Multivariate Analysis for the Questionnaire Investigation on the Needs at Yoshiwara Shopping Street in Fuji City

Kazuhiro TAKEYASU[1], Yuki HIGUCHI[2], Akane OKUBO[3], Daisuke SUZUKI[4]

[1]College of Business Administration, Tokoha University, Japan
Email: takeyasu@fj.tokoha-u.ac.jp
[2]Faculty of Business Administration, Setsunan University
Email: y-higuch@kjo.setsunan.ac.jp
[3]NIHON University Junior College, Japan
Email: okubo.akane@nihon-u.ac.jp
[4]Fujisan Area Management Company
Email: daisuke.suzuki@yoshiwara.net

Abstract

Shopping streets at local city in Japan became old and are generally declining. In this paper, we handle the area rebirth and/or regional revitalization of shopping streets. We focus on Fuji city in Japan. Four big festivals are held at Fuji city (two for Fuji Shopping Street Town and two for Yoshiwara Shopping Street Town). Many people visit these festivals including residents in those areas. Therefore a questionnaire investigation to the residents and visitors is conducted during these periods in order to clarify residents and visitors' needs for the shopping street, and utilize them to the plan building of the area rebirth and/or regional revitalization of shopping street. There is a big difference between Fuji Shopping Street Town and Yoshiwara Shopping Street Town. Therefore we focus Yoshiwara Shopping Street in this paper. These are analyzed by using Multiple Correspondence Analysis. These are utilized for constructing a much more effective and useful plan building. We have obtained fruitful results. The image of the surrounding area at this shopping street are classified into several groups and these suggest the way of rebirth plan of the shopping street including the way to gather visitors from other areas. To confirm the findings by utilizing the new consecutive visiting records would be the future works to be investigated.

Key Words: Fuji City, Area rebirth, Regional vitalization, Festival, Multiple Correspondence Analysis

1. Introduction

Shopping streets at local city in Japan are generally declining. It is because most of them were built in the so-called "High Growth Period (1954-1973)". Therefore they became old and area rebirth and/or regional revitalization are required everywhere.

There are many papers published concerning area rebirth or regional revitalization. Inoue (2017) has pointed out the importance of tourism promotion. Kotani (2017) developed the project of shutter art to Wakkanai Chuo shopping street in Hokkaido, Japan. Ohkubo (2017) has made a questionnaire research at Jigenji shopping street in Kagoshima Prefecture, Japan and analyzed the current condition and future issues.

In this paper, we handle the area rebirth and/or regional revitalization of shopping street. We focus on Fuji city in Japan. Fuji city is located in Shizuoka Prefecture. Mt. Fuji is very famous all around the world and we can see its beautiful scenery from Fuji city, which is at the foot of Mt. Fuji. There are two big shopping streets in Fuji city. One is Yoshiwara shopping street and another one is Fuji shopping street. They became old and building area rebirth and regional revitalization plan have started. Following investigation was conducted by the joint research group (Fuji Chamber of Commerce & Industry, Fujisan Area Management Company, Katsumata Maruyama

Architects, Kougakuin University and Tokoha University). The main project activities are as follows.

 A．Investigation on the assets which are not in active use

 B．Questionnaire Investigation to Entrepreneur

 C．Questionnaire Investigation to the residents and visitors

After that, area rebirth and regional revitalization plan were built.

In this paper, we handle above stated C.

 Four big festivals are held at Fuji city. Two big festivals are held at Yoshiwara Shopping Street Town and two big festivals at Fuji Shopping Street Town. At Yoshiwara Shopping Street Town, Yoshiwara Gion Festival is carried out during June and Yoshiwara Shukuba (post-town) Festival is held during October. On the other hand, Kinoene Summer Festival is conducted during August and Kinoene Autumn Festival is performed during October at Fuji Shopping Street Town. Many people visit these festivals including residents in that area.

 Therefore a questionnaire investigation of C is conducted during these periods. Finally, we have obtained 982 sheets (Yoshiwara Shopping Street Town: 448, Fuji Shopping Street Town: 534). Basic statistical analysis and Multiple Correspondence analysis are executed based on that.

 In this paper, a questionnaire investigation is executed in order to clarify residents and visitors' needs for the shopping street and utilize them to the plan building of the area rebirth and/or regional revitalization of shopping street. There is a big difference between Fuji Shopping Street Town and Yoshiwara Shopping Street Town. Therefore we focus on Yoshiwara Shopping Street in this paper. Such multivariate analysis as Multiple Correspondence Analysis is executed based on that.

 Some interesting and instructive results were obtained.

 The rest of the paper is organized as follows. Outline of questionnaire investigation is stated in section 2. In section 3, Multiple Correspondence Analysis is executed which is followed by the Remarks stated in section 4.

2. Outline and the Basic Statistical Results of the Questionnaire Research

2.1 Outline of the Questionnaire Research

 A questionnaire investigation to the residents and visitors is conducted during these periods in order to clarify residents and visitors' needs for the shopping street and utilize them to the plan building of the area rebirth and/or regional revitalization of shopping street. The outline of questionnaire research is as follows. Questionnaire sheet is attached in Appendix.

(1)	Scope of investigation	：	Residents and visitors who have visited four big festivals at Fuji city in Shizuoka Prefecture, Japan
(2)	Period	：	Yoshiwara Gion Festival: June 11,12/2016
			Yoshiwara Shukuba (post-town) Festival: October 9/2016
			Kinoene Summer Festival: August 6,7/2016
			Kinoene Autumn Festival: October 15,16/2016
(3)	Method	：	Local site, Dispatch sheet, Self writing
(4)	Collection	：	Number of distribution 1400
			Number of collection 982(collection rate 70.1%)
			Valid answer 982

2.2 Basic Statistical Results

 Now, we show the main summary results by single variable. We show the major parts such as the characteristics

of answerers (Sex, Age, Residence) and the summary results for the items used in Multiple Correspondence Analysis (Q2, Q3,Q4).

2.2.1 Characteristics of answers

(1) Sex (Q7)

Male 55.6%, Female 44.4%
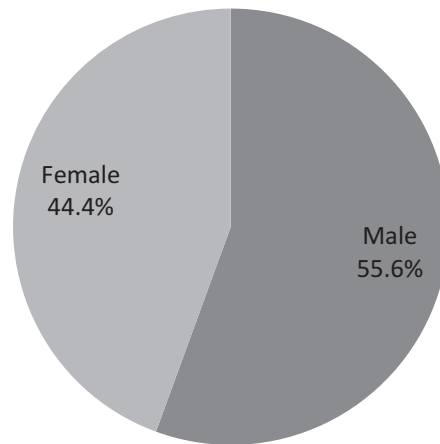
These are exhibited in Figure 1.

Figure 1   Sex (Q7)

(2) Age (Q8)

10th 10.9%, 20th 12.1%, 30th 19.0%, 40th 17.9%, 50th 13.4%, 60th 14.7%, More than 70 11.6%
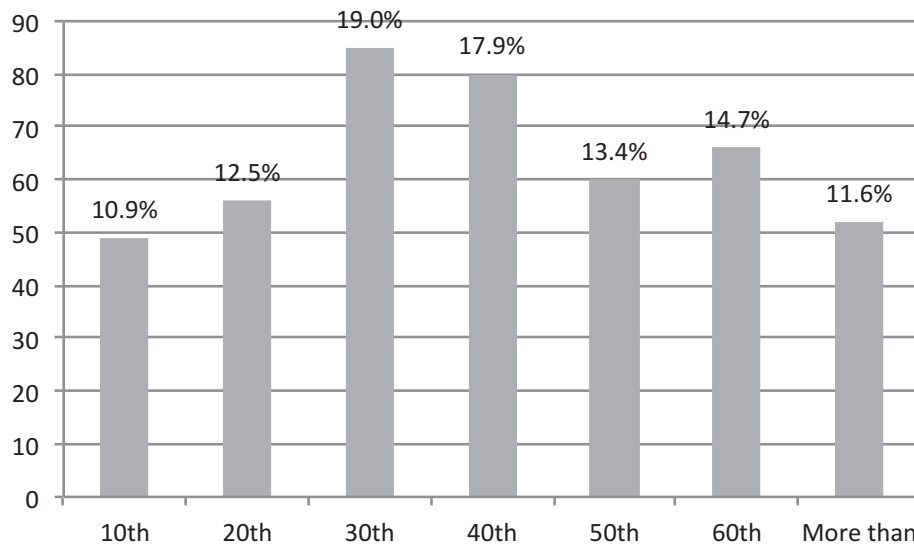
These are exhibited in Figure 2.

Figure 2   Age (Q8)

(3) Residence (Q9)

a. Fuji city 78.3%, b. Fujinomiya city 6.9%, c. Numazu city 4.5%, d. Mishima city 1.3%, e. Shizuoka city 2.9%, F. Else (in Shizuoka Prefecture) 2.5%, g. Outside of Shizuoka Prefecture 3.6%
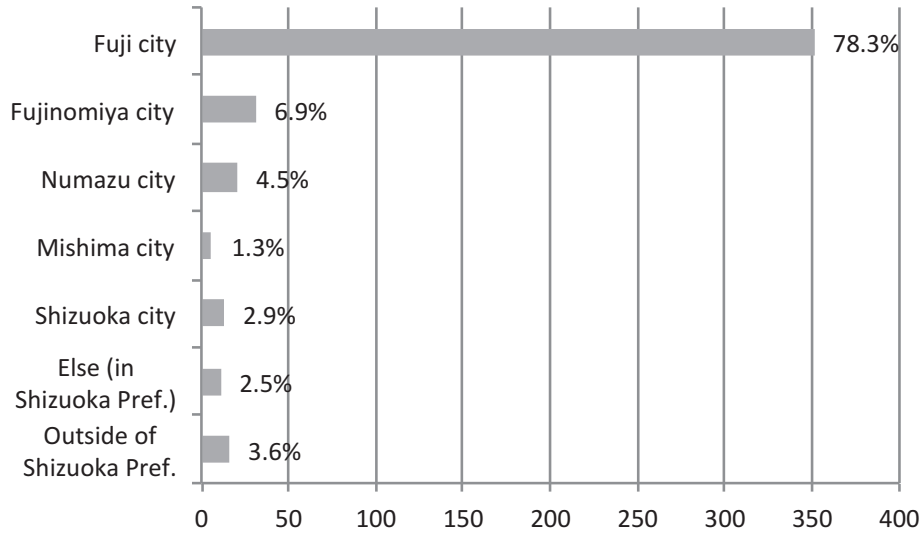
These are exhibited in Figure 3.

Figure 3　Residence (Q9)

2.2.2　Summary results for the items used in Multiple Correspondence Analysis

(1) How often do you come to this shopping street? (Q1)

Everyday 12.9%, More than 1 time a week 15.6%, More than 1 time a month 23.4%, More than 1 time a year 37.3%, First time 5.1%, Not filled in 5.6%

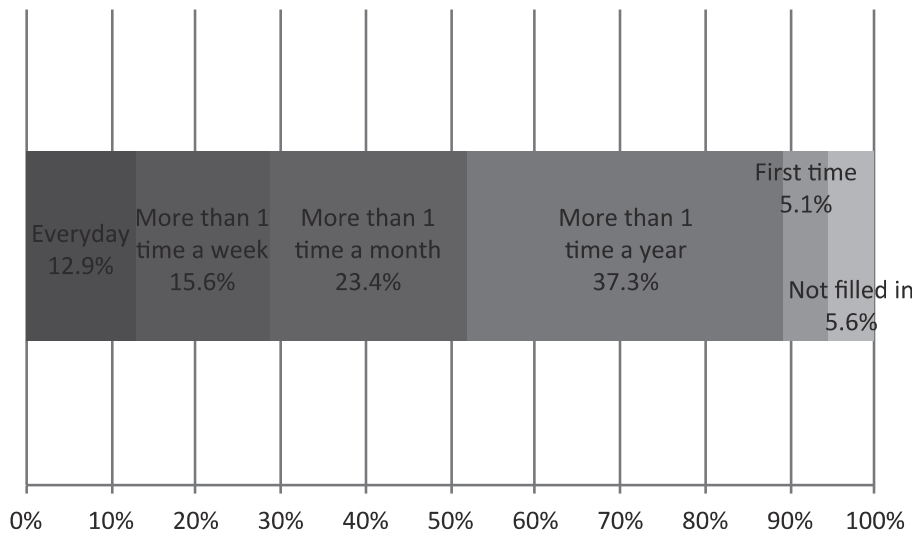These are exhibited in Figure 4.

Figure 4　How often do you come to this shopping street? (Q1)

(2) What is the purpose of visiting here? (Q2)

Shopping 20.7%, Eating and drinking 13.1%, Business 7.5%, Celebration, event 47.5%, Leisure, amusement 1.5%, miscellaneous 9.7%

These are exhibited in Figure 5.
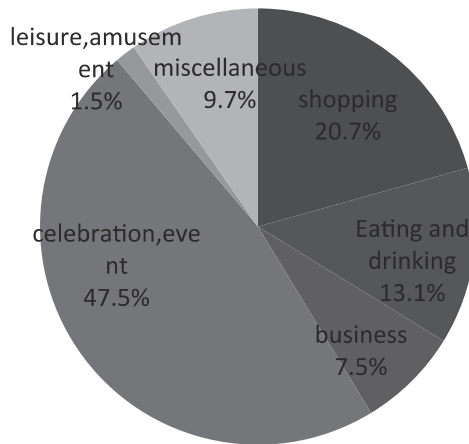
Figure 5   What is the purpose of visiting here? (Q2)

(3) How do you feel about the image of the surrounding area at this shopping street? (Q3)

Beautiful 51.9%, Ugly 48.1%, Of the united feeling there is 47.2%, Scattered 52.8%, Varied 40.0%, Featureless 60.0%, New 32.5%, Historic 67.5%, Full of nature 53.1%, Urban 46.9%, Cheerful 49.4%, Gloomy 50.6%, Individualistic 46.3%, Conventional 53.7%, Friendly 61.6%, Unfriendly 38.4%, Healed 54.2%, Stimulated 45.8%, Open 47.9%, exclusive 52.1%, Want to reside 45.1%, Do not want to reside 54.9%, Warm 62.6%, Aloof 37.4%, Fascinating 49.6%, Not fascinating 50.4%, Want to play 47.8%, Want to examine deliberately 52.2%, Lively 40.3%, Calm 59.7%, Atmosphere of urban 30.5%, Atmosphere of rural area 69.5%

These are exhibited in Figure 6.
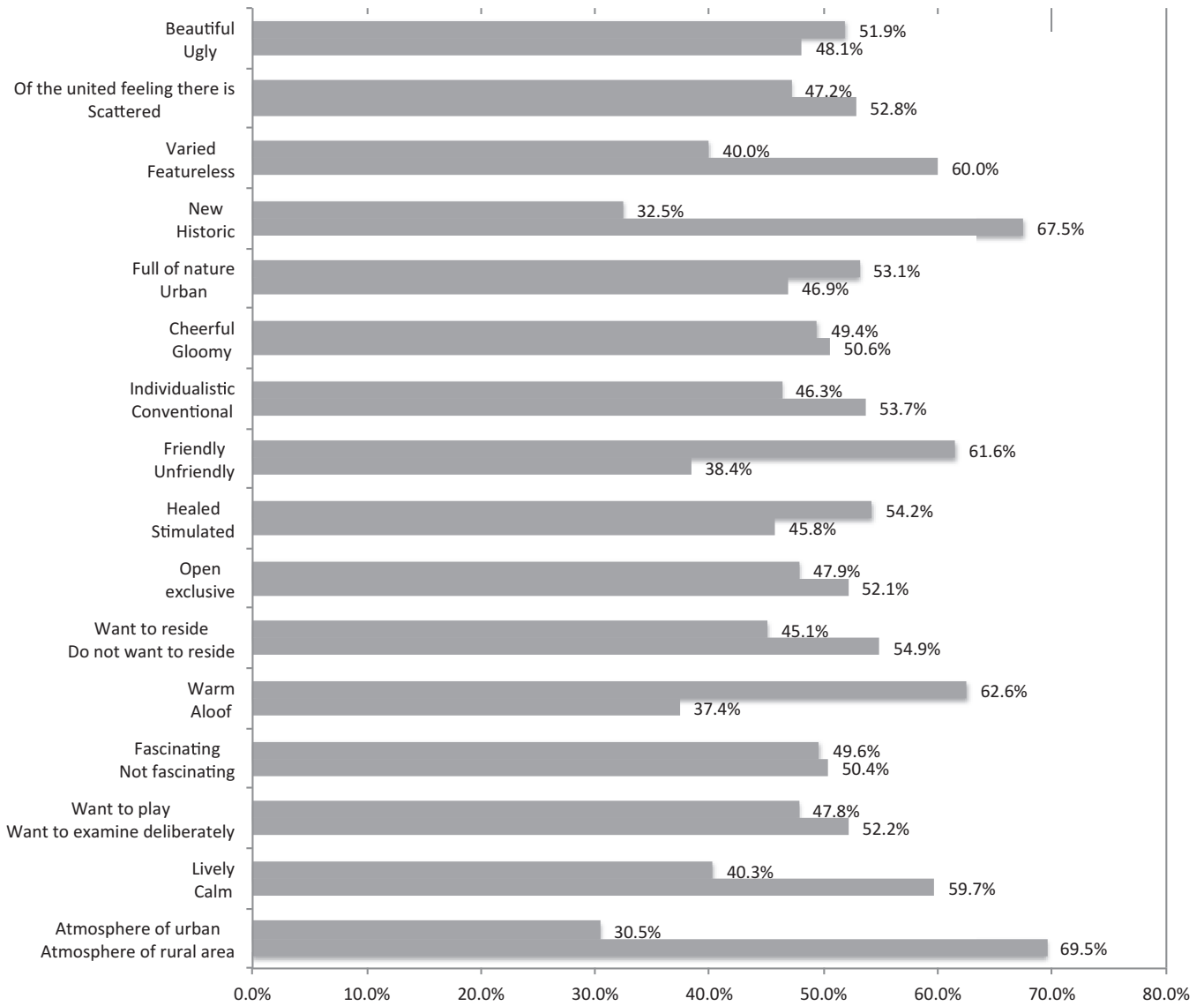
Figure 6 How do you feel about the image of the surrounding area at this shopping street? (Q3)

(4) There are many old buildings at the age of nearly 50 years. Do you think we can still use them? (Q4)

Can use it 38.6%, Cannot use it 33.9%, Have no idea 27.5%

These are exhibited in Figure 7.
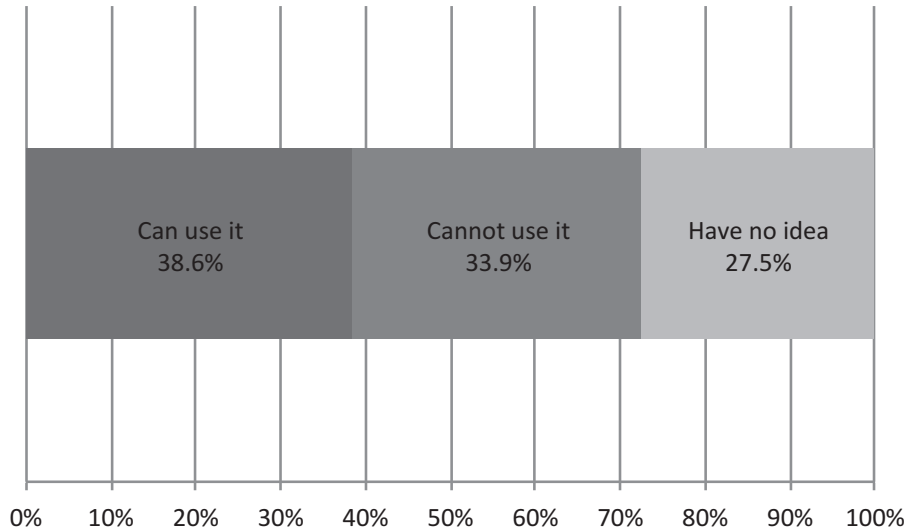
Figure 7 There are many old buildings at the age of nearly 50 years. Do you think we can still use them? (Q4)

3. Multiple Correspondence Analysis

Now, we execute the Multiple Correspondence Analysis. We made the following analysis.

Q3: "How do you feel about the image of the surrounding area at this shopping street?"
We can observe the following result from Table 1. From the data, Cronbach' α is 0.849 in dimension 1and 0.704 in dimension 2. Therefore it can be said that the data are reliable.

Table 1 Summary of the model

Dimension	Cronbach' α	Variance explained	
		Total (eigenvalue)	Inertia
1	0.849	4.899	0.306
2	0.704	2.943	0.184
Total		7.842	0.490
Average	.795a	3.921	0.245

a.Average of Cronbach' α is calculated based upon the average of eigenvalue.

Next, Discrimination Measurement for Q3 is exhibited in Figure 8.

Figure 8   Discrimination Measurement for Q3

Next, plot of link in categorical point for Q3 is exhibited in Figure 9.

Here following abbreviation is used.

➢ Y‐Fascinating：Think so
➢ N‐Fascinating：Do not think so
➢ E‐Fascinating：Else

Figure 9 Plot of link in categorical point for Q3

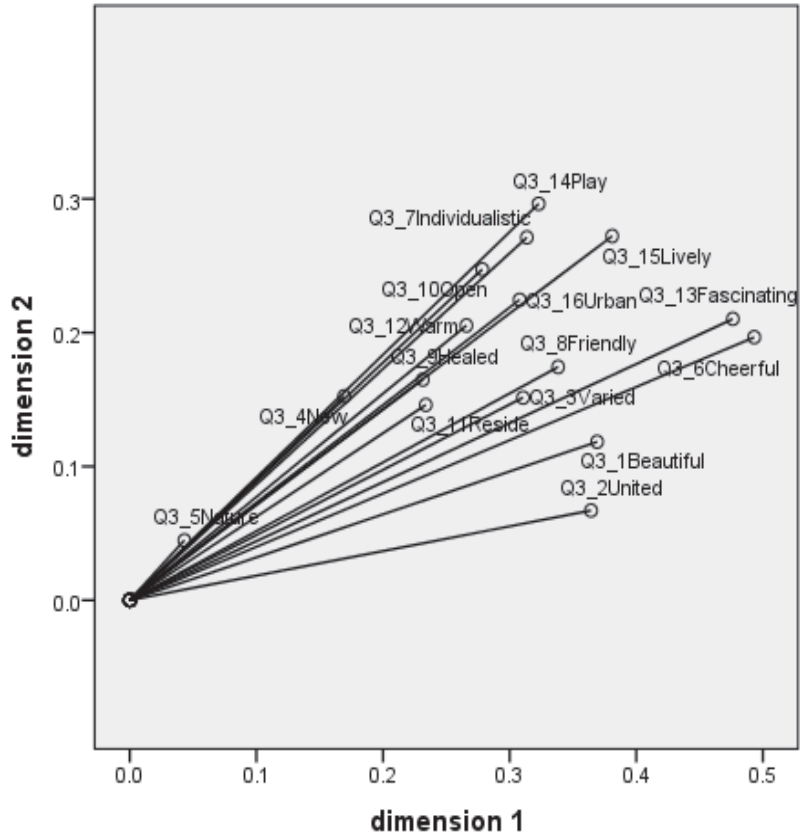From Figure 9, we can observe three big clusters. One is an affirmative group, and another one is a negative group and the last one is the else one. These are clearly divided.

We focus the affirmative group. There are following 5 clusters included.

➢ Left side: It is a single item group of "Y- Full of nature".

➢ Right upper: It is a single item group of "Y- Atmosphere of urban".

➢ Center Right lower: It consists of "Y-Cheerful", "Y-Beautiful" and "Y- Of the united feeling there is" which means "Sophisticated".

➢ Center: It consists of "Y-Warm", "Y- Friendly", and "Y-Want to reside", which means "Comfortable to live".

➢ Center Right upper: "Y-New", "Y-Varied", "Y-Open", "Y-Lively", "Y-Want to play", "Y-Fascinating", "Y-Individualistic", and "Y-Healed", which means "Exhilarating thrill".

As the center right upper and center right lower are major group parts, we focus these points under the cross relationship with Q2: "What is the purpose of visiting here?".

Q2: "What is the purpose of visiting here?"

Q3: "New", "Varied", "Open", "Lively", "Want to play", "Fascinating", "Individualistic", "Healed", "Y-Cheerful", "Y-Beautiful" and "Y- Of the united feeling there is"

We can observe the following result from Table 2. From the data, Cronbach'α is 0.786 in dimension 1and 0.546 in dimension 2. Therefore it can be said that the data are rather reliable.

Table 2   Summary of the model

Dimension	Cronbach' α	Variance explained	
		Total (eigenvalue)	Inertia
1	0.786	3.701	0.264
2	0.546	2.028	0.145
Total		5.729	0.409
Average	.701a	2.864	0.205

a.Average of Cronbach' α is calculated based upon the average of eigenvalue.

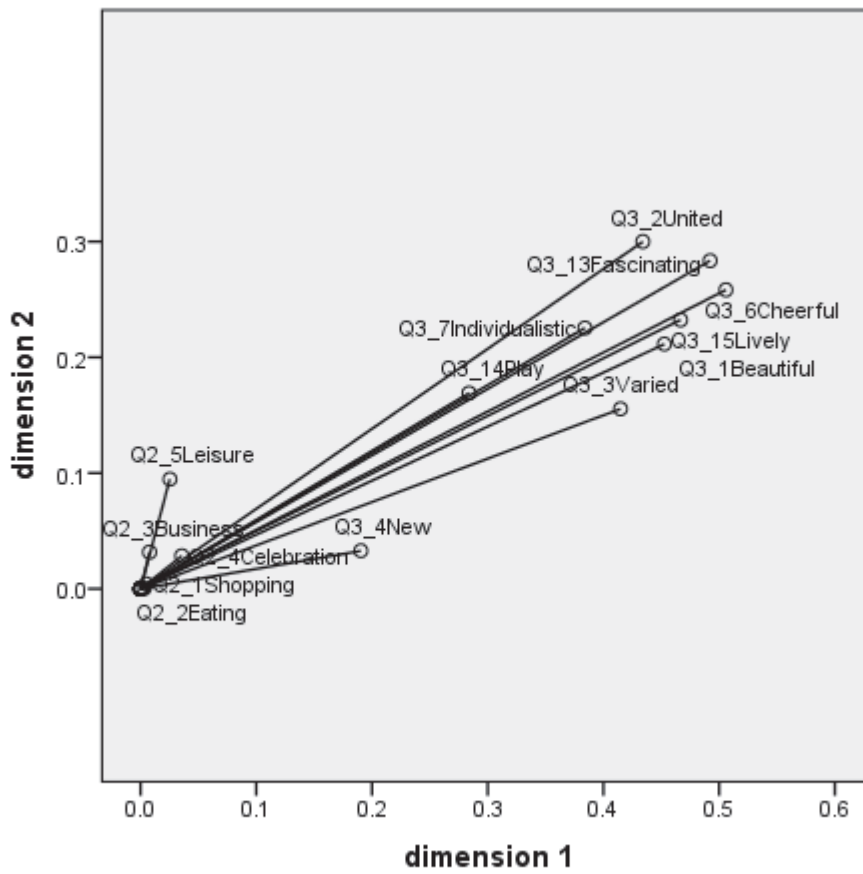Next, Discrimination Measurement for Q2 and Q3 is exhibited in Figure 10.

Figure 10   Discrimination Measurement for Q2 and Q3

Next, plot of link in categorical point for Q2 and Q3 is exhibited in Figure 11.
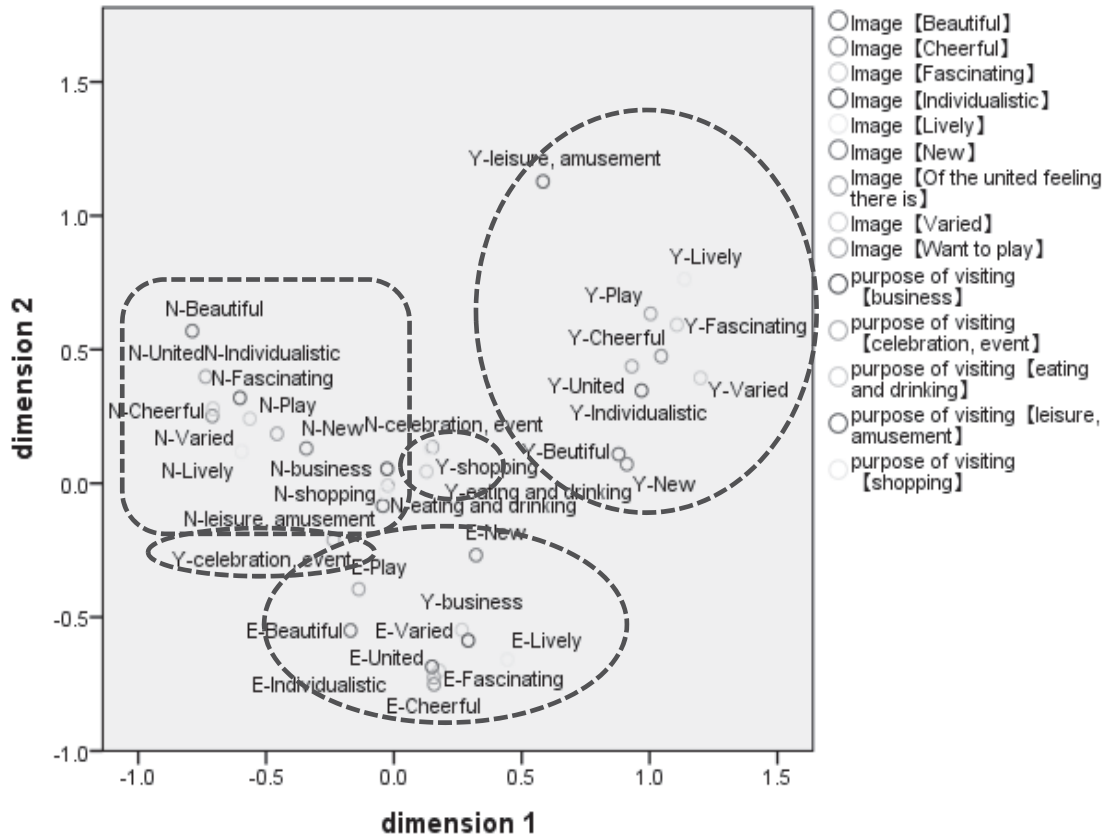The abbreviation is the same with above.

Figure 11　Plot of link in categorical point for Q2 and Q3

From Figure 11, we can observe the following five clusters.

➢ Left upper: Negative group

➢ Right Upper: "Y- Leisure, amusement", "Y-Lively", "Y-New", "Y-Fascinating", "Y-Want to play", "Y-Varied", "Y-Individualistic", "Y-Cheerful", "Y-Beautiful", "Y-Of the united feeling there is", which means "Positive vivace".

➢ Center: "Y-Shopping", "Y-Eating and drinking", which are the items of the purpose of visiting.

➢ Center Left: It is a single item group of "Y-Celebration, event".

➢ Lower Center: Else

4. Remarks

The Results for Multiple Correspondence Analysis are as follows.

From Figure 9, we can observe three big clusters. One is an affirmative group, and another one is a negative group and the last one is the else one. These are clearly divided.

We focus the affirmative group. There are following 5 clusters included.

Left side (A): It is a single item group of "Y- Full of nature".

Right upper (B): It is a single item group of "Y- Atmosphere of urban".

Center Right lower (C): It consists of "Y-Cheerful", "Y-Beautiful" and "Y- Of the united feeling there is" which means "Sophisticated".

Center (D): It consists of "Y-Warm", "Y- Friendly", and "Y-Want to reside", which means "Comfortable to live".

Center Right upper (E): "Y-New", "Y-Varied", "Y-Open", "Y-Lively", "Y-Want to play", "Y-Fascinating", "Y-Individualistic", and "Y-Healed", which means "Exhilarating thrill".

Cluster (A) is close to the Negative cluster which is in the left. Cluster (B) is far away from the Negative cluster and the Else cluster. Cluster (D) lies between cluster (A) and cluster (E), (C). It is somewhat similar to the results of the Bayesian Network Analysis we have done before.

From Figure 11, we can observe the following five clusters.

Left upper (F): Negative group

Right Upper (G): "Y- Leisure, amusement", "Y-Lively", "Y-New", "Y-Fascinating", "Y-Want to play", "Y-Varied", "Y- Individualistic", "Y-Cheerful", "Y-Beautiful", "Y-Of the united feeling there is", which means "Positive vivace".

Center (H): "Y-Shopping", "Y- Eating and drinking", which are the items of the purpose of visiting.

Center Left (I): It is a single item group of "Y- Celebration, event".

Lower Center (J): Else

Cluster (H) have both of the affirmative and negative items and is also close to the Negative cluster which is in the left. Cluster (I) is far away from the Affirmative cluster and is rather close to the Negative cluster and the Else cluster. It is somewhat similar to the results of the Bayesian Network Analysis we have done before.

In order to make the street town much more attractive, the above results should be taken into account.

5. Conclusion

Shopping streets at local city in Japan became old and are generally declining. In this paper, we handle the area rebirth and/or regional revitalization of shopping street. We focus on Fuji city in Japan. Four big festivals are held at Fuji city (two for Fuji Shopping Street Town and two for Yoshiwara Shopping Street Town). Many people visit these festivals including residents in that area. There is a big difference between Fuji Shopping Street Town and Yoshiwara Shopping Street Town. Therefore we focus Yoshiwara Shopping Street in this paper. A questionnaire investigation to the residents and visitors is conducted during these periods in order to clarify residents and visitors' needs for the shopping street and utilize them to the plan building of the area rebirth and/or regional revitalization of shopping street. These are analyzed by using Multiple Correspondence Analysis.

The Results for Multiple Correspondence Analysis are as follows.

Cluster (A) is close to the Negative cluster which is in the left. Cluster (B) is far away from the Negative cluster and the Else cluster. Cluster (D) lies between cluster (A) and cluster (E), (C).

Cluster (H) have both of the affirmative and negative items and is also close to the Negative cluster which is in the left. Cluster (I) is far away from the Affirmative cluster and is rather close to the Negative cluster and the Else cluster.

Thus, the image of the surrounding area at this shopping street are classified into several groups and these suggest the way of rebirth plan of the shopping street including the way to gather visitors from other areas. These are somewhat similar to the results of the Bayesian Network Analysis we have done before. In order to make the street town much more attractive, the above results should be taken into account.

These are utilized for constructing a much more effective and useful plan building.

Although it has a limitation that it is restricted in the number of research, we could obtain the fruitful results. To confirm the findings by utilizing the new consecutive visiting records would be the future works to be investigated.

References

[1] Inoue, Akiko(2017) "Changes in Local Communities Brought by Municipal Mergers：From the Viewpoint of

Tourism Promotion as the Main Industry", Bulletin of the Faculty of Regional Development Studies, Otemon Gakuin University, Vol.2, pp.1-32.

〔2〕 Kotani, Akihiro(2017)" The implementation report of the Machi-lab shutter art project", Bulletin of Wakkanai Hokusei Gakuen University, (17),207-218.

〔3〕 Ohkubo, Yukio(2017) "Current status and problems in Jigenji-dori shopping area : from a consumer questionnaire", Bulletin of Local Research, Kagoshima International University, Vol.44 no.2 p.1 -15.

APPENDIX

Questionnaire Sheet about the Image Around the Shopping Street

1. How often do you come to this shopping street?

a. Everyday   b. (   ) times a week   c. (   ) times a month   d. (   ) times a year

e. miscellaneous (   )

2. What is the purpose of visiting here? (Plural answers allowed)

   a. shopping   b. eating and drinking   c. business   d. celebration, event   e. leisure, amusement

   f. miscellaneous (   )

3. How do you feel about the image of the surrounding area at this shopping street?

Select the position

Beautiful	·	·	·	·	·	Ugly
Of the united feeling there is	·	·	·	·	·	Scattered
Varied	·	·	·	·	·	Featureless
New	·	·	·	·	·	Historic
Full of nature	·	·	·	·	·	Urban
Cheerful	·	·	·	·	·	Gloomy
Individualistic	·	·	·	·	·	Conventional
Friendly	·	·	·	·	·	Unfriendly
Healed	·	·	·	·	·	Stimulated
Open	·	·	·	·	·	exclusive
Want to reside	·	·	·	·	·	Do not want to reside
Warm	·	·	·	·	·	Aloof
Fascinating	·	·	·	·	·	Not fascinating
Want to play	·	·	·	·	·	Want to examine deliberately
Lively	·	·	·	·	·	Calm
Atmosphere of urban	·	·	·	·	·	Atmosphere of rural area

4. There are many old building at the age of nearly 50 years. Do you think we can still use them?

a. Can use it   b. Cannot use it   c. Have no idea

5. Is there any functions or facilities that will be useful?

```
```

6. Comments

```
```

7. Sex

a. Male   b. Female

8. Age

   a.10th   b.20th   c.30th   d.40th   e.50th   f.60th   g. More than70

9. Residence

   a. Fuji City   b. Fujinomiya City   c. Numazu City   d. Mishima City   e. Shizuoka City   f. Miscellaneous in Shizuoka Prefecture

   g. Outside of Shizuoka Prefecture 〔　　　　　　　　　　　　　　　　〕