

Global Environmental Policy 2012

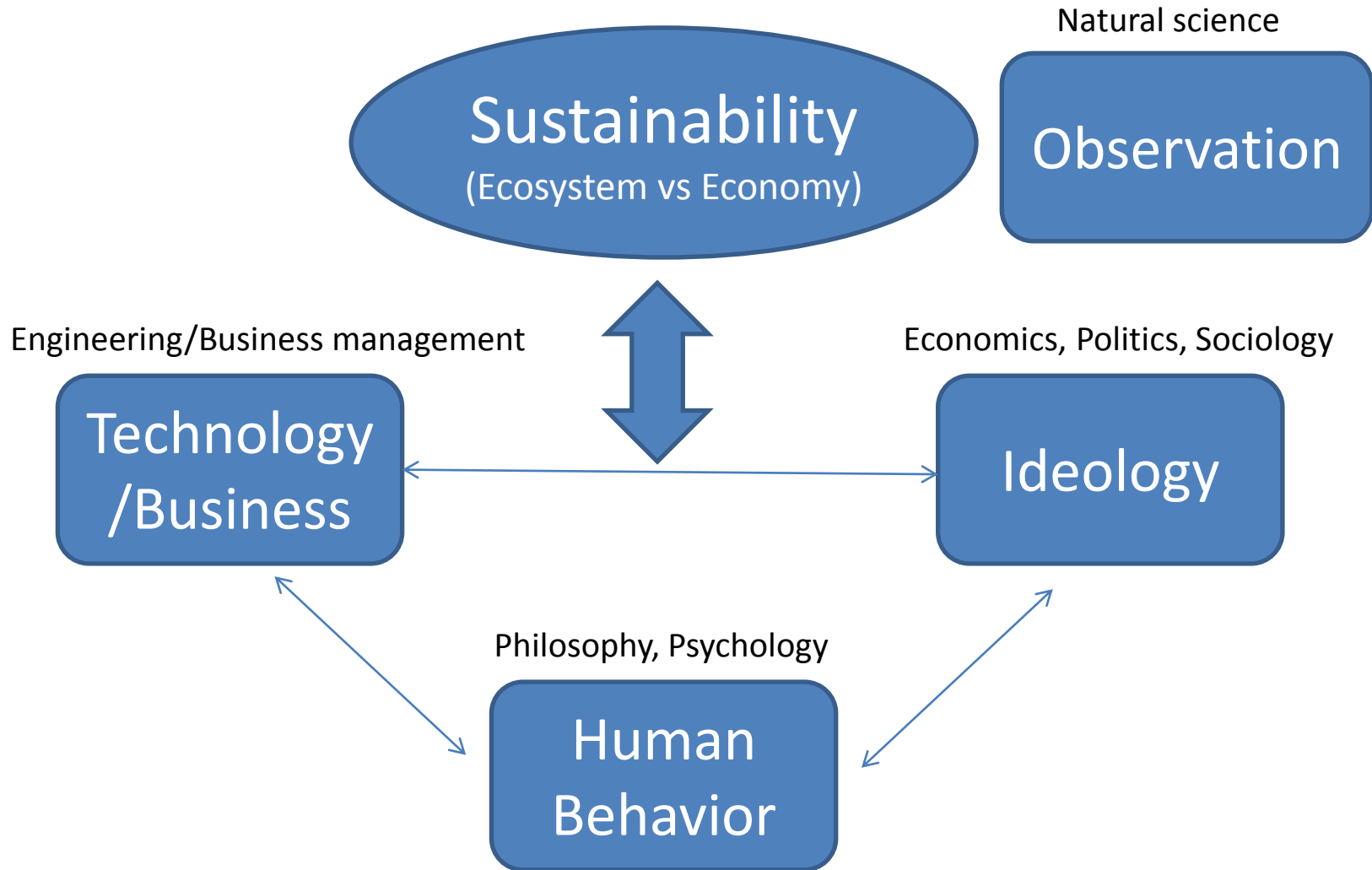
Environmental Management
-Recycling-

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What is Sustainability?



THE 3 R'S

REDUCE

REUSE

RECYCLE

CONTENTS

1-KEY ISSUES LYING BEHIND RECYCLING SYSTEMS

2-SURVEY: PURCHASING BEHAVIOR

3-POSSIBLE SOLUTIONS: SOP'S, DTOS.

KEY ISSUES

1-Recycling QCD

2-Recycling and energy saving conflict

3-Invisible flow

4-Philosophical/Psychological Issues: An unsustainable culture of “having”

RECYCLING QCD

Q= QUALITY

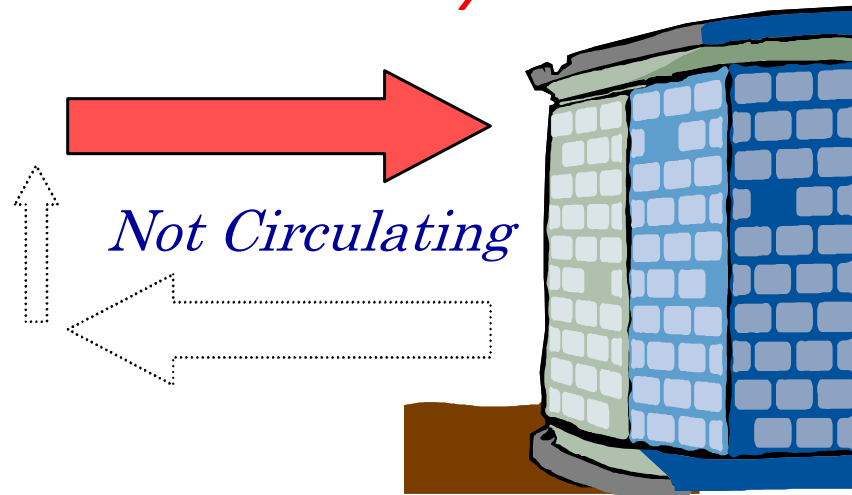
C= COST

D= DELIVERY

Economic “Berlin Wall” between Business and Recycling

(an analogy with economic systems)

“Free Economy”

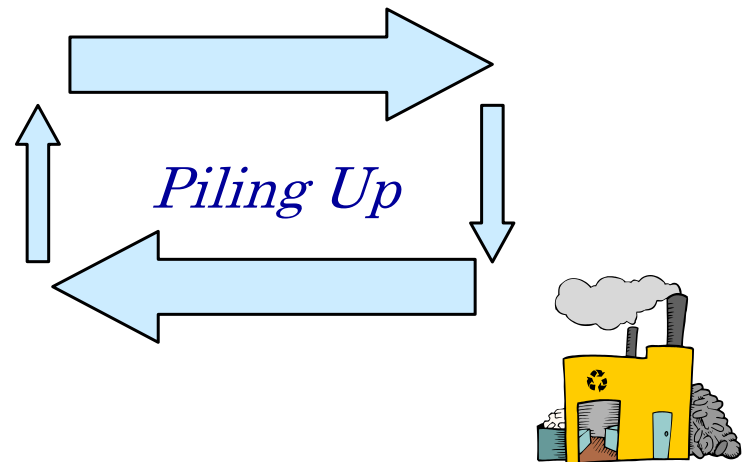


Business

(Resource Procurement Manufacturing- Sales)

“Berlin Wall”

“Socialist Economy”



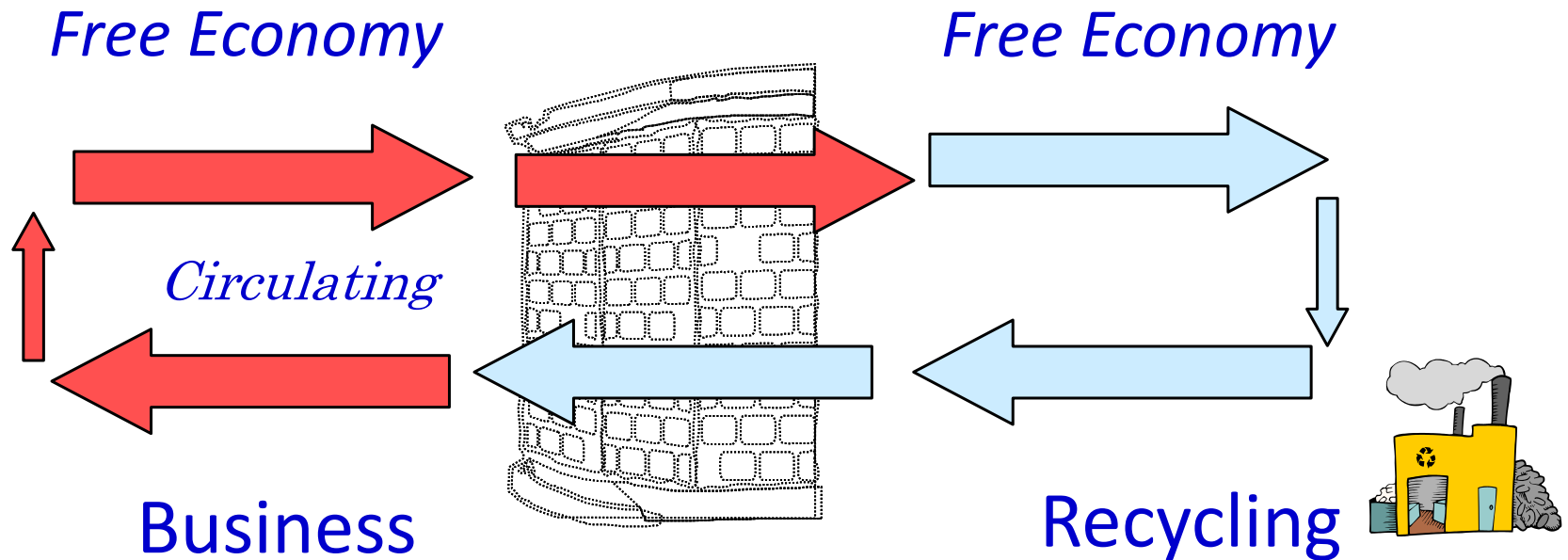
Recycling

(Usage Recycling)

No recycling technologies can function effectively.

Well-Matched Economic System

(barrier broken down)



Recycling → Integral part of manufacturing process

Recycling QCD

MANUFACTURING= QUICK RESPONSE DELIVERY

Recycling Systems Depend on **Push Mechanism**

Manufacturing Systems Depend on **Pull Mechanism**

=Mismatch Between:

PUSH MECHANISM/PULL MECHANISM

Example: Dropped Sausage

Can you pick it up and eat it?



Recycling QCD

Recycling QCD: Can we get the required quantity of recycled parts and materials which still have the necessary quality level when we need them?

	Products Owned by Customers			Products Leased to Customers
	Conventional	+Recycling Regulations	+Recycling Regulations + IT System	
Quality	Poor	Poor	Acceptable	Good
Cost	Poor	Acceptable	Acceptable	Good
Delivery	Poor	Acceptable	Acceptable	Good

Conclusion

- How to achieve recycling QCD?

Modify entire life-cycle systems by introducing:

- 1- Innovative Product Design
- 2- New Sales and Service Patterns
- 3- Innovative Reuse and Upgrade Strategies

CONFLICT BETWEEN RECYCLING AND ENERGY SAVING

Conflict existed in some products which required high energy consumption at usage stage.....

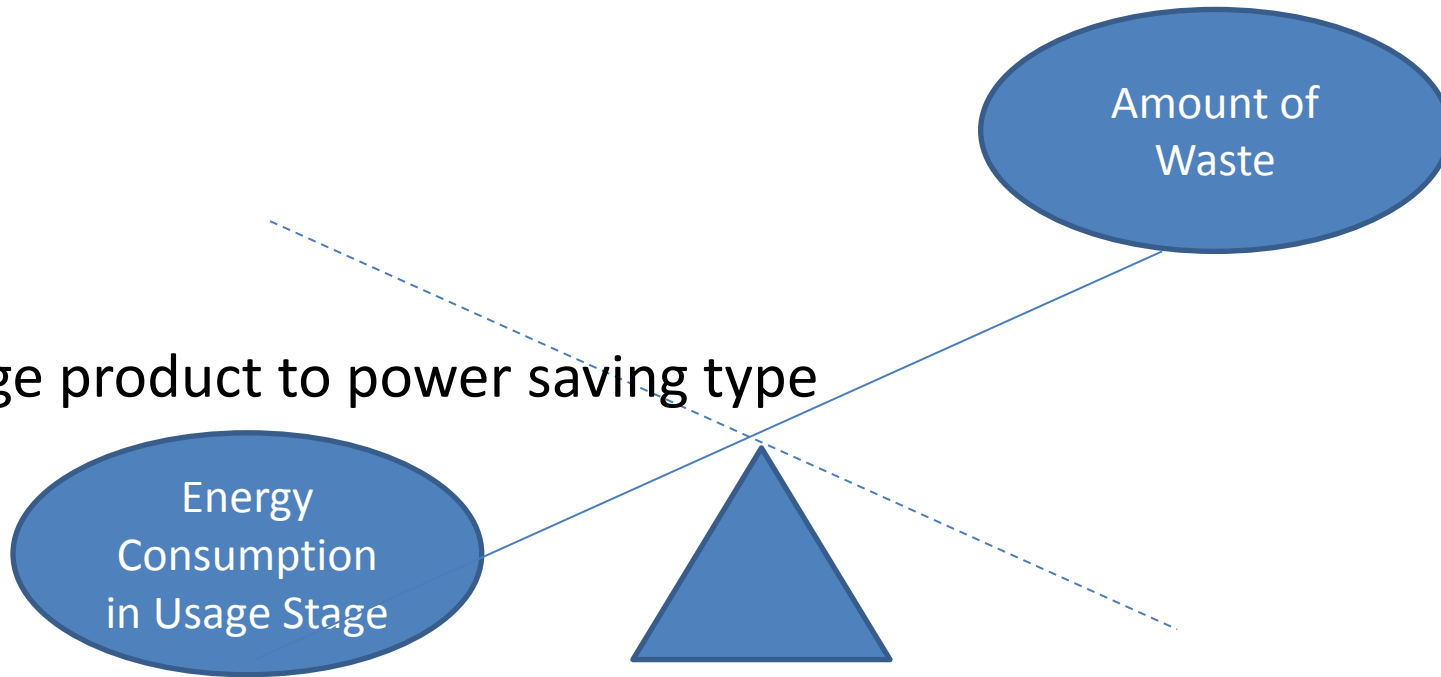
Use product for long time

Amount of Waste

Change product to power saving type

Energy Consumption in Usage Stage

Rapid circulation of product



Invisible Flow

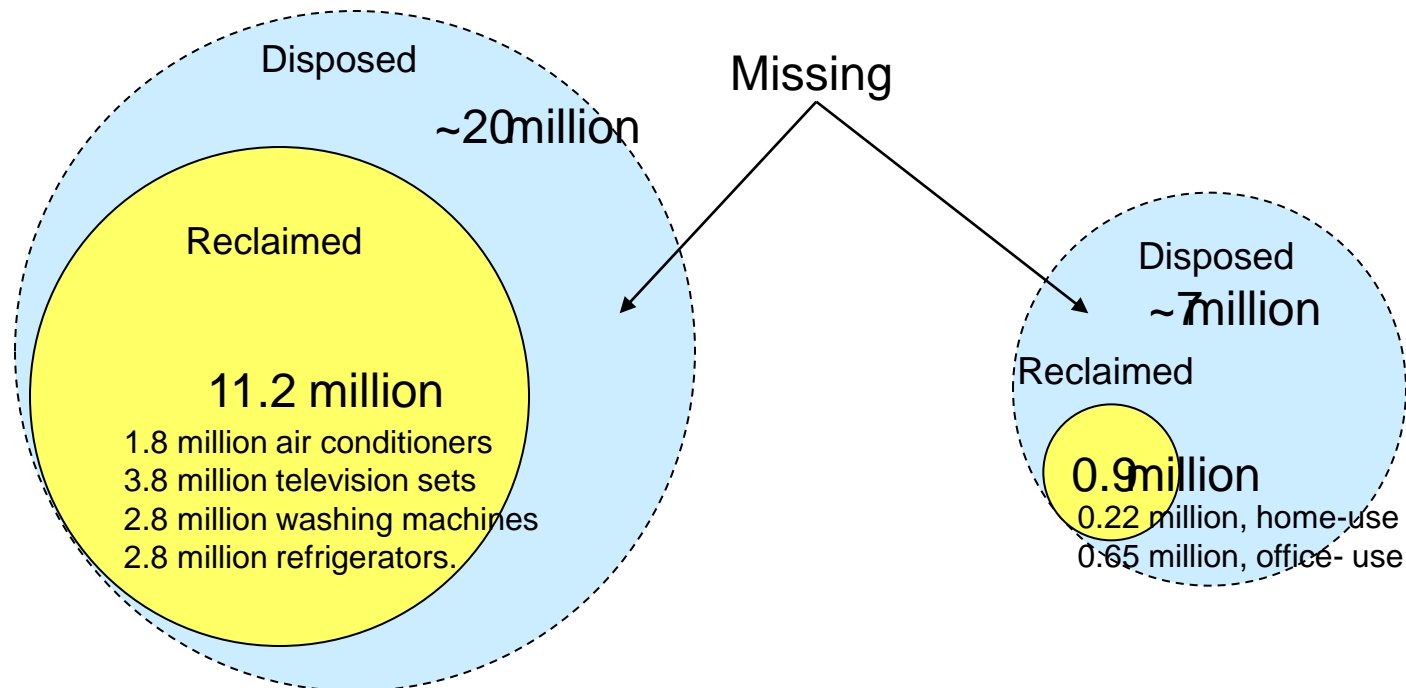
Japan's recycling system in 2004

Home Appliances
(4 electric products)

Personal Computers

Based on home appliances' recycling law

Based on the law
for promotion of effective utilization of resources



2004 Fiscal year

SUMMARY

TECHNOLOGICAL/ECONOMIC ISSUES

- RECYCLING QCD
- RECYCLING/ENERGY SAVING CONFLICT
- INVISIBLE FLOW

PHILOSOPHICAL QUESTIONS

- 1- At what point does an object stop being what it 'is' and start being 'garbage'?
- 2- Does the concept of Recycling encourage a 'Disposable Culture'?

ONTOLOGY OF GARBAGE

To Be or Not To Be.
That is the
question.



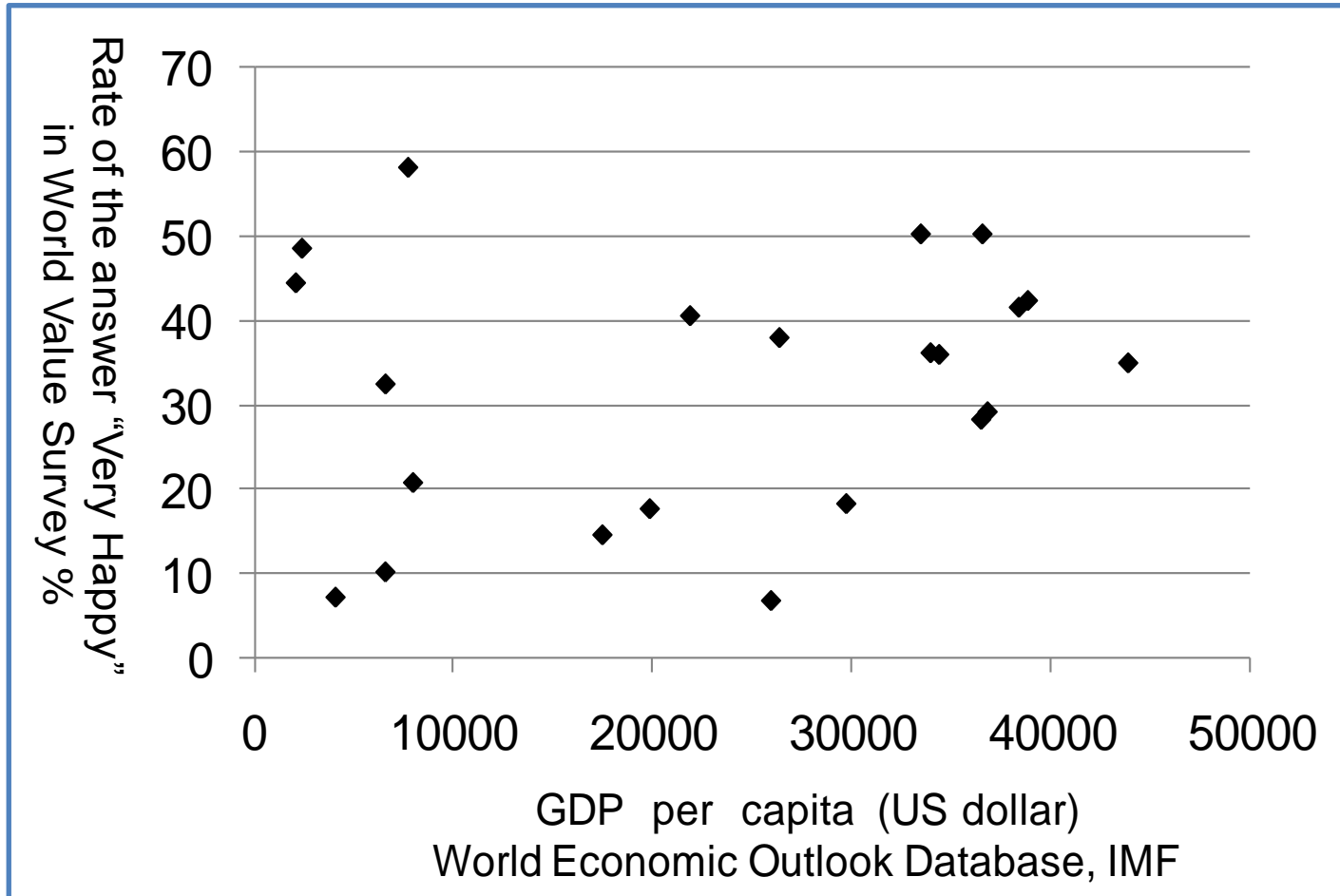
You're
talking
garbage!



PSYCHOLOGICAL ISSUES

- GDP AND HAPPINESS CHART
- FALSE-SELF SYSTEM

HAPPINESS AND INCOME



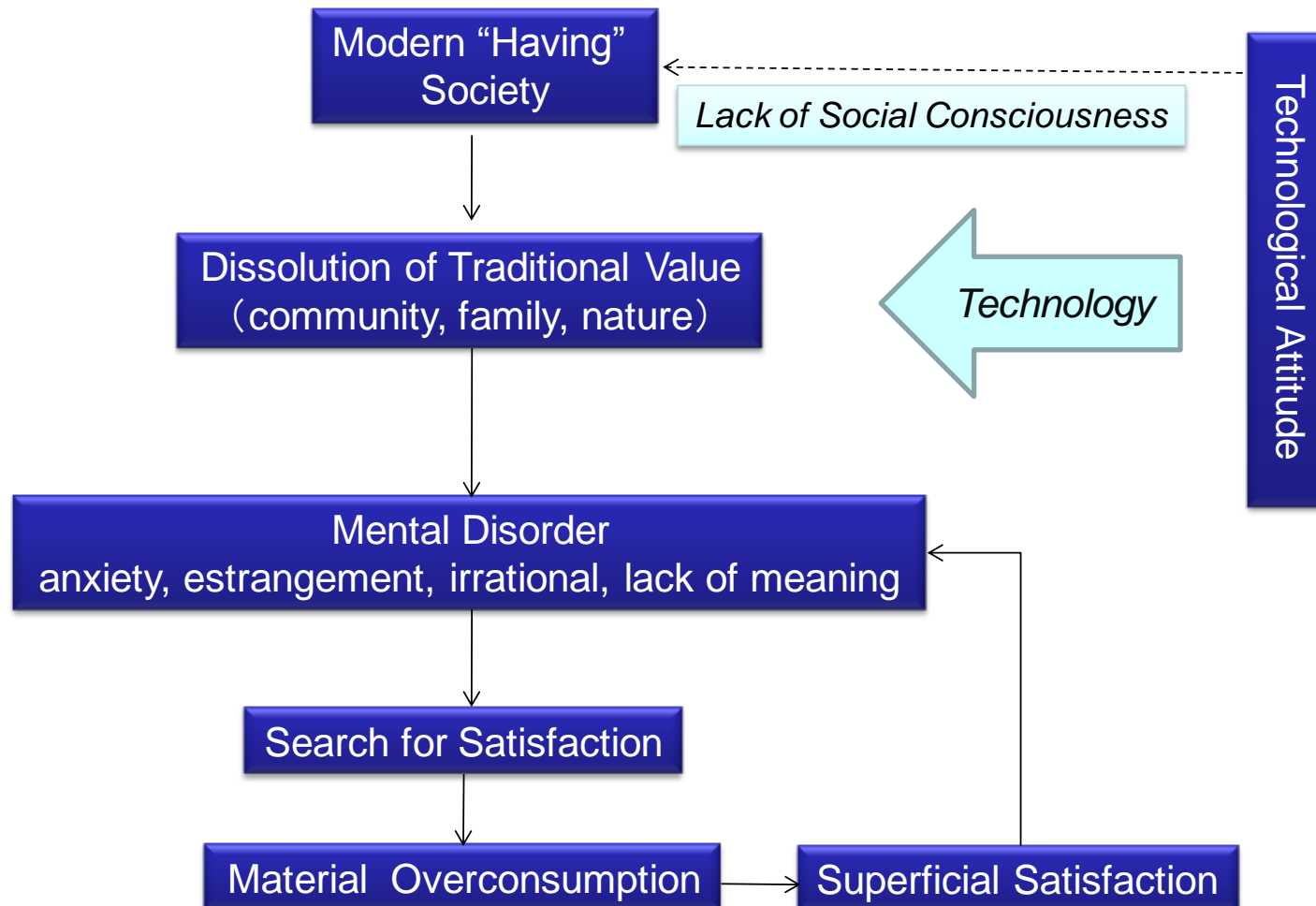
FALSE-SELF SYSTEM: I Am What I Consume



UNSUSTAINABLE CULTURE OF “HAVING”: OVERVIEW

- Subjective well-being does not necessarily correlate with high personal wealth (Diener 2004).
- Social/Psychological mechanisms drive consumer behaviour that is irrational and unsustainable (Boven 2003).
- Much of irrationality of our environmentally unsustainable behavior could be attributed to a ‘false self’ system (Winter & Koger 2004).

Mechanism of Resource and Energy Overconsumption



Over Consumption Disorder

e.g. Hyperphagia



Hyperphagia
(over-eating disorder)



Cure Disease

Losing Weight



Excessive foods



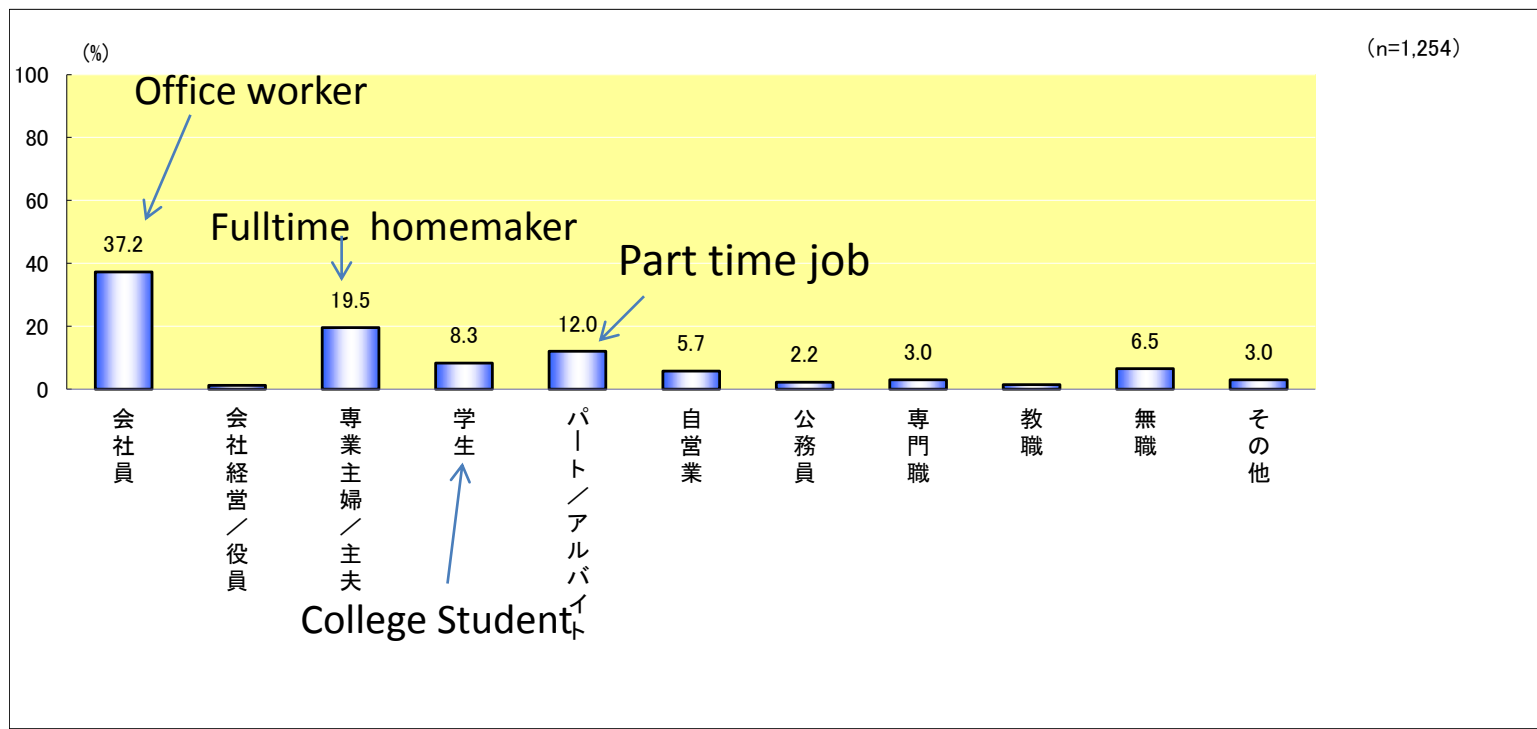
Excessive Demand

SURVEY:

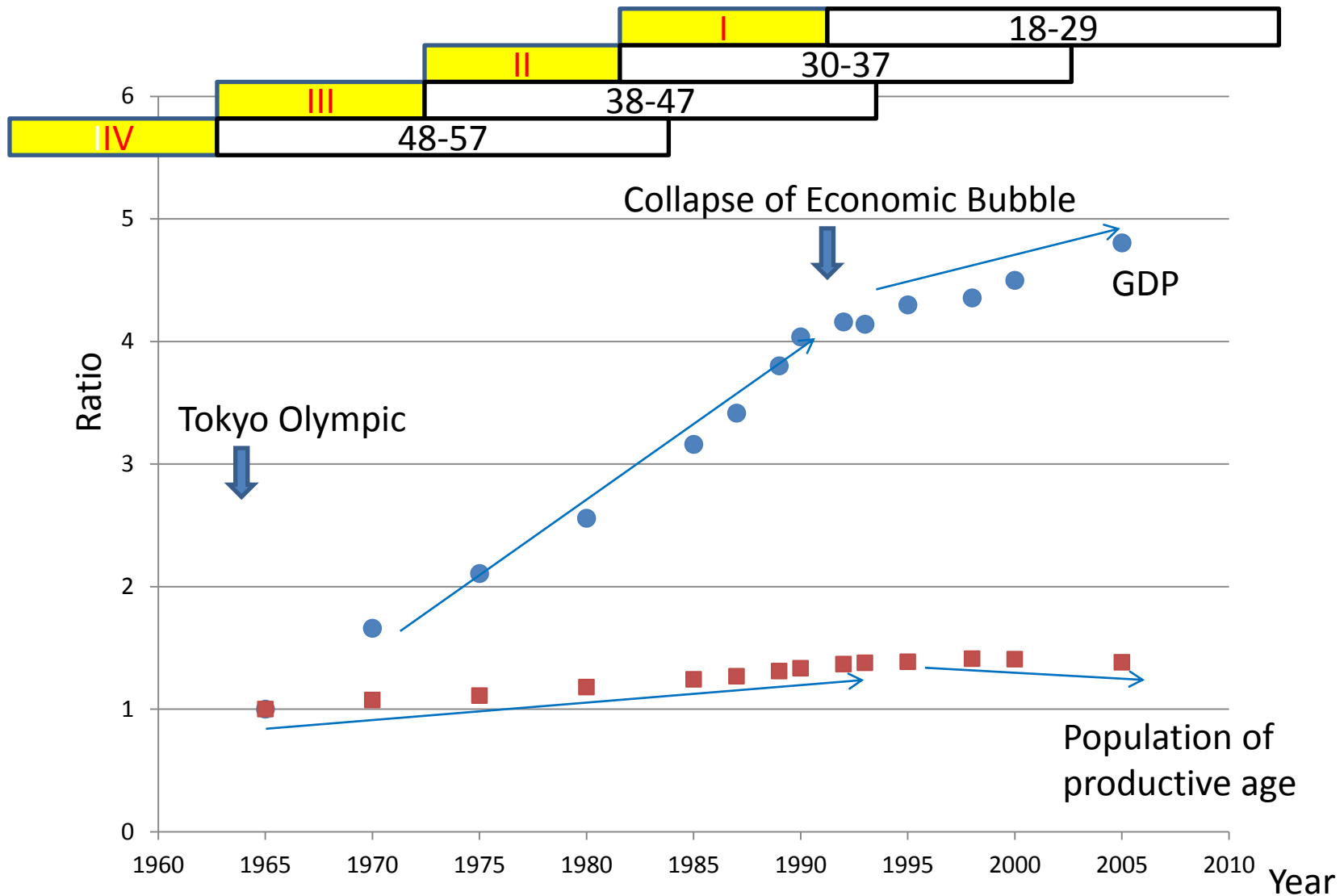
PURCHASING BEHAVIOR IN JAPAN

Methodology of Survey

- February 2010
- Through Internet (web survey)
- Conducted on over 1,200 people



Questionnaire & Demographic Age



Short Workshop

- Fill in the answers
- Form 3 groups of 5 - 6 students
- How to calculate...

*Questionnaire Survey: Purchasing
Behavior*

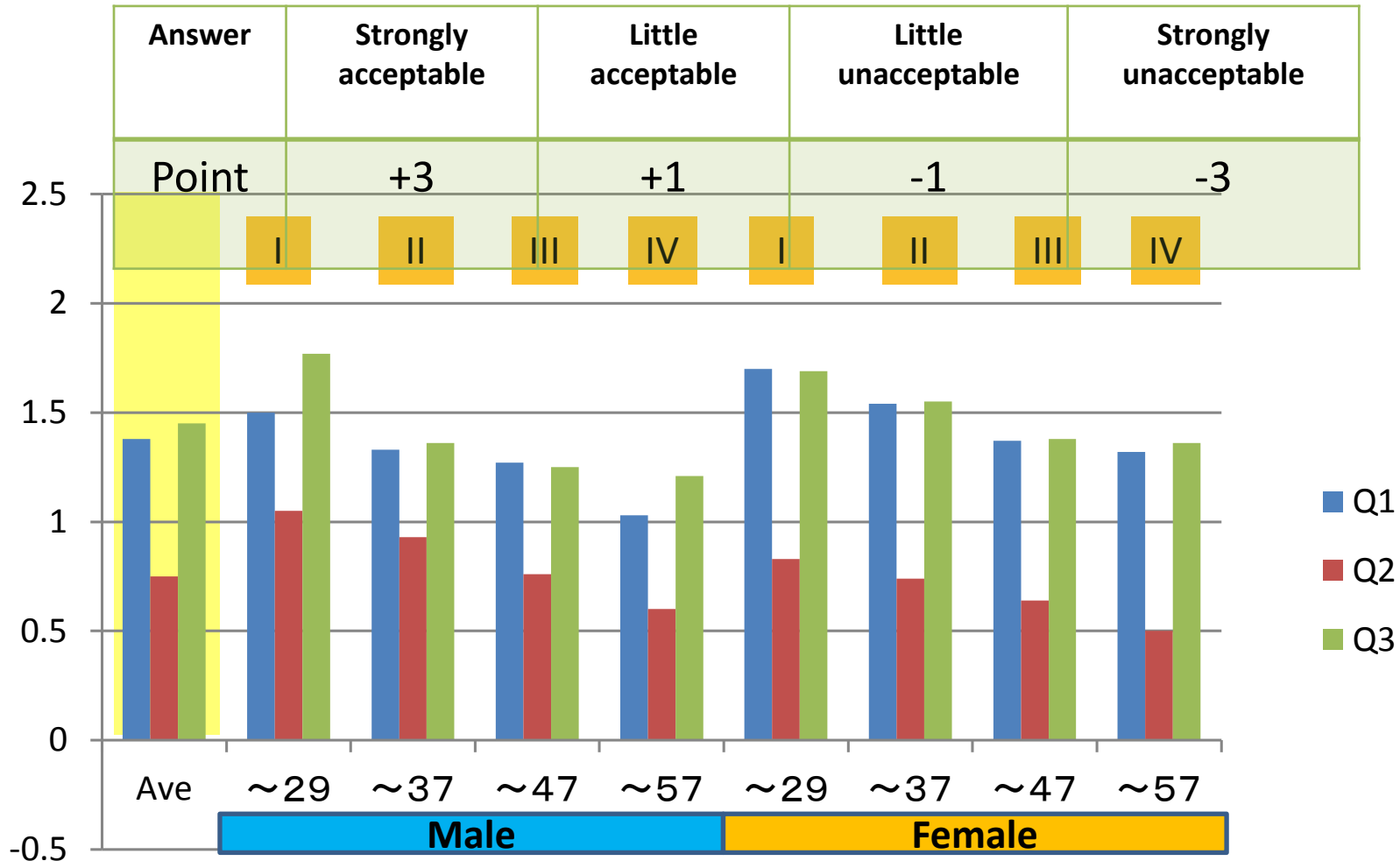
Goods & Service Desirability

Goods & Service	Top 10	Point	Total
Fashion (clothes)			
Domestic travel			
Eating out			
Book			
Music (CD, concert)			
Watching movie			
Car			
Personal computer			
Watch			
Foreign language learning, licenses getting			
Mobile music player such as iPod and Walkman			
Asset management (stock, financial product)			
Museum (art, history, ethnographic, transportation, science) travel			
Game (Soft, equipment)			
Tableware			
AV equipment such as blue-ray recorder			
Bicycle including one with electric assist			
International travel			
Audio equipment such as amplifier, speaker and player			
Camera			
Television set			
Manga (comic book), animation			
Jewelry, accessory			
Sporting goods			
Cosmetic, esthetique			
Motorbike			
Music instrument			
Stationery			
Communication equipment such as mobile phone and smart phone			
Travel place of scenic beauty and historical interest			
Furnishings, interior decorating			
Gardening, vegetable garden			
Home electrical appliances			
Antiques			

Top 10 What Goods& Service People Want to Have

	-29M	-29W	-37M	-37W	-47M	-47W	-57M	-57W
1	PC 4.4	Fashion 6.4	PC 5.5	Domestic Travel 5.9	Domestic Travel 5.8	Domestic Travel 6.2	PC 5.6	Domestic Travel 5.9
2	Domestic Travel 4.2	Domestic Travel 5.7	Domestic Travel 4.7	Fashion 5.5	PC 5.3	Eating Out 5.7	Domestic Travel 5.5	Eating Out 4.8
3	Game 3.4	Eating Out 5.3	Eating Out 3.8	Eating Out 5.2	Eating Out 4.2	Fashion 4.7	Eating Out 3.5	Fashion 3.6
4	Music(CD, Concert) 3.1	Music(CD, Concert) 3.3	Game 3.1	International Travel 3.0	Car 3.3	Watching Movie 3.5	Car 3.1	Watching Movie 3.5
5	Animation, Manga 2.8	Cosmetics 3.2	TV 2.7	Furniture, Interior 2.7	TV 3.1	International Travel 3.1	International Travel 3.0	International Travel 2.9
6	Fashion 2.7	International Travel 3.1	Investment 2.7	Domestic Appliance 2.7	AV Equipment 2.7	PC 2.8	TV 3.0	PC 2.8
7	Eating Out 2.6	Book 2.6	Watching Movie 2.6	Book 2.6	Watching Movie 2.4	Book 2.8	Watching Movie 2.7	Book 2.7
8	Book 2.6	Watching Movie 2.4	Music(CD, Concert) 2.5	Cosmetics 2.6	International Travel 2.0	Cosmetics 2.5	Book 2.6	Music(CD, Concert) 2.7
9	Car 2.6	PC 2.0	Car 2.5	Watching Movie 2.4	Music(CD, Concert) 2.0	Music(CD, Concert) 2.4	Visiting Famous Spot 2.3	TV 2.5
10	Watching Movie 2.2	Animation, Manga 1.9	AV Equipment 2.5	Music(CD, Concert) 2.4	Book 1.9	Domestic Appliance 2.4	AV Equipment 2.2	Cosmetics 2.4

Purchasing Behavior (I)

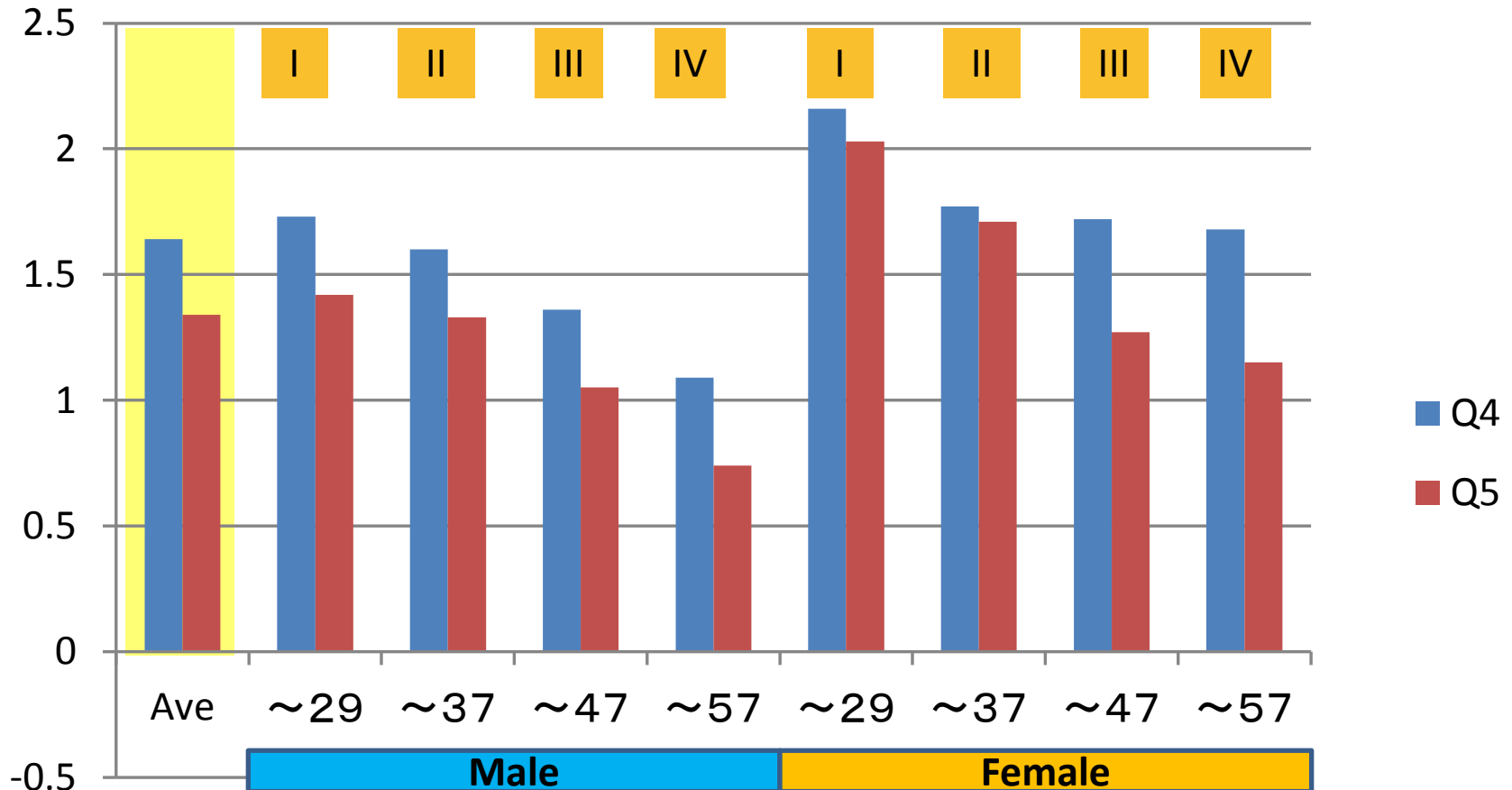


Q1 Do you want to buy something which you feel emotional attachment?

Q2 Even if a price is high, do you want to buy something which you can use for a long time.?

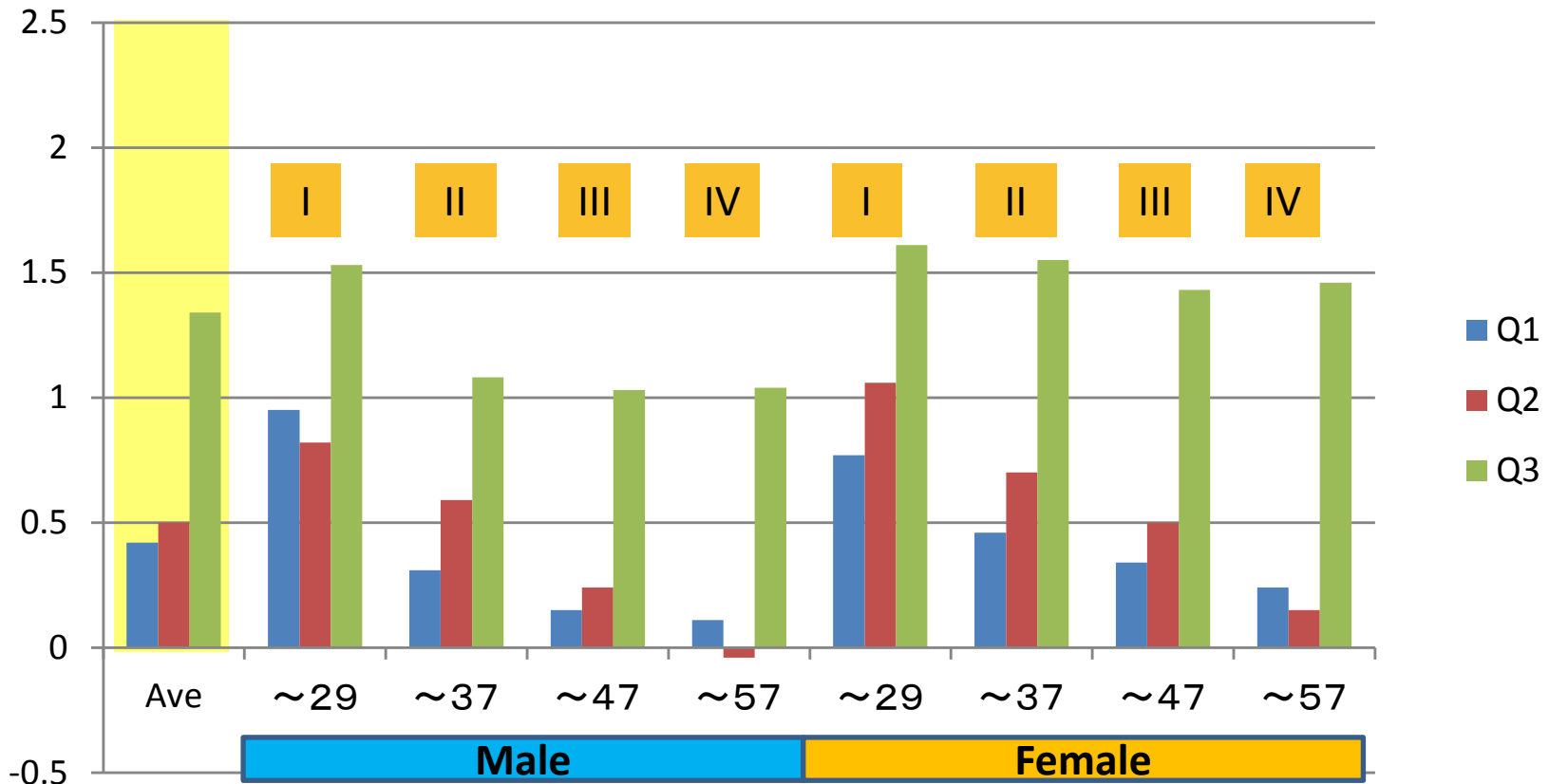
Q3 Do you buy something suited to your hobby and your sensitivity?

Purchasing Behavior (II)



Q4 Do you want to avoid a loan and a debt when shopping?
 Q5 Are you happy to increase your savings.

Attitude Towards Consumption and Lifestyle (I)

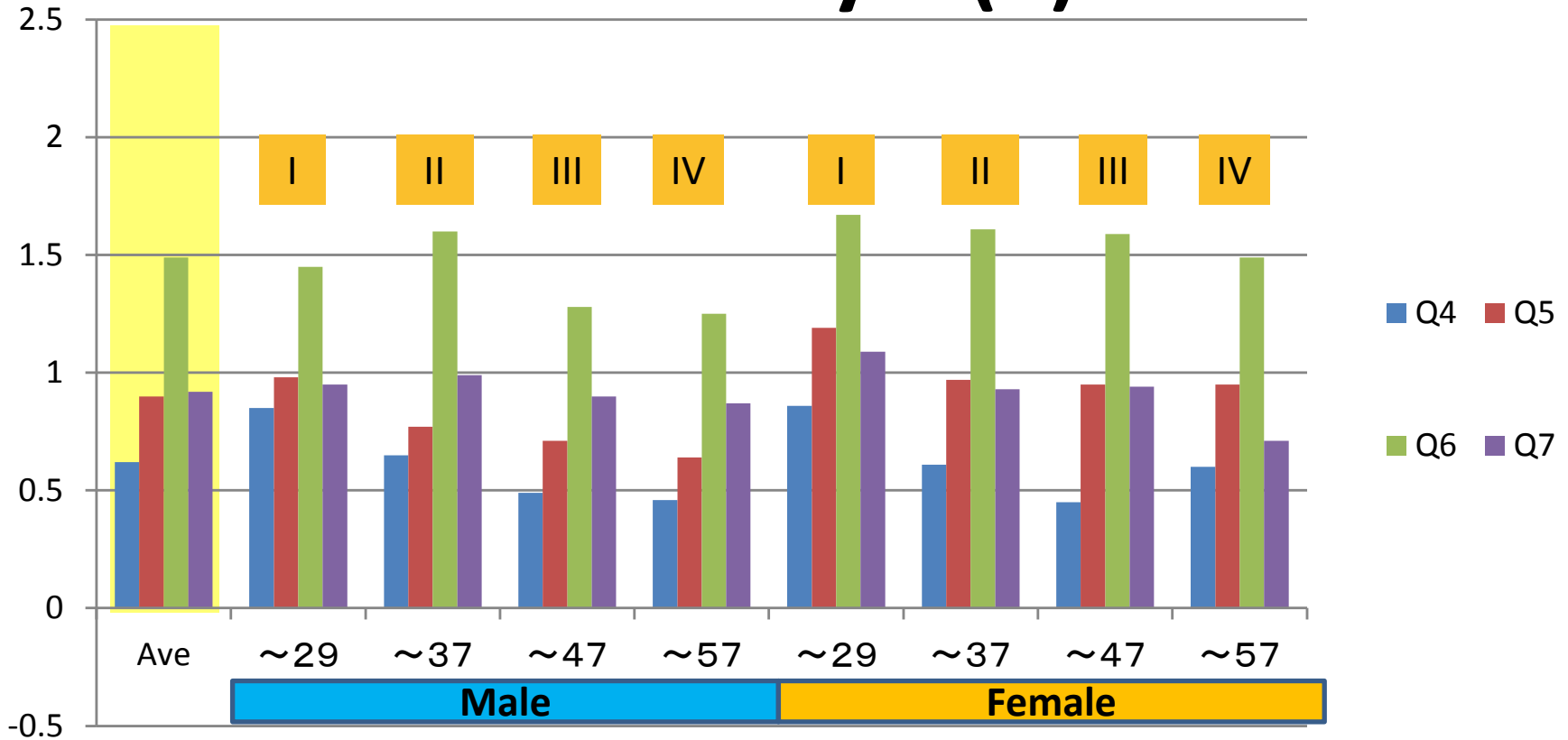


Q1 Do you want to extend the human relations and to associate with various kinds of people?

Q2 Do you sometimes act according to seeing others' facial expression?

Q3 Do you want to have a high regard for old friend?

Attitude Towards Consumption and Lifestyle (II)



Q4 Do you act considering the future?

Q5 Do you want a risk free lifestyle?

Q6 Do you want to live at your own pace, without straining yourself?

Q7 Do you want to have laid-back life, if you have enough income to live on?

SUMMARY OF QUESTIONNAIRES

- Characteristics of young Japanese people
 - Value “communication” over “money”.
 - Prefer to purchase ‘services’ rather than purchasing goods such as car, TV, and AV equipment
- Reasons for these characteristics
 - Grew up surrounded by an abundance of material goods.
 - Born into the “Internet and Mobile” era.

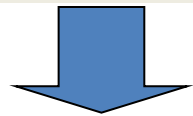
Solutions must address the following issues:

- 1- Recycling QCD
- 2- Energy Consumption/Recycling
- 3- Invisible Flow
- 4- Purchasing trends moving towards services/experiential purchases

New Business Model for Consumer Products

Achieving “Recycling QCD”

- **Business on Lease Basis**
 - Customers: New benefits which they couldn't get by owning the product.
 - Ex. Product can be exchanged easily
 - Manufacturer: Increased profitability



**New Business Model Involving
“Service-Oriented Products”(SOPs)**

What are Service-Oriented Products?

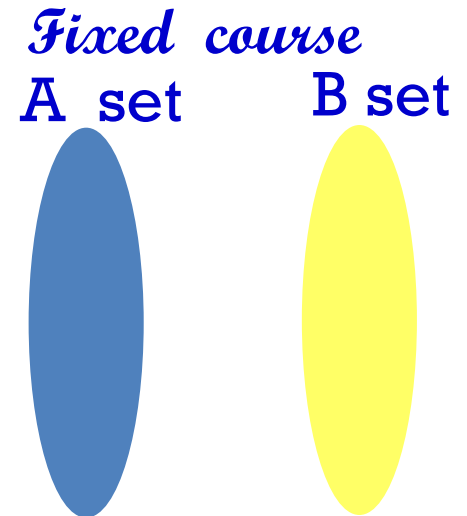
(an analogy with the restaurant industry)

Service (cuisine)



Hardware (dishes)

Hors D'oeuvre
Appetizer
Soup
Main dish
Dessert



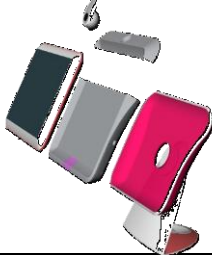

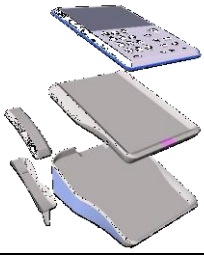
Customers pay money not for the dishes but for the cuisine.
Customers choose a fixed course from the cuisine it includes.
Dishes are used many times by many people.

SOPs are “dishes” on which companies “serve” services.

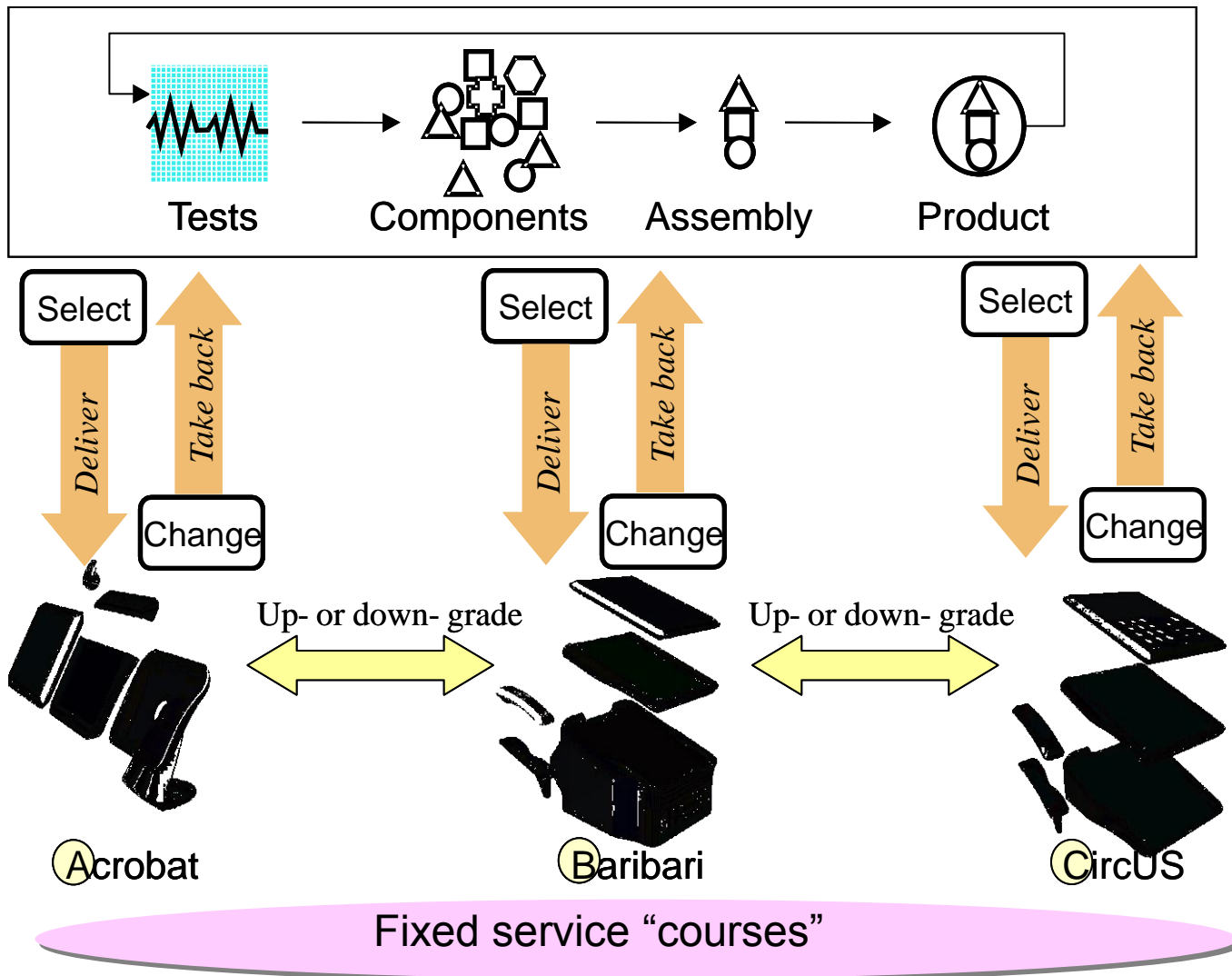
An Approach to SOP Business

1. Create the services and fixed courses
 2. Choose the basic product
 3. Decide its life-cycle options
 - remanufacturing, reuse of modules, recycling upgrading, maintenance, and so on
 4. Design the SOPs
 - Reconfiguration which makes offering of various services possible
 - Structure suitable for life-cycle options
 5. Make the business plan
- 

Example Consumer Fax Application

<p>"Courses" and Services</p>	<p>"Acrobat"</p>	<p>"BariBari"</p>	<p>"CircUS"</p>
<p>Basic Product</p>	<p>Consumer Facsimile Machine</p>		
<p>Life-cycle Options</p>	<p>Reuse among Different Customers Moderate Upgrading</p>		
<p>SOPs</p>	<p>Share Functional Components</p>		
			
<p>Business Plan</p>	<p>Under Study</p>		

Business Flow



Concept Models



Bari-Bari



Acrobat



Circus

Comparing SOP concept with conventional products

		Conventional products	SOPs
Customer	choose	product specifications	“service” course
	purchase	hardware	service(hardware rental)
	replace	buy a new one	change with extra charge
Business	profit	product sales	service provision
	manufacture	assembling parts	combining module
	Post-use	disposal/recycling	reuse/recycling
Relation between business and customers		weak (in post-sales periods)	close (until use period ends)

DTOS CAN MAKE THE CONCEPT OF
SOP'S CONCRETE.

OWNERSHIP=RESPONSIBILITY

Dual Traceable Ownership System (DTOS)

1. Individual consumer has complete ownership of the product
2. Company has complete ownership and the consumer hires the product

CONSUMER OWNERSHIP

1. An identification number corresponding to the owner.
2. When transferring ownership during product use, the owner has to follow a set of procedures laid down by law.
3. When discarding the product, the owner takes responsibility for the recycling process. For example choosing an appropriate recycling trader..
4. If the product is discovered in an illegal situation, such as a 'black market' recycling process, the owner will receive a severe penalty.

COMPANY OWNERSHIP

1. The consumer pays money not for the product itself, but for the services or functions which the product provides.
2. The consumer can enjoy the product without worrying about its disposal. The company or 'seller' will take responsibility for all the recycling duties that come with 'ownership.'
3. Through the identification code system, the product and its parts can be easily traced back to the company.
4. It may be possible for the consumer to receive new services quickly and at minimal or no extra cost

CONCLUSION

- 1-Recycling has become one of the essential solutions but recycling strategies and methods must become far more sophisticated. The conventional recycling system has serious defects from the viewpoint of “Recycling QCD”.**
- 2-Businesses stimulate people’s desire, sell a lot of products to people, and then lose their attention of the products after sale. These businesses are also supported by people’s overconsumption disorder.**
- 3- Research suggested a departure from the notion of “owning” consumer products in Japanese young people, suggesting systems such SOP’s AND DTOS may be feasible in the future.**

Preparation for Next Class

1. Choose a product
 - a. TV & AV Equipment, Others (electric home appliances), Private car, PC & Information communication equipment
2. How many of these products were disposed every year in Japan?
3. How much energy was consumed at the product usage stage a year in Japan?
4. What is your idea based on today's lecture to solve these problems? (e.g. SOP's, Service menu.....)
5. Analyze positive and negative points of your idea using quantitative and/or qualitative method.

An Approach to SOP Business

1. Create the services and fixed courses
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 4. Design the SOPs
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 5. Make the business plan
- 

Schedule

- Individual group presentation (-80 minutes)

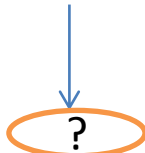


15 minutes: presentation
10 minutes: Q&A, discussion

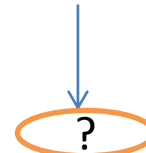
- Debate(-20 minutes)



Compare: which is feasible



Compare: which is feasible



- Explain debate process (10minutes X 2)

Thank you for listening!!!



Tōhoku earthquake and tsunami



Fukushima Daiichi nuclear disaster

Purchasing Behavior

N	Question	Answer			
		Strongly acceptable (+3)	Little acceptable (+1)	Little unacceptable (-1)	Strongly unacceptable (-3)
1	Do you want to buy something which you feel emotional attachment?				
2	Even if a price is high, do you want to buy something which you can use for a long time. ?				
3	Do you buy something suited to your hobby and your sensitivity?				
4	Do you want to avoid a loan and a debt when shopping?				
5	Are you happy to increase your savings. ?				

Q. No	Total points of individual group
1	
2	
3	
4	
5	

Attitude towards Consumption and Lifestyle

N	Question	Answer			
		Strongly acceptable (+3)	Little acceptable (+1)	Little unacceptable (-1)	Strongly unacceptable (-3)
1	Do you want to extend the human relations and to associate with various kinds of people?				
2	Do you sometimes act according to seeing others' facial expression?.				
3	Do you want to have a high regard for old friend?				
4	Do you act considering the future?				
5	Do you want a risk free lifestyle?				
6	Do you want to live at your own pace, without straining yourself?				
7	Do you want to have laid-back life, if you have enough income to live on?				

Q. No	Total points of individual group
1	
2	
3	
4	
5	
6	
7	