefit Analysis

Co-Sub

21102052 Lee Jeong-yun | 21102044 Oh Se-yeon | 21102050 Lee In-sun

Contents

1

Item Identification

- Cost Item
- Benefit Item
- Estimated Income Statement

2

Estimation Process

- Cost & Revenue Estimation Logic

3

Cash Flow

Cost item

Purchase

M & O

Others

Cost item

Purchase (per year)

💋 **Lip product** (lip product unit price * User * 8)

Average prices from our investigate in Olive Young, Hwahae, Zamface = ₩ 11,118.25 per product
Olive Young's commission ratio = 45% (http://theviewers.co.kr/View.aspx?No=1628494)
8 products per year, then total price = ₩ 11,118.25 * 8 = ₩ 88,946
Sum vendor take = ₩88,946 * (1 – 45%) = ₩ 48,920.3
'Cosub' need to pay more than Olive Young to vendors to have advantages!
So, we decided to pay them ₩ 50,000 per a year, ₩ 6,250 per product.
cf) slide #12

Cost item

Purchase (per year)

Package material (Package unit price * User * 8)

* Package unit price = ₩ 217

1 **Item Identification**

Cost item
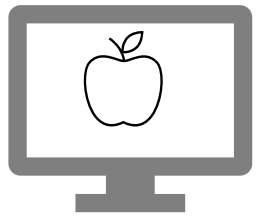
M & O (per year)

Hardware (MacPro + Pro display sdr + nas storage)
= 788,770,000+52,400,000
=841,170,000

Data (Tip of personal color expert + provider)
=(10,000 + 10,000) * 50,000
= 1,000,000,000

Cost item
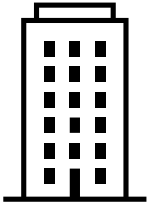
M & O (per year)

Facility (Deposit 25,000,000, Monthly rent 21,000,000)
***Gangnam-gu, Seoul**
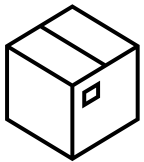
Delivery charge (2,500 * User * 8)

Item Identification

Cost item

M & O (per year)

Developer 4 person

Manager 2 person

Salaries (60,000,000 * 6 person) = 360,000,000

Marketing Cost (Total of commission from vendor * 0.2)

Cost item

M & O

(per year)

SW Operating (Virtual machine, Database, App service, Git)

Virtual Machine	219,693
Azure SQL Database	537,059
App Service	78,837
Git	166,608
Total(Month)	1,002,197

→ **Total (year) : 12,026,364**

Cost item

Others (per year)

Interest (Debt * Debt interest rate)

* NH Bank : 5.28%

Internet, Electricity = 200,000 + 300,000 = 500,000

Tax (Taxible income * Progressive tax rate)

(* Taxible income = GI – OE – D)

Benefit Item

Vendor Commission

Subscription Fee

Benefit Item

Vendor Commission (per year)

Subscription Fee - Delivery Fee – Packaging - Purchasing product

Benefit Item

Vendor Commission (per year)

Cosmetics price from vendor	₩ 50,000
Delivery cost (twice in a quarter)	₩ (2,500 * 8) = 10,000
Package cost	₩ (217 * 8) = 1,736
Subscription fee per quarter	₩ 17,500
Subscription fee per year	₩ (17,500 * 4) = 70000
Cosub profit	₩ 8264 = (70,000 – 50,000 – 10,000 –1736)
Cosub profit ratio	8264 / 70,000 = 11.80%

Benefit Item

< Subscription Fee >

* PSM method

💄화장품 구독 서비스 구독료 결정-PSM💄

안녕하세요 서울과학기술대학교 ITM전공에서 IT investment analysis를 수강하고 있는 이인선, 오세연, 이정윤입니다☺

빅데이터 분석과 AI기술을 바탕으로 퍼스널컬러를 진단받고 이를 바탕으로 추천 받은 립 제품들💄(립스틱, 틴트) 을 체험해볼 수 있는 화장품 구독 서비스를 기획하는 중입니다!

서비스를 런칭하기에 앞서, 서비스의 구독료를 결정하고자 설문조사를 진행하게 되었습니다!

짧은 투표에 응해주신다면 정말 감사드리겠습니다😊👍:)

매우저렴, 저렴, 비쌈, 매우 비쌈 고르세요

1. 우리 제품을 구입하는데 저렴하다고 생각되는 비용은? *

- ○ 14000
- ○ 15000
- ○ 16000
- ○ 17000
- ○ 18000
- ○ 19000
- ○ 20000
- ○ 21000

2. 우리 제품을 구입하는데 비싸다고 생각되는 비용은? *

- ○ 14000
- ○ 15000
- ○ 16000
- ○ 17000
- ○ 18000
- ○ 19000
- ○ 20000
- ○ 21000

3. 우리 제품을 구입하는데 매우 저렴하다고 생각되는 비용은? *

- ○ 14000
- ○ 15000
- ○ 16000
- ○ 17000
- ○ 18000
- ○ 19000
- ○ 20000
- ○ 21000

4. 우리 제품을 구입하는데 매우 비싸다고 생각되는 비용은? *

- ○ 14000
- ○ 15000
- ○ 16000
- ○ 17000
- ○ 18000
- ○ 19000
- ○ 20000
- ○ 21000

< Subscription Fee >

	A	B	C	D	E
1		Cheap	Expensive	Too cheap	Too expensive
2	Prices	1. Cheap	2. Expensive	3. Too cheap	4. Too expensive
3	14000	100	0	100	0
4	15000	99	2	98	0
5	16000	67	7	85	0
6	17000	50	32	72	45
7	18000	25	42	45	72
8	19000	10	67	0	85
9	20000	5	80	0	98
10	21000	0	100	0	100

< 제품 적정 비용 PSM >

17,500

IT Performance Framework

Effectiveness

	finance	customer	Internal process	Learning & Growth
Effectiveness	New contract and renewal ratio of partners Assets management of ROI Increment of business profit	Increase user repurchase rate Conversion rate		Self-development Support System Investment Capacity
Efficiency	Purchase cost reduction Sales growth rate Operating profit growth rate	Expanding market share in Cosmetics Sales		Increase productivity

Quantitative

IT Performance Framework

	finance	customer	Internal process	Learning & Growth
Effectiveness		Expand user selection		Employee work experience satisfaction
Efficiency			Packing and shipping satisfaction Improved accuracy of personal-color diagnosis	The period of update

qualitative

Estimated Income Statement

▶ First cost ◀

iMac pro + pro display xdr	788,770,000
Nas Storage	52,400,000
deposit	250,000,000
Data	1,000,000,000

Total : 2,091,170,000

Estimated Income Statement

▶ Depreciation item ◀

year	0	1	2	3	4	5	6	7	8	9	10
mac	₩0	₩78,877,000.00	₩78,877,000.00	₩78,877,000.00	₩78,877,000.00	₩78,877,000.00	₩78,877,000.00	₩78,877,000.00	₩78,877,000.00	₩78,877,000.00	₩78,877,000.00
storage	₩0	₩5,240,000.00	₩5,240,000.00	₩5,240,000.00	₩5,240,000.00	₩5,240,000.00	₩5,240,000.00	₩5,240,000.00	₩5,240,000.00	₩5,240,000.00	₩5,240,000.00
Total	₩0	₩84,117,000.00	₩84,117,000.00	₩84,117,000.00	₩84,117,000.00	₩84,117,000.00	₩84,117,000.00	₩84,117,000.00	₩84,117,000.00	₩84,117,000.00	₩84,117,000.00

Using Straight Line method

Period : 10 year

Estimated Income Statement

▶ Debt ◀

First cost	**2,091,170,000**
Rate	5.28%
Year	10 year
Repayment period	1 year

Estimated Income Statement

▶ Growth rate - Subscribers ◀

▶ Why the number of subscribers is 629,191 in year 6?

N = Percentage of people who have **N**ot received personal color diagnostic experience
F = Percentage of people who have **F**ailed to experience buy cosmetic in online shop
A = Number of downloads of **A**more Pacific application in 2021

N ✕ F ✕ A = 629,191

▶Why did we refer to AmorePacific's number of downloads?

: AmorePacific is the company that has the largest share of the cosmetics market

▶ Except for six years, the number of subscribers in other years reflected Cosub's growth rate.

N

**Period : 2022. 09.26~2022.10.01
A Number of participants : 68**

F

Q1. 퍼스널 컬러를 진단 받아본 경험이 있나요?
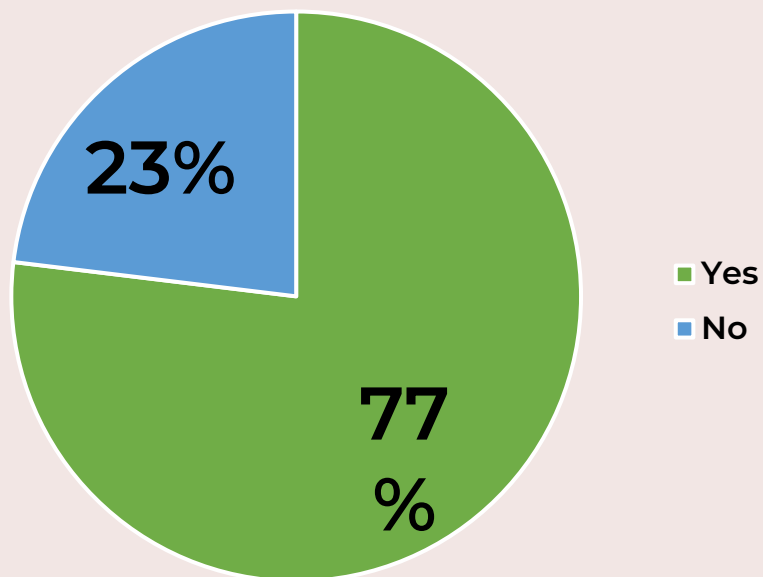
Q2. 온라인에서 색조 화장품을 구매했을때,
예상과 다른 색상을 구입한 적이 있으신가요?
(ex : 예상한 것보다 채도가 더 낮았던 경험, 사진으로 본 것보다 매트한 촉감이었던 경험, 기대한 것 이상으로 밝은 색이었던 경험 등)

23%

77%

■ Yes
■ No

26%

74%

■ Yes
■ No
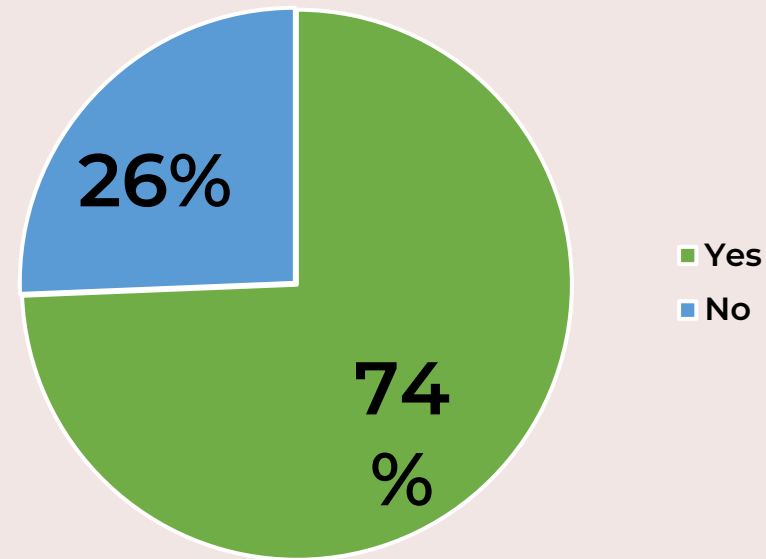
Item Identification

▶ **Growth rate** - affiliated cosmetics company ◀

> ▶ **Number of affiliated cosmetics company in Year 0**
>   : **500**

> ▶ **Why is the growth rate of cosmetics companies affiliated with COSUB decreasing from the 6th year?**
> : Because it is close to 4,750,
>   the largest number of cosmetics companies affiliated with COSUB.

> ▶ **Why is the maximum number of affiliated cosmetics companies 4,750?**
>   : The total number of brands in Olive Young is 4,750.

Item Identification

▶ **Growth rate** - affiliated cosmetics company ◀

▶ Why is the number of brands of cosmetics in Olive Young based on?

: Because Olive Young is the company that occupies the largest share of the cosmetics brokerage industry.

▶ Except for 0 year, the number of affiliated cosmetics company in other years reflected Cosub's growth rate.

Estimated Income Statement

▶ **Number of User** ◀

Users
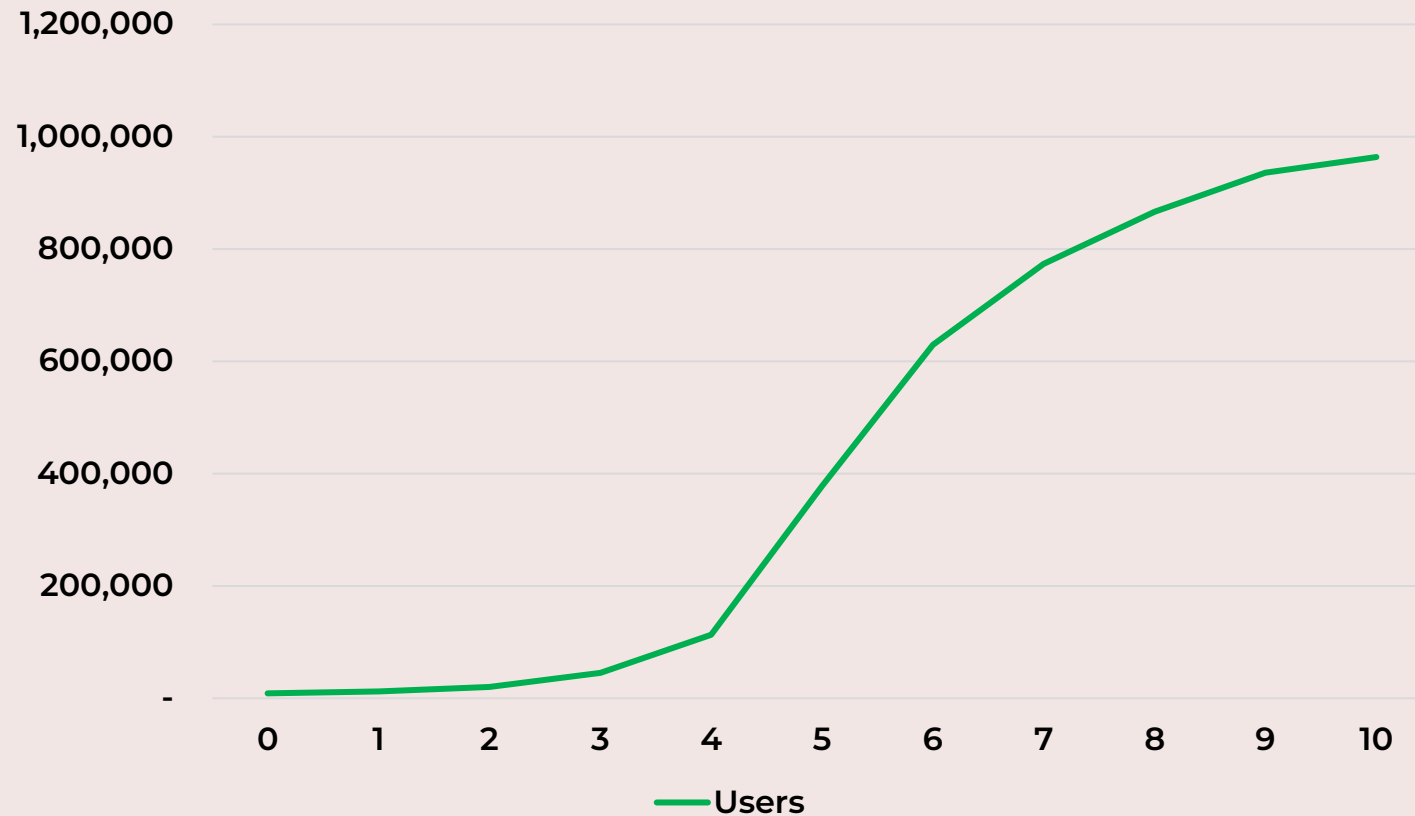
Estimated Income Statement

Year 2

Income Statement			
Cosub, Inc.			
For the year ended December 31, 20XX			
Net Sales		1,427,005,188	
Cost of goods sold :			
Software developing	12,026,364		
Lip Products	1,019,289,420		
Package Material	35,389,729		
Delivery	407,715,768		
Total cost of goods sold			1,474,421,281
Gross Profit		-	47,416,093
Operating Revenue :			
Commision from vendor	168,468,155		
Expense :			
Interest	99,372,398		
Salaries	360,000,000		
Marketing	25,270,223		
Facility	252,000,000		
Utility	500,000		
Depriciation	84,117,000		
Total Expense			821,259,622
Income before tax		-	700,207,559
Income tax expense			-
Net income		-	700,207,559

Estimated Income Statement

Year 4

Income Statement		
Cosub, Inc.		
For the year ended December 31, 20XX		
Net Sales(구독료)	7,927,806,600	
Cost of goods sold :		
Software developing	12,026,364	
Lip Products	5,662,719,000	
Package Material	196,609,604	
Delivery	2,265,087,600	
Total cost of goods sold		8,136,442,568
Gross Profit	-	208,635,968
Operating Revenue :		
Commision from vendor	935,934,196	
Expense :		
Interest	77,289,643	
Salaries	360,000,000	
Marketing	140,390,129	
Facility	252,000,000	
Utility	500,000	
Depriciation	84,117,000	
Total Expense		914,296,773
Income before tax	-	186,998,544
Income tax expense	-	
Net income	-	186,998,544

Estimated Income Statement

Year 6

Income Statement				
Cosub, Inc.				
For the year ended December 31, 20XX				
Net Sales(구독료)		44,043,370,000		
Cost of goods sold :				
	Software developing	12,026,364		
	Lip Products	31,459,550,000		
	Package Material	1,092,275,576		
	Delivery	12,583,820,000		
	Total cost of goods sold		45,147,671,940	
	Gross Profit		-	1,104,301,940
Operating Revenue :				
	Commision from vendor	5,199,634,424		
Expense :				
	Interest	55,206,888		
	Salaries	360,000,000		
	Marketing	779,945,164		
	Facility	252,000,000		
	Utility	500,000		
	Depriciation	84,117,000		
	Total Expense		1,531,769,052	
Income before tax		2,563,563,432		
Income tax expense		475,889,286		
	Net income		2,087,674,146	

Estimated Income Statement

Year 8

Income Statement
Cosub, Inc.
For the year ended December 31, 20XX

Net Sales(구독료)		60,674,146,512		
Cost of goods sold :				
	Software developing	12,026,364		
	Lip Products	43,338,676,080		
	Package Material	1,504,718,833		
	Delivery	17,335,470,432		
	Total cost of goods sold			62,190,891,709
	Gross Profit		-	1,516,745,197
Operating Revenue :				
	Commision from vendor	7,163,016,383		
Expense :				
	Interest	33,124,133		
	Salaries	360,000,000		
	Marketing	1,074,452,457		
	Facility	252,000,000		
	Utility	500,000		
	Depriciation	84,117,000		
	Total Expense			1,804,193,590
Income before tax		3,842,077,595		
Income tax expense		731,592,119		
	Net income			3,110,485,476

Estimated Income Statement

Year 10

Income Statement			
Cosub, Inc.			
For the year ended December 31, 20XX			
Net Sales(구독료)		67,493,920,580	
Cost of goods sold :			
	Software developing	12,026,364	
	Lip Products	48,209,943,271	
	Package Material	1,673,849,230	
	Delivery	19,283,977,309	
	Total cost of goods sold		69,179,796,174
	Gross Profit		- 1,685,875,594
Operating Revenue :			
	Commision from vendor	7,968,139,424	
Expense :			
	Interest	11,041,378	
	Salaries	360,000,000	
	Marketing	1,195,220,914	
	Facility	252,000,000	
	Utility	500,000	
	Depriciation	84,117,000	
	Total Expense		1,902,879,291
Income before tax		4,379,384,538	
Income tax expense		839,053,508	
	Net income		3,540,331,031
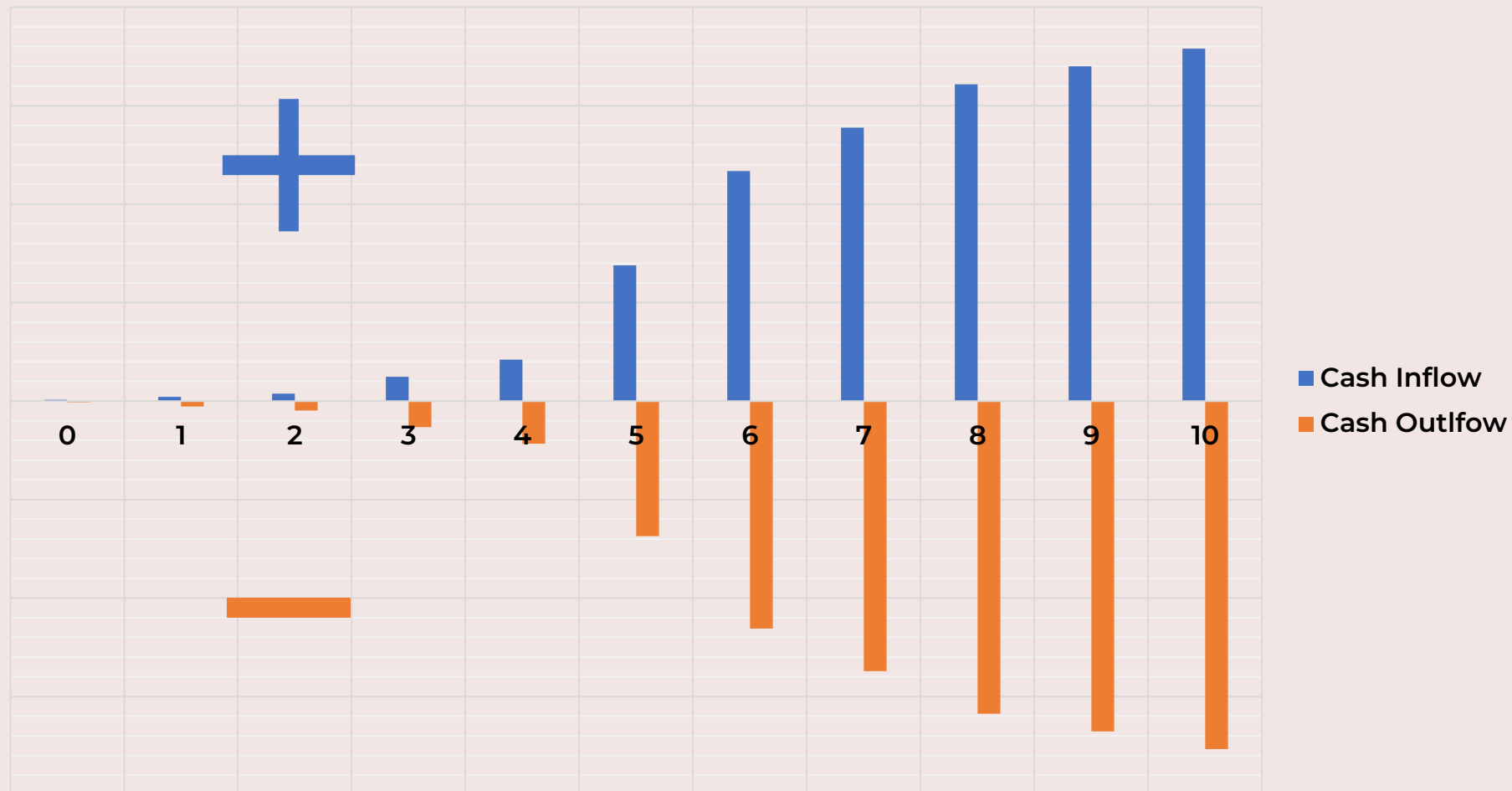
Cash In & Out Flow

Net Cash Flow, NPV

NPV

Year	Value
1	-₩2,091,170,000
2	-₩1,395,688,780
3	-₩700,207,559
4	-₩443,603,052
5	-₩186,998,544
6	₩950,337,801
7	₩2,087,674,146
8	₩2,599,079,811
9	₩3,110,485,476
10	₩3,325,408,253
11	₩3,540,331,031
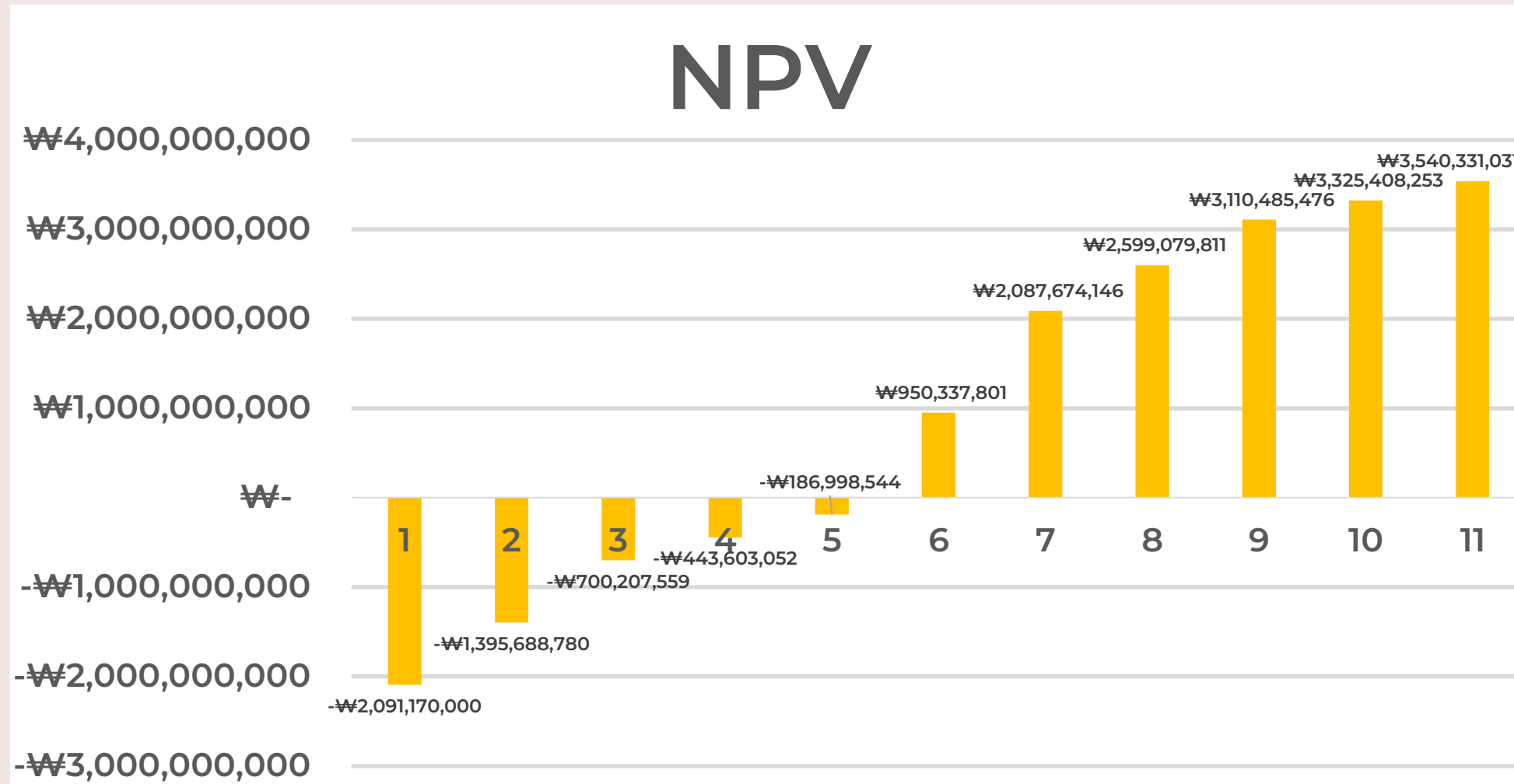
NPV
= ₩2,40,664,650

$i = 5.28\%$

$f = 5.70\%$

$i_f = 11.28\%$

B/C Ratio, IRR

NPV (Net present value)	₩2,340,664,650	
First Cost	₩2,091,170,000	
B/C Ratio	NPV / first cost = 1.119	**> 1**
IRR	18%	**> 10%**

Cosub has good profitability   **It satisfied with our goal IRR**

Cash Flow

Comparing to Olive-Young's financial statement

Financial Statements of both 'Cosub' and 'Olive young' have similar factors.

Year 5	Cosub	Oliveyoung
Sales	₩25,985,588,300	₩ 2,109,125,086,149
Cost of goods sales	₩26,642,057,254	₩ 1,125,634,518,637
Gross profit	(₩656,468,954)	₩ 983,490,567,512
Expense	₩1,156,784,647	₩ 844,462,709,210
Operating revenue	(₩1,813,253,600)	₩ 139,027,858,302
Other revenue	₩3,067,784,310	₩ 13,586,568,245
Other expense	₩66,248,266	₩ 24,419,110,056
Gross profit before tax	₩1,188,282,444	₩ 128,195,316,491.00
Tax	₩118,828,244	₩ 32,317,729,613
Net income	₩1,069,454,200	₩ 95,877,586,878
Net income per Sales	4.12%	5%
Total expense per Sales	107.23%	95%

Contents
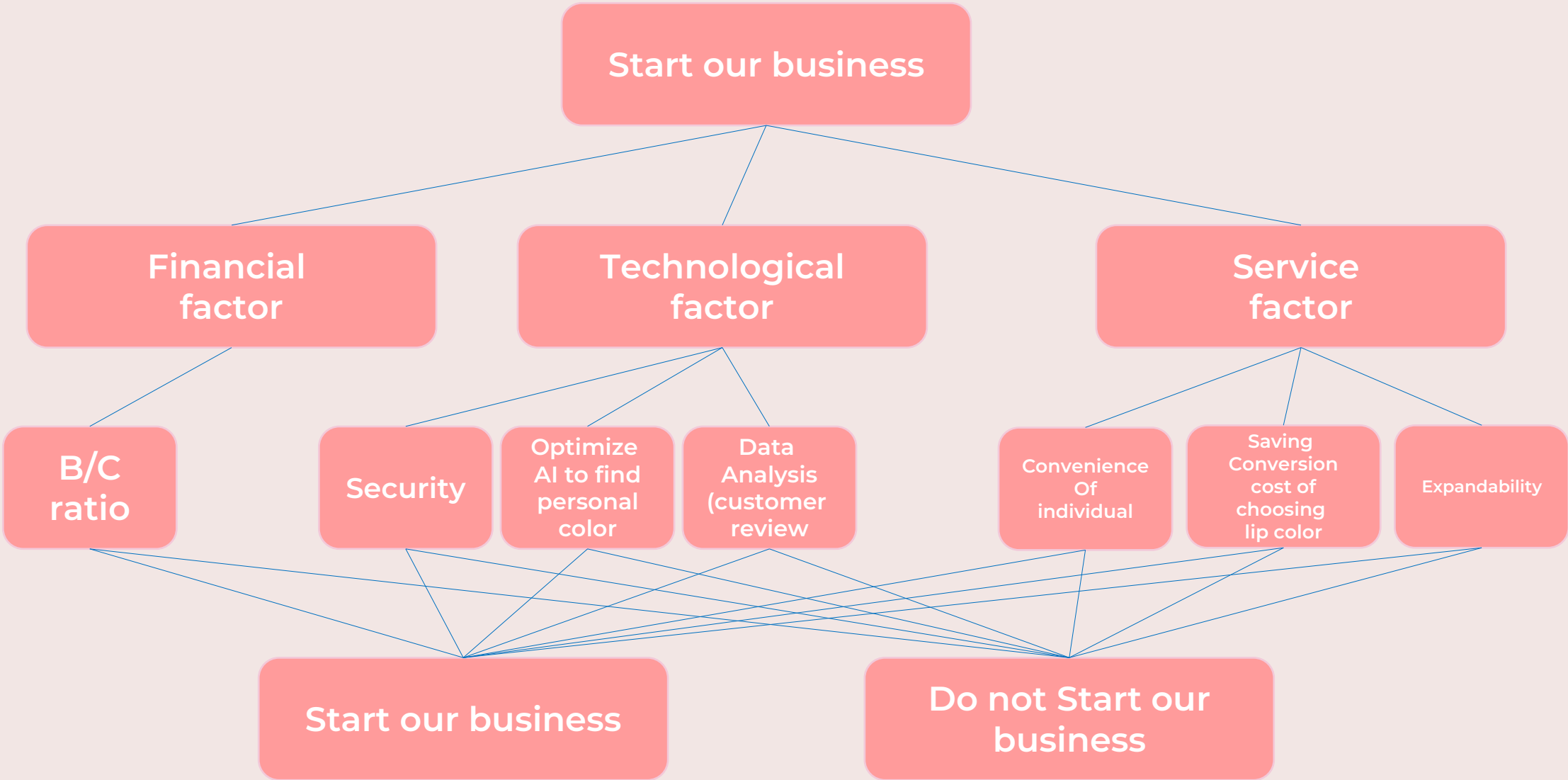
Overall

Financial > Technological > Service

Step 1	Financial Factor	Technological Factor	Service Factor
Financial Factor	1	3	5
Technological Factor	0.333333333	1	3
Service Factor	0.2	0.333333333	1
Total	1.533333333	4.333333333	9

Step 4	Consistency Vector
Financial Factor	3.071973401
Technological Factor	3.032968775
Service Factor	3.011201867
Lambda	3.038714681

Step 2	Financial Factor	Technological Factor	Service Factor	Resulting Priorities
Financial Factor	0.652173913	0.692307692	0.555555556	0.63334572
Technological Factor	0.217391304	0.230769231	0.333333333	0.260497956
Service Factor	0.130434783	0.076923077	0.111111111	0.106156324
Total	1	1	1	1

CI of all	0.01935734
CR of all	0.033374725
RI	0.58

Step 3	Financial Factor	Technological Factor	Service Factor	Weighted Sum Vector
Financial Factor	0.63334572	0.781493868	0.530781618	1.945621206
Technological Factor	0.21111524	0.260497956	0.318468971	0.790082167
Service Factor	0.126669144	0.086832652	0.106156324	0.31965812

Overall

Financial > Technological > Service

Step 1	Financial Factor	Technological Factor	Service Factor
Financial Factor	1	2	5
Technological Factor	0.5	1	6
Service Factor	0.2	0.166666667	1
Total	1.7	3.166666667	12

Step 4	Consistency Vector
Financial Factor	3.131325871
Technological Factor	3.108205486
Service Factor	3.019938962
Lambda	3.086490106

Step 2	Financial Factor	Technological Factor	Service Factor	Resulting Priorities
Financial Factor	0.588235294	0.631578947	0.416666667	0.545493636
Technological Factor	0.294117647	0.315789474	0.5	0.36996904
Service Factor	0.117647059	0.052631579	0.083333333	0.084537324
Total	1	1	1	1

CI of all	0.043245053
CR of all	0.074560437
RI	0.58

Step 3	Financial Factor	Technological Factor	Service Factor	Weighted Sum Vector
Financial Factor	0.545493636	0.73993808	0.422686619	1.708118335
Technological Factor	0.272746818	0.36996904	0.507223942	1.1499398
Service Factor	0.109098727	0.061661507	0.084537324	0.255297558

Weight – Jeongyun

Overall

Financial > Service > Technological

Step 1	Financial Factor	Technological Factor	Service Factor
Financial Factor	1	7	5
Technological Factor	0.142857143	1	0.5
Service Factor	0.2	2	1
Total	1.342857143	10	6.5

Step 4	Consistency Vector
Financial Factor	3.031270792
Technological Factor	3.003713791
Service Factor	3.007617188
Lambda	3.01420059

Step 2	Financial Factor	Technological Factor	Service Factor	Resulting Priorities
Financial Factor	0.744680851	0.7	0.769230769	0.73797054
Technological Factor	0.106382979	0.1	0.076923077	0.094435352
Service Factor	0.14893617	0.2	0.153846154	0.167594108
Total	1	1	1	1

CI of all	0.007100295
CR of all	0.012241888
RI	0.58

Step 3	Financial Factor	Technological Factor	Service Factor	Weighted Sum Vector
Financial Factor	0.73797054	0.661047463	0.83797054	2.236988543
Technological Factor	0.105424363	0.094435352	0.083797054	0.283656769
Service Factor	0.147594108	0.188870704	0.167594108	0.50405892

Financial

B/C 비율 표준점수 전환식:

$$B/C\ 표준점수 = 5.11532 \times \ln(B/C) + i$$

단, $B/C \geq 1 \rightarrow i = 1$, $B/C < 1 \rightarrow i = -1$

Start business	b/c ratio	1.119
	b/c standard score	5.11532*LN(1.119)+1
No start business	b/c ratio	1
	b/c standard score	1

Start business	b/c ratio	1.119
	b/c standard score	1.5751432
No start business	b/c ratio	1
	b/c standard score	1

Technological

Optimize AI > Data analysis > Security

Step 1	Security	Opimize AI	Data Analysis
Security	1	0.166666667	0.25
Opimize AI	6	1	2
Data Analysis	4	0.5	1
Total	11	1.666666667	3.25

Step 4	Consistency Vector
Security	3.002393386
Opimize AI	3.015885624
Data Analysis	3.009359251
Lambda	3.009212753

Step 2	Security	Opimize AI	Data Analysis	Resulting Priorities
Security	0.090909091	0.1	0.076923077	0.089277389
Opimize AI	0.545454545	0.6	0.615384615	0.586946387
Data Analysis	0.363636364	0.3	0.307692308	0.323776224
Total	1	1	1	1

CI of all	0.004606377
CR of all	0.007942029
RI	0.58

Step 3	Security	Opimize AI	Data Analysis	Weighted Sum Vector
Security	0.089277389	0.097824398	0.080944056	0.268045843
Opimize AI	0.535664336	0.586946387	0.647552448	1.77016317
Data Analysis	0.357109557	0.293473193	0.323776224	0.974358974

Weight - Jeongyun

Technological

Optimize AI > Data analysis > Security

Step 1	Security	Opimize AI	Data Analysis
Security	1	0.166666667	0.25
Opimize AI	6	1	3
Data Analysis	4	0.333333333	1
Total	11	1.5	4.25

Step 4	Consistency Vector
Security	3.012528474
Opimize AI	3.100371747
Data Analysis	3.049204052
Lambda	3.054034758

Step 2	Security	Opimize AI	Data Analysis	Resulting Priorities
Security	0.090909091	0.111111111	0.058823529	0.08694791
Opimize AI	0.545454545	0.666666667	0.705882353	0.639334522
Data Analysis	0.363636364	0.222222222	0.235294118	0.273717568
Total	1	1	1	1

CI of all	0.027017379
CR of all	0.046581688
RI	0.58

Step 3	Security	Opimize AI	Data Analysis	Weighted Sum Vector
Security	0.08694791	0.106555754	0.068429392	0.261933056
Opimize AI	0.521687463	0.639334522	0.821152704	1.982174688
Data Analysis	0.347791642	0.213111507	0.273717568	0.834620717

Weight - Insun

Technological

Data analysis > Optimize AI > Security

Step 1	Security	Opimize AI	Data Analysis
Security	1	0.5	0.25
Opimize AI	2	1	0.2
Data Analysis	4	5	1
Total	7	6.5	1.45

Step 4	Consistency Vector
Security	3.030434783
Opimize AI	3.061417323
Data Analysis	3.194848824
Lambda	3.095566977

Step 2	Security	Opimize AI	Data Analysis	Resulting Priorities
Security	0.142857143	0.076923077	0.172413793	0.130731338
Opimize AI	0.285714286	0.153846154	0.137931034	0.192497158
Data Analysis	0.571428571	0.769230769	0.689655172	0.676771504
Total	1	1	1	1

CI of all	0.047783488
CR of all	0.082385325
RI	0.58

Step 3	Security	Opimize AI	Data Analysis	Weighted Sum Vector
Security	0.130731338	0.096248579	0.169192876	0.396172793
Opimize AI	0.261462675	0.192497158	0.135354301	0.589314134
Data Analysis	0.522925351	0.96248579	0.676771504	2.162182645

Service

Step 1	Convenience of individual	Saving conversion cost	Expandability
Convenience of individual	1	0.25	3
Saving conversion cost	4	1	8
Expandability	0.333333333	0.125	1
Total	5.333333333	1.375	12

Step 4	Consistency Vector
Convenience of individual	3.012232416
Saving conversion cost	3.038869258
Expandability	3.004
Lambda	3.018367225

Step2	Convenience of individual	Saving conversion cost	Expandability	Resulting Priorities
Convenience of individual	0.1875	0.181818182	0.25	0.206439394
Saving conversion cost	0.75	0.727272727	0.666666667	0.714646465
Expandability	0.0625	0.090909091	0.083333333	0.078914141
Total	1	1	1	1

CI of all	0.009183612
CR of all	0.015833814
RI	0.58

Step3	Convenience of individual	Saving conversion cost	Expandability	Weighted Sum Vector
Convenience of individual	0.206439394	0.178661616	0.236742424	0.621843434
Saving conversion cost	0.825757576	0.714646465	0.631313131	2.171717172
Expandability	0.068813131	0.089330808	0.078914141	0.237058081

Weight - Jeongyun

Service

Step 1	Convenience of individual	Saving conversion cost	Expandability
Convenience of individual	1	0.333333333	4
Saving conversion cost	3	1	7
Expandability	0.25	0.142857143	1
Total	4.25	1.476190476	12

Step 4	Consistency Vector
Convenience of individual	3.028197983
Saving conversion cost	3.062314063
Expandability	3.007090858
Lambda	3.032534301

Step2	Convenience of individual	Saving conversion cost	Expandability	Resulting Priorities
Convenience of individual	0.235294118	0.225806452	0.333333333	0.264811301
Saving conversion cost	0.705882353	0.677419355	0.583333333	0.655545014
Expandability	0.058823529	0.096774194	0.083333333	0.079643685
Total	1	1	1	1

CI of all	0.016267151
CR of all	0.028046811
RI	0.58

Step3	Convenience of individual	Saving conversion cost	Expandability	Weighted Sum Vector
Convenience of individual	0.264811301	0.218515005	0.318574742	0.801901047
Saving conversion cost	0.794433903	0.655545014	0.557505798	2.007484714
Expandability	0.066202825	0.093649288	0.079643685	0.239495798

Weight - Insun

Service

Step 1	Convenience of individual	Saving conversion cost	Expandability
Convenience of individual	1	0.333333333	0.13
Saving conversion cost	3	1	0.25
Expandability	6	5	1
Total	10	6.333333333	1.38

Step 4	Consistency Vector
Convenience of individual	2.976435929
Saving conversion cost	2.985796133
Expandability	3.211935344
Lambda	3.058055802

Step2	Convenience of individual	Saving conversion cost	Expandability	Resulting Priorities
Convenience of individual	0.1	0.052631579	0.094202899	0.082278159
Saving conversion cost	0.3	0.157894737	0.18115942	0.213018052
Expandability	0.6	0.789473684	0.724637681	0.704703788
Total	1	1	1	1

CI of all	0.029027901
CR of all	0.050048105
RI	0.58

Step3	Convenience of individual	Saving conversion cost	Expandability	Weighted Sum Vector
Convenience of individual	0.082278159	0.071006017	0.091611492	0.244895669
Saving conversion cost	0.246834477	0.213018052	0.176175947	0.636028477
Expandability	0.493668955	1.065090262	0.704703788	2.263463005

Seyeon

Financial Factor

Step 1	No Start	start	Total
B/C Standard score	1	1.5751432	2.5751432

Step 2	No Start	start	Total
B/C Standard score	0.388327919	0.611672081	1

Security

Step1	No Start	start
No Start	1	0.333333333
start	3	1
Total	4	1.333333333

Step2	No Start	start	Resulting Priorities
No Start	0.25	0.25	0.25
start	0.75	0.75	0.75
Total	1	1	1

Optimize AI

Step1	No Start	start
No Start	1	0.166666667
start	6	1
Total	7	1.166666667

Step2	No Start	start	Resulting Priorities
No Start	0.142857143	0.142857143	0.142857143
start	0.857142857	0.857142857	0.857142857
Total	1	1	1

Data Analysis

Step1	No Start	start
No Start	1	0.111111111
start	9	1
Total	10	1.111111111

Step2	No Start	start	Resulting Priorities
No Start	0.1	0.1	0.1
start	0.9	0.9	0.9
Total	1	1	1

Convenience of individual

Step1	No Start	start
No Start	1	0.2
start	5	1
Total	6	1.2

Step2	No Start	start	Resulting Priorities
No Start	0.166666667	0.166666667	0.166666667
start	0.833333333	0.833333333	0.833333333
Total	1	1	1

Saving conversion cost

Step1	No Start	start
No Start	1	0.142857143
start	7	1
Total	8	1.142857143

Step2	No Start	start	Resulting Priorities
No Start	0.125	0.125	0.125
start	0.875	0.875	0.875
Total	1	1	1

Expandability

Step1	No Start	start
No Start	1	0.333333333
start	3	1
Total	4	1.333333333

Step2	No Start	start	Resulting Priorities
No Start	0.25	0.25	0.25
start	0.75	0.75	0.75
Total	1	1	1

Jeongyun

Financial Factor			
Step 1	No Start	Start	Total
B/C Standard score	1	1.5751432	2.5751432

Step 2	No Start	Start	Total
B/C Standard score	0.388327919	0.611672081	1

Security		
Step1	No start	Start
No start	1	0.25
Start	4	1
Total	5	1.25

Step2	No start	Start	Resulting Priorities
No start	0.2	0.2	0.2
Start	0.8	0.8	0.8
Total	1	1	1

Optimize AI		
Step1	No start	Start
No start	1	0.333333333
Start	3	1
Total	4	1.333333333

Step2	No start	Start	Resulting Priorities
No start	0.25	0.25	0.25
Start	0.75	0.75	0.75
Total	1	1	1

Data Analysis		
Step1	No start	Start
No start	1	0.142857143
Start	7	1
Total	8	1.142857143

Step2	No start	Start	Resulting Priorities
No start	0.125	0.125	0.125
Start	0.875	0.875	0.875
Total	1	1	1

Convenience of individual		
Step1	No start	Start
No start	1	0.142857143
Start	7	1
Total	8	1.142857143

Step2	No start	Start	Resulting Priorities
No start	0.125	0.125	0.125
Start	0.875	0.875	0.875
Total	1	1	1

Saving conversion cost		
Step1	No start	Start
No start	1	0.2
Start	5	1
Total	6	1.2

Step2	No start	Start	Resulting Priorities
No start	0.166666667	0.166666667	0.166666667
Start	0.833333333	0.833333333	0.833333333
Total	1	1	1

Expandability		
Step1	No start	Start
No start	1	0.2
Start	5	1
Total	6	1.2

Step2	No start	Start	Resulting Priorities
No start	0.166666667	0.166666667	0.166666667
Start	0.833333333	0.833333333	0.833333333
Total	1	1	1

3 ▶ Score

Insun

Financial Factor			
Step 1	**No tart**	**start**	**Total**
B/C Standard score	1	1.5751432	2.5751432

Step 2	No start	start	Total
B/C Standard score	0.388327919	0.611672081	1

Security		
Step1	**No start**	**start**
No start	1	0.5
start	2	1
Total	3	1.5

Step2	No start	start	Resulting Priorities
No start	0.333333333	0.333333333	0.333333333
start	0.666666667	0.666666667	0.666666667
Total	1	1	1

Optimize AI		
Step1	**No start**	**start**
No start	1	0.111111111
start	9	1
Total	10	1.111111111

Step2	No start	start	Resulting Priorities
No start	0.1	0.1	0.1
start	0.9	0.9	0.9
Total	1	1	1

Data Analysis		
Step1	**No start**	**start**
No start	1	0.142857143
start	7	1
Total	8	1.142857143

Step2	No start	start	Resulting Priorities
No start	0.125	0.125	0.125
start	0.875	0.875	0.875
Total	1	1	1

Convenience of individual		
Step1	**No start**	**start**
No start	1	0.111111111
start	9	1
Total	10	1.111111111

Step2	No start	start	Resulting Priorities
No start	0.1	0.1	0.1
start	0.9	0.9	0.9
Total	1	1	1

Saving conversion cost		
Step1	**No start**	**start**
No start	1	0.166666667
start	6	1
Total	7	1.166666667

Step2	No start	start	Resulting Priorities
No start	0.142857143	0.142857143	0.142857143
start	0.857142857	0.857142857	0.857142857
Total	1	1	1

Expandability		
Step1	**No start**	**start**
No start	1	0.5
start	2	1
Total	3	1.5

Step2	No start	start	Resulting Priorities
No start	0.333333333	0.333333333	0.333333333
start	0.666666667	0.666666667	0.666666667
Total	1	1	1

Aggregate Final Priorities

*Calculation of weight

Seyeon

b/c ratio	0.63334572
Security	0.023256577
Optimize AI	0.152898334
Data Analysis	0.084343045
Convenience of individual	0.021914847
Saving conversion cost	0.075864241
Expandability	0.008377235

Jeong-yun

b/c ratio	0.73797054
Security	0.008210957
Optimize AI	0.060375781
Data Analysis	0.025848615
Convenience of individual	0.044380814
Saving conversion cost	0.109865482
Expandability	0.013347812

In-sun

b/c ratio	0.545493636
Security	0.048366548
Optimize AI	0.071217989
Data Analysis	0.250384504
Convenience of individual	0.006955575
Saving conversion cost	0.018007976
Expandability	0.059573772

*Calculation of score

Seyeon

	No Start	start
b/c ratio	0.388327919	0.611672081
Security	0.25	0.75
Optimize AI	0.142857143	0.857142857
Data Analysis	0.1	0.9
Convenience of individual	0.166666667	0.833333333
Saving conversion cost	0.125	0.875
Expandability	0.25	0.75

Jeong-yun

	No start	start
b/c ratio	0.388327919	0.611672081
Security	0.2	0.8
Optimize AI	0.25	0.75
Data Analysis	0.125	0.875
Convenience of individual	0.125	0.875
Saving conversion cost	0.166666667	0.833333333
Expandability	0.166666667	0.833333333

In-sun

	No start	start
b/c ratio	0.388327919	0.611672081
Security	0.333333333	0.666666667
Optimize AI	0.1	0.9
Data Analysis	0.125	0.875
Convenience of individual	0.1	0.9
Saving conversion cost	0.142857143	0.857142857
Expandability	0.333333333	0.666666667

Aggregate Final Priorities

Merged Result

merge weight vector	
b/c ratio	0.634098196
Security	0.020981098
Optimize AI	0.086953101
Data Analysis	0.081726832
Convenience of individual	0.01891279
Saving conversion cost	0.053144023
Expandability	0.018815769

merge weight vector	
b/c ratio	0.089542042
Security	0.041027114
Optimize AI	0.170030888
Data Analysis	0.159811275
Convenience of individual	0.059510557
Saving conversion cost	0.167221784
Expandability	0.059205273

merged AHP result	
start	0.623886568
No Start	0.288954887

No start < Start

Aggregate Final Priorities

AHP result

Total / Start : No start	AHP<0.45	0.45<=AHP<0.5	0.5<=AHP<0.55	0.55<=AHP
3 : 0	-	-	Valid	Valid
2 : 1	Feedback	Very Cautious	A Bit Cautious	Valid
1 : 2	No Validity	A Bit Cautious	Very Cautious	Feedback
0 : 3	No Validity	No Validity	-	-

Starting Our Business is Valid Choice.

Thank you

Co-Sub

21102052 Lee Jeong-yun | 21102044 Oh Seyeon | 21102050 Lee In-sun