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# The Significance of Picture Mining in the Fashion and Design as a New Research Method

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# 1. Introduction

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- ▶ Since the beginning of the 21st century, there were drastic environmental changes surrounding marketing and marketing strategies.

Development in information and communication technology(ITC)



New concepts and Marketing Strategies



Changes in Marketing Research

Increasing attention has been paid to using pictures and photographs in research in marketing and social sciences



## 2. Objectives of the Research

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- ▶ Our objective in this study is;
  - ▶ 1) To investigate the recent changes in marketing strategies and identify its influences on marketing research methods.
  - ▶ 2) To find research areas which Picture Mining is useful for future research.
  - ▶ 3) To discuss the research area (in this study, Fashion and Design) is really a significant one.

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# 3.Changes in Marketing and Research

# 3. Changes in Marketing Strategies and its Influence on Market Research

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## ▶ 1) Changes in Marketing Concepts

- ▶ Product/Sales oriented Marketing has changed to Customer/Relationship oriented Marketing
- ▶ *“Marketing is the activity, set of institutions, and processes for creating, communicating, delivering, and exchanging offerings that have value for customers, clients, partners, and society at large.”*  
(AMA 2007)

## ▶ 2) Changes in Marketing Mix strategies

- ▶ Products and Services → Values and Experiences
- ▶ Promotion → Communications
- ▶ Distribution Channels → Deliveries

## 3.1 Changes in Marketing Concepts

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- ▶ Changes in Marketing Concepts have changed the styles of marketing research in;
  - ▶ **1) From market research to customer research**
    - ▶ Became more individual and personal
    - ▶ To look into the insight of the customer, more qualitative information were necessary to analyze the market.
  - ▶ **2) From descriptive research to exploratory research**
    - ▶ Quantitative research to Qualitative research
    - ▶ Continuous and integrated research
      - e.g. Brand recognition research → Brand switch research

## 3-1-1. From Market to Customer

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- ▶ Changes of Research Targets
- ▶ 1) Mass Marketing
  - ▶ Understanding the ‘average consumer’ as a whole
  - ▶ →Conventional marketing research
- ▶ 2) Target Marketing
  - ▶ Recognize the heterogeneous consumer
  - ▶ →Internet marketing research
- ▶ 3) Relationship Marketing
  - ▶ Understanding the customer
  - ▶ →New types of marketing research is necessary

## 3-1-2. From Descriptive to Exploratory

- ▶ Concepts of 'Marketing 3.0' (Kotler, Kartajaya, Setiawan; 2010) and Marketing Research

	<b>Marketing 1.0</b>	<b>Marketing 2.0</b>	<b>Marketing 3.0</b>
<b>Marketing Goals</b>	<b>Sell Products/Services</b>	<b>Customer satisfaction and retention</b>	<b>Make a better world</b>
<b>Dialogue with users</b>	<b>one-to-many</b>	<b>one-to-one</b>	<b>many-to-many</b>
	<b>process</b>	<b>relation</b>	<b>collaboration</b>
	↓	↓	↓
<b>Customer Analysis</b>	<b>Descriptive</b>	<b>Causal</b>	<b>Exploratory/Predictive</b>
	<b>What customers did</b>	<b>Why customer did</b>	<b>What customers will do next</b>
<b>Data Collection</b>	<b>Ad-hoc</b>	<b>systematic</b>	<b>continous/integrated</b>

Hagiwara(2010) modified by author





## 3-2. Changes in Marketing Mix Strategies

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- ▶ **1) Changes in product and service strategies**
  - ▶ e.g. values and experience
- ▶ **2) Changes in distribution channels**
  - ▶ e.g. online and direct channels
- ▶ **3) Changes in communication and promotion strategies**
  - ▶ e.g. interactive communication on the web

## 3.2.1 Changes in Products

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### ▶ 1) Products/Services to Experience

- ▶ Experience will be memorized as episodes. Episodes are difficult to explain in words.

### ▶ 2) Social values

- ▶ e.g. Sustainable brands, stakeholders, society etc.

### ▶ 3) Values in the Global market

- ▶ Quick decision making is necessary for the global market, localization of the products/services. Fast research is required.

## 3.2.2 Changes in Distribution

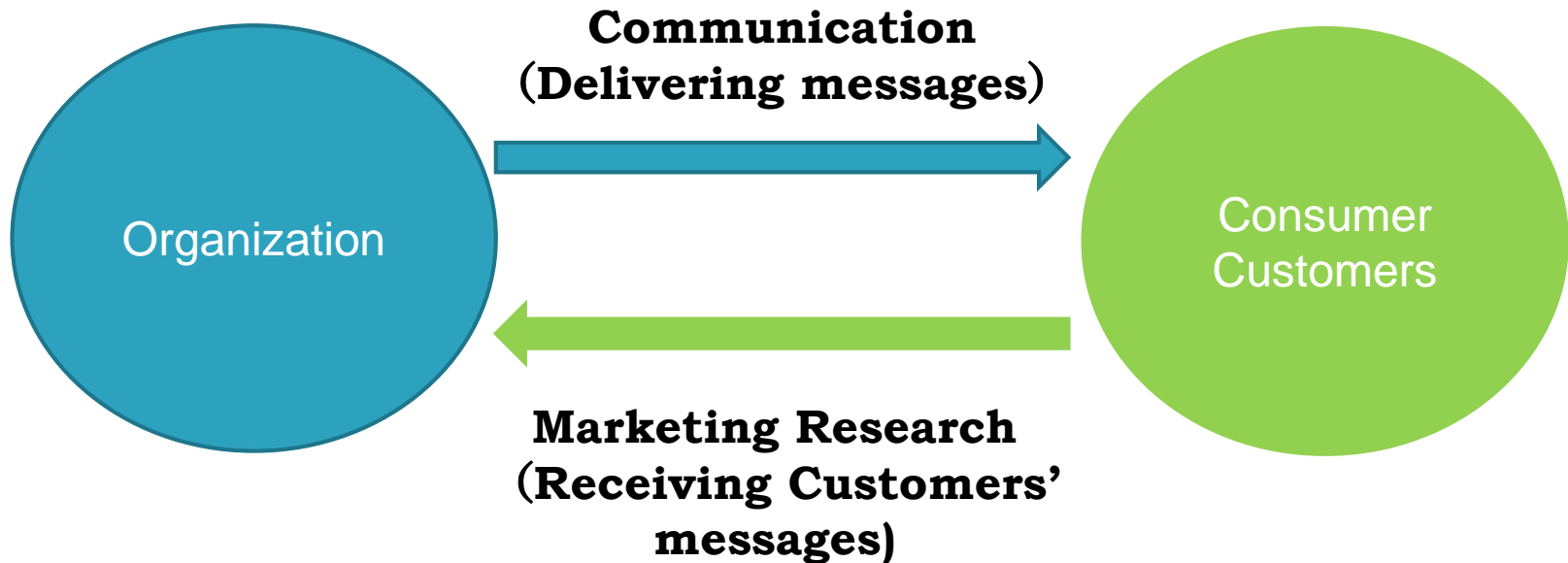
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- ▶ **1) Large format retailers and data collection**
  - ▶ Using the Point of Sales system data for 'big' research
- ▶ **2) Convenience stores and the shortening of the Product Life Cycle**
  - ▶ Using Internet research, Focus Group Interviews for 'quick' research
- ▶ **3) Online and Direct Channels**
  - ▶ Research using customer monitors and panels as 'real' research

## 3.2.3 Changes in Communication

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### Communication and Marketing Research (Hagiwara2011)



## 3.2.3 Changes in Communication

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- ▶ Changes in communication and marketing research (Hagiwara 2011)
  - ▶ 1) Before the Internet Media (Offline, Paid Media)
    - ▶ Conventional Advertising (TV, magazines, newspapers etc.) → Conventional marketing research
  - ▶ 2) Internet Media(Online, Paid Media)
    - ▶ Advertising on the Internet (Banners, e-mails etc)
    - ▶ →Internet research
  - ▶ 3) New Internet Media(Online, Owned/Earned Media)
    - ▶ Social Media, Corporate Websites →New types of research (e.g. MROC)

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# 4. Picture Mining and the Concepts

## 4. Picture Mining: Using Pictures instead of Words as Responses

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### ▶ Definition:

- ▶ Picture mining is the explorative method that takes useful information from pictures, static or moving images.
- ▶ It is often compared with the methods of text mining.
- ▶ The Picture Mining concept includes observational research in the broad sense, because it also aims to analyze moving images

(Ochihara, Edo, Hiroi; 2010)

\*Sometimes these kind of methods are called 'participant-generated photography' or 'respondent-generated visual imagery' (Pauwels 2011, Snyder 2012).

## 4. Picture Mining 2) Procedures

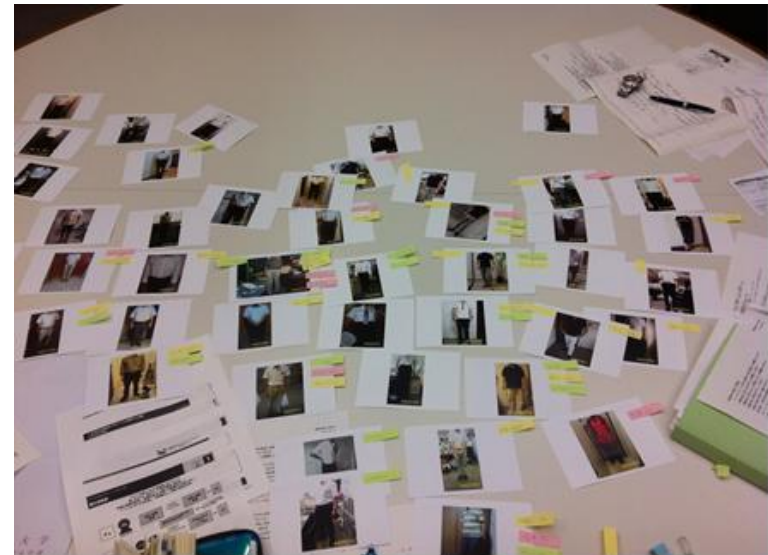
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- ▶ Make picture cards for each of the photos
- ▶ Record information from the questionnaire on back side
- ▶ Turn the questionnaire side above, classify, group, sample or abstract characteristics
- ▶ Turn the picture side above, analyze for findings (repeat steps 3 and 4 for achieving findings from the pictures)
- ▶ Confirm the findings found from step 3 and 4
- ▶ Use other quantitative and/or qualitative methods for confirming findings.



# 4. Picture Mining Basic Procedures

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## 4.1 ‘Shoulds’ of Picture using research

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### ▶ 1) Changes in Marketing Concepts

- ▶ We should understand the customers insights more individually, continuously and more carefully.
- ▶ *“Pictures can express many things. It has a lot of information in it. More easy and less burden for respondents.”* (Ochihara, Edo 2012)

### ▶ 2) Changes in Marketing Mix strategies

- ▶ Products and Services → Limitation of verbal research
- ▶ Distribution → Overflow of unnecessary and unuseful information
- ▶ Communication → Real time research overcoming lack of respondent’s memory

# 4.1 'Could's' of Picture using researches

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## ▶ Technological Changes

- ▶ Low price digital cameras, smart phones
- ▶ High information transmission speed
- ▶ Low costs for information transferring
- ▶ High performance and resolution of the cameras of mobile phones.

## ▶ Social Changes

- ▶ Diffusion of mobile phones with digital cameras
- ▶ Downsizing and light-weighting of cameras
- ▶ No more resistances in taking and processing pictures
  - ▶ (Ochihara, et al., 2010)

## 4.2 Recent Picture Mining Researches

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- ▶ Refashion of Clothes (2006)
- ▶ OBENTO for kindergarten (2007)
- ▶ Tools for desserts and cakes (2008)
- ▶ Shoes and Occasions (2007)
- ▶ Fashion difference between Tokyo Disneyland and Disneysea(2009)
- ▶ Satisfaction in Highway Service areas(2010)
- ▶ Cool Biz styles in summertime (2011, 2012, 2013,2014)
- ▶ Relations between Hairstyle and Fashion (2012)
- ▶ Lifestyles for Energy Drinks (2012-2013)
- ▶ Desserts and Cakes for Christmas (2013)
- ▶ Lifestyles for healthcare (2013-2014)
- ▶ Business styles for women in summertime (2014)
- ▶ Comparing shoes on occasions(2015)

# 4.3 Significance of Picture Mining

## A Non Language-dependent research

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- ▶ Risks of bias in verbal surveys
  - ▶ 1) Researchers encode the questions to communicate with the respondents
  - ▶ 2) Respondents decode the questions
  - ▶ 3) Respondents encode their answers to the given questions
  - ▶ 4) Researchers decode the answers of the respondents
- ▶ The bias could be avoided if the research is a non-language-dependent one.
  - ▶ (Ochihara and Edo;2012)

## 4.4 Useful Areas and Activities

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- ▶ a) Lifestyle analysis
  - ▶ Lifestyles for healthcare,
  - ▶ Lifestyles for energy drinks
- ▶ b) New Product Development
  - ▶ Tools for kindergarten Obento
  - ▶ Kitchen tools for cakes and desserts at Christmas
- ▶ c) Fashion and design
  - ▶ Japanese Business styles in summertime
  - ▶ Fashion difference between Disneyland and Disneysea

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# 5. Picture Mining in Fashion and Design: A Case Study

# A Case of Picture Mining in Fashion

## 'Cool Biz' styles in Japan(1) Methodology

- ▶ Pictures Collected during summer of 2011, 2012, 2013 and 2014
- ▶ Used internet monitoring system
- ▶ Women were instructed to send pictures of Super/Cool Biz styled men
- ▶ Responses to questions were attached with pictures (age of subjects etc.)

Year	2011			2012			2013		
Pictures collected	71			124			158		
Period	August			June			August(July)		
Age of respondents	20s	16	23%	20s	16	13%	20s	12	8%
	30s	17	24%	30s	70	56%	30s	100	63%
	40s	20	28%	40s	34	27%	40s	42	27%
	50s	18	25%	50s	4	3%	50s	4	3%
			100%			100%			100%



# A Case of Picture Mining in Fashion

## ‘Cool Biz’ styles in Japan(2)

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- ▶ There were many brown belts till last year. We were thinking that the Japanese men were getting to be more fashionable, but in 2014 these fashionable items has decreased. We think this as ‘Uniformalization of Cool Biz styles’.

# A Case of Picture Mining in Fashion 'Cool Biz' styles in Japan(3)

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Short sleeve shirts(including Polo shirts) are decreasing.

(2011:85%, 2012:67%,

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▶ <sup>26</sup> 2013:59%,2014:58%)

# A Case of Picture Mining in Fashion

## ‘Cool Biz’ styles in Japan(4)

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- ▶ The decrease of short sleeve shirt stopped in 2014. But the use of Polo shirts have decreased in 2014. Instead there is a increase in normal short sleeve shirts. Maybe Polo shirts are too casual.

# A Case of Picture Mining in Fashion

## ‘Cool Biz’ styles in Japan(5)

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- ▶ Until 2013, the shirts were inside the pants to look neat. In 2014, due to the decrease in Polo shirts, there was a increase of shirts outside their pants.

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## 6. Basic Research on Uploading Pictures in Fashion

## 6.1 Research Methodology

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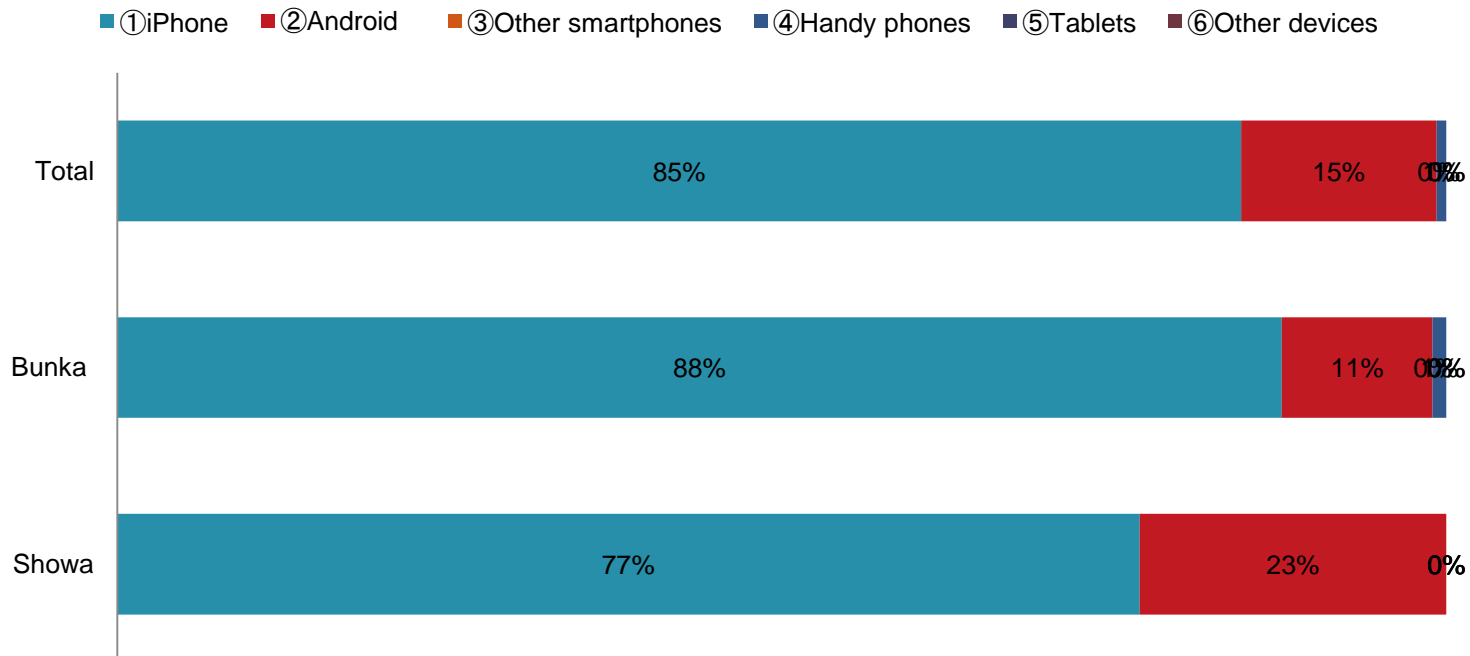
- 1 · Objectives: To study basic attitudes and behaviors of picture taking by comparing fashion and food/meals
- 2 · Respondents : 148 University students in Tokyo  
( Female 141, Male 7 )  
Bunka Gakuen University 101, Showa Women' s University 40
- 3 · Research Period : Dec. 2014
- 4 · Method: Questionnaire after classes
- 5 · Questions : About attitudes toward Fashion and Food /Meals, Behavior of Social media and attitudes

# 6.1 Communication Devices (1)

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We have excluded responses of 7 male students, 3 who were not 3<sup>rd</sup> year students, and 2 foreign students out of 148. The number of samples are 97 Bunka Gakuen University students and 39 Showa Womens' university.

**Figure 1. Communication Devices**

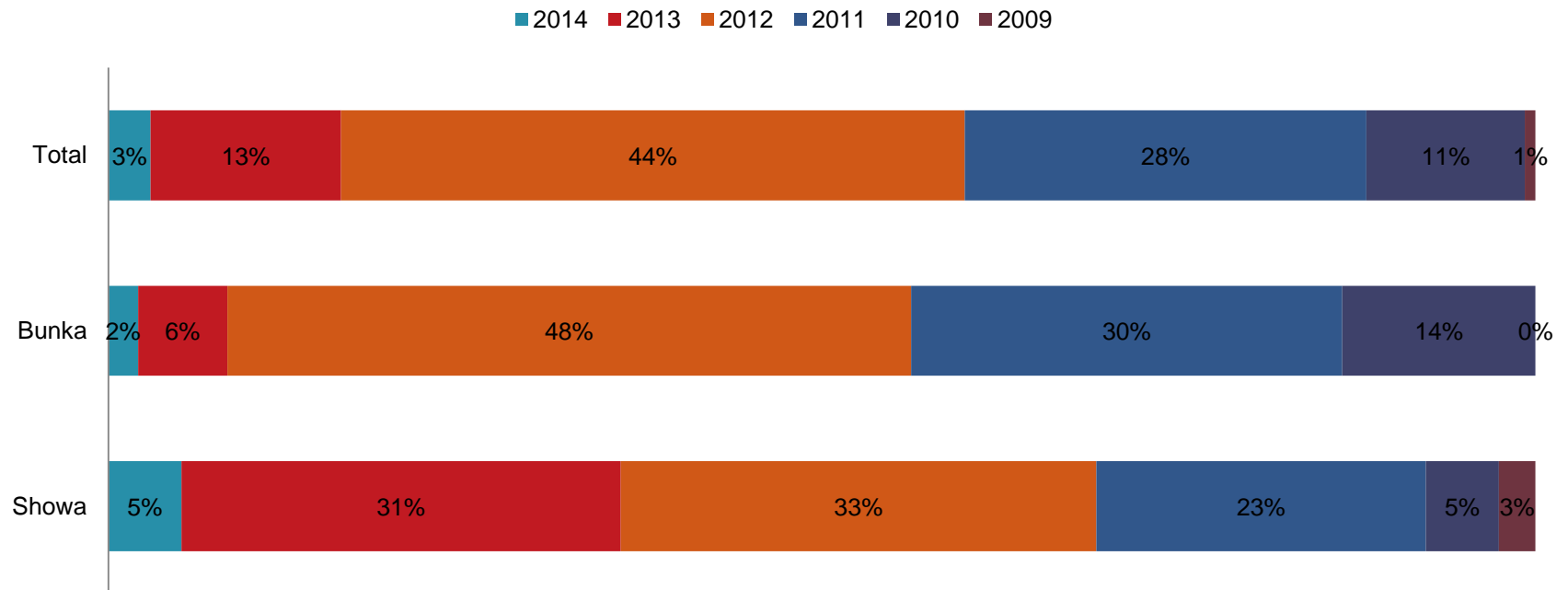


# 6.1 Communication Devices (2)

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Many students changed their devices when they entered university mainly in 2012. We have to remark that 36% of the students of Showa changed after 2013. It represents the students characteristics.

**Figure2. Change to Smart Phones**





## 6.2 Social Media and Picture Uploads

There were many responses that they ‘often upload’ ‘sometimes upload’ when using the social media. The figures in the tables are average when we rated the answers in 4 point scale. The pictures save inside the device is about 4000. Though there are a difference between the two university students, we can assume that they have a lot of pictures in their devices.

			Total	Bunka	Showa	D
			(n=136)	(n=97)	(n=39)	
Social Media and Uploads	Q2-4	Upload of pictures	2.51	2.48	2.58	-0.10
	Q2-5	How often do you upload pictures	3.41	3.51	3.17	0.33
	Q2-6	Pictures inside your device	4046	4503	2812	1691
	Q2-7	Use of Instagram	196	209	139	70

## 6.3 Attitudes and Behavior of Fashion

The responses of Bunka students toward fashion were much higher compared to the responses of Showa. We can say that it was better to add Showa's students have a more representative sample. (The standard deviation rose when in total)

			Total (n=136)	Bunka (n=97)	Showa (n=39)	D
Fashion (Attitude and Behavior )	Q3-1	Interest in Fashion(including accessories )	3.76	3.82	3.59	0.23
	Q3-2	I think myself fashionable	2.32	2.34	2.26	0.08
	Q3-3	Have a policy in fashion	2.99	3.01	2.92	0.09
	Q3-4	Choose clothes with caring of others	3.03	3.07	2.92	0.15
	Q3-5	I want to express myself using fashion	3.04	3.16	2.72	0.45
	Q3-6	Want to be seen fashionable from others	3.27	3.35	3.05	0.30
	Q3-7	Want to be seen by others	2.68	2.81	2.33	0.48
	Q3-8	Take pictures of your fashion	2.21	2.40	1.72	0.68
	Q3-9	Upload your fashion on the internet	2.16	2.31	1.79	0.52
	Q3-10	Take pictures of your fashion to upload on the internet	1.96	2.09	1.64	0.45

## 6.4 Attitudes and Behavior of Food/Meals

We could not see the difference between the two samples. Though the students of Showa seem to have a little bit of interest in food, the Bunka students say they often upload their pictures on the internet..

			Total	Bunka	Showa	D
			(n=136)	(n=97)	(n=39)	
Food/ Meal (Attitu de and Behavi or)	Q4-1	Have interest in Food /Meals	3.57	3.54	3.66	-0.12
	Q4-2	Know trendy food and meals	2.63	2.58	2.76	-0.18
	Q4-3	Have a policy in Food/Meals	2.71	2.66	2.84	-0.19
	Q4-4	Take picture of Food /meals	2.87	2.89	2.82	0.07
	Q4-5	Want to take pictures of food/meals nice	2.46	2.47	2.42	0.05
	Q4-6	Upload your pictures of Food/meals on the internet	2.75	2.75	2.76	-0.01
	Q4-7	Take pictures of food/meals with consciousness of others	2.44	2.42	2.50	-0.08
	Q4-8	Want the pictures of food/meals to be seen	2.43	2.42	2.45	-0.03
	Q4-9	Take pictures of food/meals to upload to the internet	2.42	2.51	2.18	0.33
	Q4-10	Increased opportunity to upload after using Internet	2.49	2.58	2.26	0.32

# 6.5 Difference in Fashion and Food/Meals

Though the respondents have a strong policy in fashion, they do not upload pictures or take pictures for uploading compared to food/meals. We have found out that there is a significant difference in attitude and behavior between the two categories.

	Fashion (n=133)	Food (n=133)	D (n=133)	t	significance
Interest	3.75	3.57	0.18	2.81	* *
Knowledge	2.32	2.62	-0.31	-3.55	* *
Strong Policy	2.98	2.71	0.28	2.89	* *
Uploading Pictures	2.17	2.75	-0.59	-6.10	* *
Taking picture for uploading	1.96	2.41	-0.45	-4.57	* *

\* \*  $p < 0.01$

# 6. Findings and Implications

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## (1) Findings

▪ Even if there is interest or a strong policy toward fashion, no correlation between them. It is assumed that;

1) Fashion is always exposed to the public, so there is not so much needs to upload and show them. On the other hand, usually food/meals are consumed privately or within small groups. There still are needs for showing off.

2) It is difficult to take pictures of yourself, compared to food/meals.

## (2) Implications

1) We have to be careful in using uploaded pictures on the social media(e.g. Instagram) because there might be a bias.

2) We have to take more care in sampling and analysis when we deal with fashion using Picture Mining methods.

# Acknowledgment

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- ▶ This work was supported by JSPS KAKENHI Grant Number23653108.