

# A study of influences aimed at invigorating local communities by establishing a shopping mall in Miyashiro Town

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## Abstract

*This study focuses on how local communities in the town of Miyashiro in Saitama Prefecture can be invigorated. In the previous study, a total of seven factors for invigorating the local communities in Miyashiro were derived from the results of a questionnaire survey. In addition, useful factors for invigorating the local communities in Miyashiro were examined by hypothesis testing. From this examination, the following two suggestions were made, (1) Creation of partnerships within Miyashiro Town for area redevelopment, (2) Creation of partnerships with affiliate bodies. In this study, establishing a shopping mall at Miyashiro is the focus. The purpose of this study is to discern the factors and influences required to invigorate these local communities by establishing the shopping mall. For this study, a questionnaire survey was sent to the members of Miyashiro's Chamber of Commerce and Industry. Based on the results of this questionnaire, four factors for invigorating local communities in Miyashiro are derived by factor analysis. Moreover, the influencers for establishing the shopping mall were derived from the results of this hypothesis testing.*

## Keywords

*invigorating local communities, establishing a shopping mall, questionnaire survey, factor analysis, hypothesis testing*

## 1. Introduction

In Japan, there are several problems associated with an aging population. One of these is depopulation in local communities. In 2018, 817 municipalities (47.5 %) were in depopulated areas [Ministry of Internal Affairs and Communications, 2018]. The small municipalities of large city suburbs tend to be depopulated areas. In these areas, the problem remains of how to invigorate the local communities. This study focuses on invigorating local communities in the town of Miyashiro in Saitama Prefecture. In the previous study, factors for invigorating the local communities in Miyashiro were derived from the analysis of a questionnaire survey. This questionnaire survey was prescribed to members of the town's Chamber of Commerce and Industry (209, valid responses), and undergraduate students who attend college in Miyashiro (272 valid responses). From the results of this questionnaire survey, a total of seven factors (four factors influenced by members of the town's Chamber of Commerce and Industry and three factors influenced by the undergraduate students attending the college in Miyashiro) for invigorating the local communities in Miyashiro were derived by a principal component analysis. In addition, useful factors for invigorating the local communities in Miyashiro were examined by hypothesis testing. From this examination, the following two matters were suggested.

- Creation of partnerships within Miyashiro Town for area redevelopment
- Creation of partnerships with affiliate bodies

Based on the findings of the previous studies, the focus of this study is to establish a shopping mall in Miyashiro Town.

The purpose of this study is to discern the factors and influences required to invigorate the local communities by establishing a shopping mall. For this study, a new questionnaire survey is used. Moreover, the influences for establishing a shopping mall are derived from the results of this hypothesis testing.

In section 2, the results of the questionnaire survey are outlined. In section 3, the survey and results are shown. In section 4, the factors and influences required to invigorate the local communities by establishing a shopping mall are discussed.

## 2. Outline of the questionnaire survey

### 2.1 Elements of the questionnaire survey

The purpose of the questionnaire survey was to discover the factors necessary to invigorate local communities by establishing a shopping mall in Miyashiro for members of the Chamber of Commerce and Industry of Miyashiro Town (hereinafter MT) and a number of undergraduate students (hereinafter ST). These undergraduate students attend a college in Miyashiro. Many members of the Chamber of Commerce and Industry of Miyashiro Town consider that the opinions of young people affect invigorating local communities in Miyashiro. In this survey, three questions were posed. The questions are shown further down in this section. The remaining questions are shown in the appendix.

- Question No. 2 (1): "Do you think that Miyashiro Town invigorates its local communities? Please select one of the following:"
  - (1) Agree
  - (2) Disagree
- Question No. 2 (2): "Do you think that Miyashiro Town practices effective utilization of land? Please select one of the following:"
  - (1) Agree
  - (2) Disagree

- Question No. 2 (4): “Do you think that Miyashiro Town must establish a shopping mall? Please select one of the following:”
  - (1) Agree
  - (2) Disagree
- Question No. 3: “How do you feel about the following 22 items? For each statement, please select a response from the options that are listed (i.e., strongly agree, agree, etc.):”
  - (1) Do you feel there is a need for a tourist attraction other than Tobu Zoo in Miyashiro?
  - (2) Do you feel there is a need to maintain a tourist information center in Miyashiro?
  - (3) Do you feel there is a need to publish/improve tourist pamphlets in Miyashiro?
  - (4) Do you feel there is a need for morning markets and direct-sales shops in Miyashiro?
  - (5) Do you feel there is a need for a tourist attraction along with Tobu Zoo?
  - (6) Do you feel there is a need to introduce shops of the principal products of Miyashiro Town?
  - (7) Do you feel there is a need to renovate the shopping area of Miyashiro Town?
  - (8) Do you feel there is a need for a shopping mall that deals with the principal products of Miyashiro Town?
  - (9) Do you feel there is a need to develop new principal products of Miyashiro?
  - (10) Do you feel there is a need to concentrate on the local shops of Miyashiro within a shopping mall?
  - (11) Do you feel there is a need for a space for recreation for residents within a shopping mall in Miyashiro?
  - (12) Do you feel there is a need for medical facilities within a shopping mall in Miyashiro?
  - (13) Do you feel there is a need to hold festivals of Miyashiro Town within a shopping mall?
  - (14) Do you feel there is a need for a food court and restaurants (not offering alcohol) within a shopping mall in Miyashiro?
  - (15) Do you feel there is a need for public houses within a shopping mall in Miyashiro?
  - (16) Do you feel there is a need for amusement facilities within a shopping mall in Miyashiro?
  - (17) Do you feel there is a need for automated teller machines within a shopping mall in Miyashiro?
  - (18) Do you feel there is a need for public facilities within a shopping mall in Miyashiro?
  - (19) Do you feel there is a need to constitute the landscape of Miyashiro Town?
  - (20) Do you feel there is a need to repair the roads and the sidewalks of Miyashiro Town?
  - (21) Do you feel there is a need for a countermeasure for noise and vibration of Miyashiro Town?
  - (22) Do you feel there is a need to adopt a barrier-free design in Miyashiro Town?

For each question above, choose the answer that best describes your response:

- (1) Strongly agree
- (2) Agree
- (3) Disagree
- (4) Strongly disagree

### 2.2 Survey methods

In this section, the survey methods are described. The MT survey was conducted from March 5 to April 30, 2019 (approximately two months). The ST survey was conducted from April 8 to April 22, 2019 (two weeks). The surveys were conducted via post (MT) and by manual dissemination (ST).

### 3. Results of the questionnaire survey

In this section, the results of the questionnaire survey are provided. 209 survey responses were received by post (response rate: 38.2 %) from the MT participants. Of these, 180 were valid responses (valid response rate: 33.0 %). 128 questionnaires were collected after being manually disseminated (response rate: 100.0 %) from the ST participants. Of these, 115 were valid responses (valid response rate: 89.8 %). Figure 1 shows the gender composition of the MT respondents (more males than females). The occupation categories of the MT sample are shown in Figure 2. The major occupation categories of MT, as shown in Figure 2, are “Services” (25.8 %), “Retail” (17.5 %), “Building” (15.2 %), and “Manufacturing” (11.1 %). Next, the number of working years of the MT sample

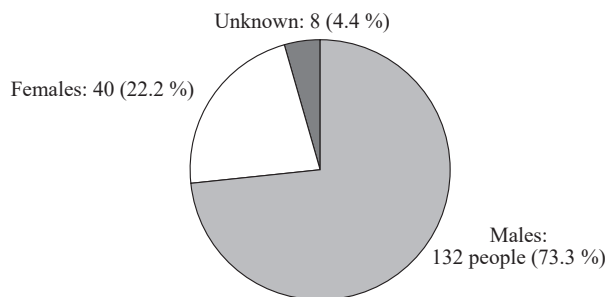


Figure 1: Sex of respondents (MT)

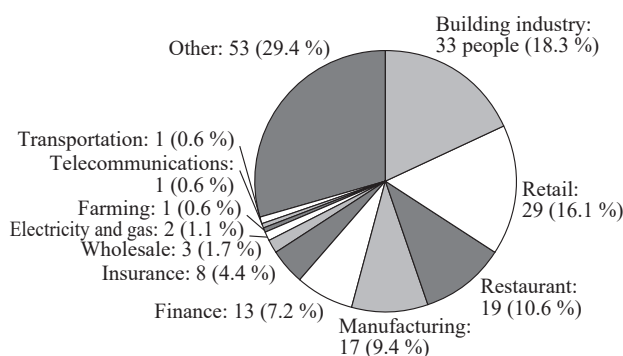


Figure 2: Occupation categories of respondents (MT)

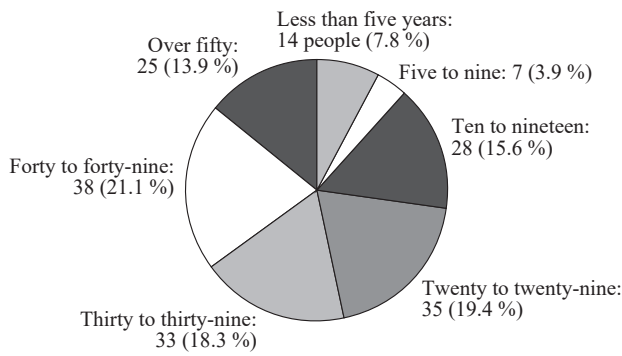


Figure 3: Respondents' number of years working (MT)

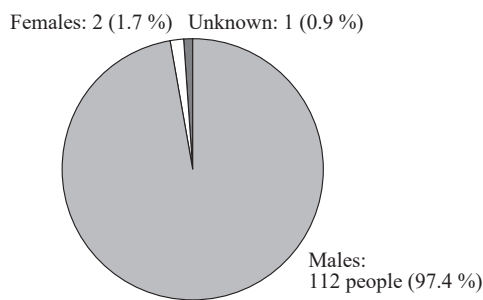


Figure 4: Sex of respondents (ST)

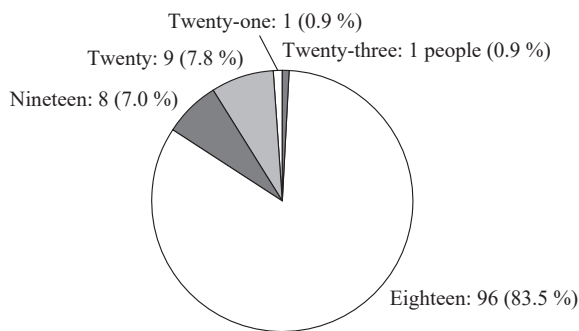


Figure 5: Age of respondents (ST)

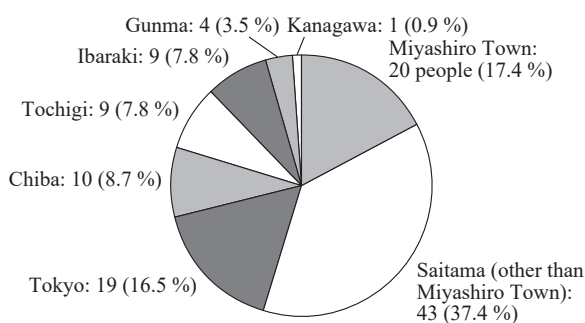


Figure 6: Residential area of respondents (ST)

is shown in Figure 3. The majority of the respondents had been working for more than ten years. Figure 4 shows the gender composition of the ST respondents (more shows the gender composition of the ST respondents males than females). The ages of the ST sample are shown in Figure 5. The majority of

the respondents were in their college sophomore year (aged nineteen years old). The residential area of the ST sample is shown in Figure 6. The majority of the respondents were living in Saitama prefecture.

#### 4. Factors and influences required to invigorate local communities by establishing a shopping mall in Miyashiro Town

In this section, first, the analytical results of the questionnaire survey are shown. Table 1 illustrates the results of the question on invigorating Miyashiro's local communities (Question 2-1). As shown in Table 1, many respondents felt that there is no dynamic local community in Miyashiro. Next, Table 2 illustrates the results of the question of practicing effective utilization of land in Miyashiro (Question 2-2). The ratio of MT respondents who selected "Disagree" was 96.1 % (173 people), and 77.4 % (89 people) by the ST respondents. Many of the respondents selected "Disagree" about the question of practicing effective utilization of land. Next, Table 3 illustrates the results of the question of establishing a shopping mall in Miyashiro. The ratio of MT respondents who selected "Agree" was 51.1 % (92 people), and the ST respondents, was 64.3 % (74 people). Therefore, based on the responses on establishing the shopping mall in Miyashiro, the people's opinion was split down the middle. Then, the factors and influences required to invigorate

Table 1: Results for the question on invigorating local communities in Miyashiro town (Question 2-1)

	MT	ST
Agree	10.0 % (18 people)	23.5 % (27 people)
Disagree	90.0 % (162 people)	76.5 % (88 people)

Table 2: Results for the question on practicing effective utilization of land in Miyashiro town (Question 2-2)

	MT	ST
Agree	3.9 % (7 people)	22.6 % (26 people)
Disagree	96.1 % (173 people)	77.4 % (89 people)

Table 3: The result for Question on inviting shopping mall of Miyashiro town (Question 2-4)

	MT	ST
Agree	51.1 % (92 people)	64.3 % (74 people)
Disagree	48.9 % (88 people)	35.7 % (41 people)

Table 4: Data converted to numerical data

Results	Numerical data
Strongly agree	4
Agree	3
Disagree	2
Strongly disagree	1

local communities by establishing a shopping mall in Miyashiro Town were examined using the results of the questionnaire survey from the MT and ST samples (Question 3; 22 items). First, the results of each answer were converted to numerical data, as shown in Table 4. If the respondent selected “Strongly agree” in relation to an item of a question, the result was set to “4.” Similarly, if the respondent selected “Strongly disagree” in relation to an item of a question, the result of this question was set to “1.” In addition, factors required to invigorate local communities by establishing a shopping mall in Miyashiro Town are analyzed by a factor analysis using the numerical data. For this analysis, IBM SPSS ver. 24.0 was used.

**4.1 Analytical results of the MT sample**

In this section, the results of the factor analysis (method: maximum likelihood, varimax) of the MT sample are shown. The results and the scree plot obtained from the factor analysis are illustrated in Table 5 (part of results) and Figure 7. From these results, four factors were derived from the analysis in this study.

**4.2 Analytical results of the ST sample**

In this section, the results of the factor analysis (method: maximum likelihood, varimax) of the ST sample are shown. The results and the scree plot obtained from the factor analysis are illustrated in Table 6 (part of results) and Figure 8. Based

Table 5: A part of results of the factor analysis (MT)

Factors	Eigenvalue	Variance	Cumulative contribution ratio
1	6.813	0.310	0.310
2	2.432	0.111	0.420
3	1.415	0.064	0.485
4	1.306	0.059	0.544
5	1.022	0.046	0.590
6	1.015	0.046	0.636
		.	
		.	
		.	
22	0.174	0.008	1.000

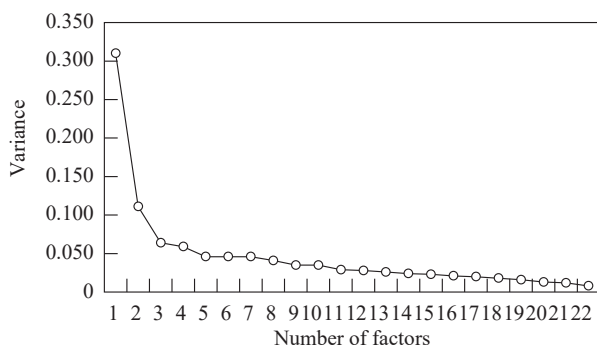


Figure 7: Scree plot obtained from the factor analysis (MT)

Table 6: A part of results of the factor analysis (ST)

Factors	Eigenvalue	Variance	Cumulative contribution ratio
1	8.336	0.379	0.379
2	1.894	0.086	0.465
3	1.547	0.070	0.535
4	1.226	0.056	0.591
5	1.028	0.047	0.638
6	0.958	0.044	0.681
		.	
		.	
		.	
22	0.164	0.007	1.000

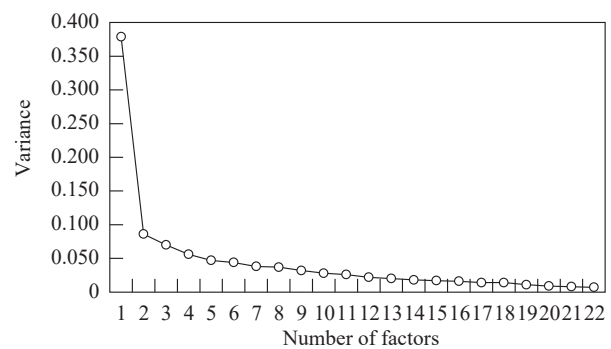


Figure 8: Scree plot obtained from the factor analysis (ST)

on these results, five factors were derived from this analysis in this study.

**4.3 Naming the derived factors**

In this section, the factors derived from the factor analysis are named. First, the four factors derived from the MT sample are named. The result of the factor score coefficient matrix from the MT sample is shown in Table 7. The questions that factor 1 influence are number (20), (21), and (22). The keywords for this question set are “repair load,” “noise,” among others. Thus, the environment of Miyashiro Town is the consideration. Therefore, factor 1 is named “Environmental improvement.” Question numbers which factor 2 influences are number (8), (9), (6), (10), (4), and (19). The keywords for this question set are “principal product,” “direct-sales shops,” among others. Thus, the principal product produced in Miyashiro Town is a consideration. However, the values of the factor score are negative. Therefore, factor 2 is named “No principal product.” The question numbers which factor 3 influences are number (16), (14), (11), (17), (13), (18), (15), (12) and (7). The keyword of this question set is “within the shopping mall.” Thus, the form of the shopping mall is a consideration. Therefore, factor 3 is named “Shopping mall.” The question numbers that factor 4 influences are numbers (2), (3), (1), and (5). The keywords of this question set are “attraction” and “tourist.” Thus, tourism is a consideration. Therefore, factor 4

Table 7: The result of the factor score coefficient matrix (MT)

Question No.	Factors			
	1	2	3	4
(20)	0.606	-0.097	0.322	0.171
(21)	0.518	-0.128	0.045	-0.022
(22)	0.307	-0.071	0.094	0.038
(8)	0.086	-0.731	0.310	0.234
(9)	0.156	-0.661	0.082	0.227
(6)	0.144	-0.634	0.143	0.368
(10)	0.098	-0.491	0.455	0.184
(4)	0.172	-0.419	0.212	0.179
(19)	0.331	-0.371	0.055	0.114
(16)	0.120	0.045	0.642	-0.005
(14)	0.356	-0.137	0.633	0.119
(11)	0.050	-0.231	0.575	0.039
(17)	0.373	0.042	0.564	-0.014
(13)	0.107	-0.231	0.545	0.084
(18)	0.148	-0.098	0.543	0.244
(15)	-0.009	-0.211	0.501	0.194
(12)	0.045	-0.139	0.485	0.030
(7)	0.265	-0.232	0.453	0.211
(2)	0.079	-0.241	0.099	0.890
(3)	0.026	-0.293	0.137	0.778
(1)	0.034	-0.212	0.061	0.723
(5)	0.318	-0.202	0.277	0.485

Table 8: The result of the factor score coefficient matrix (ST)

Question No.	Factors				
	1	2	3	4	5
(16)	0.592	0.012	-0.019	0.038	0.072
(15)	0.461	-0.198	-0.206	-0.190	0.407
(14)	0.383	-0.380	-0.069	-0.192	0.373
(17)	0.024	-0.919	-0.160	-0.332	0.192
(21)	0.058	0.027	-0.855	-0.108	0.239
(20)	0.113	-0.343	-0.565	-0.185	0.082
(11)	0.024	-0.166	-0.006	-0.748	0.331
(22)	-0.033	-0.138	-0.389	-0.678	0.038
(12)	0.151	-0.306	-0.098	-0.604	0.230
(19)	-0.183	-0.273	-0.231	-0.583	0.186
(5)	0.330	-0.005	-0.148	-0.543	0.265
(6)	0.110	0.001	0.037	-0.522	0.440
(9)	-0.035	0.001	-0.166	-0.065	0.784
(2)	0.168	-0.004	-0.011	-0.236	0.740
(8)	0.075	-0.157	-0.175	-0.194	0.645
(3)	0.168	-0.223	-0.074	-0.286	0.610
(1)	0.157	-0.051	0.029	-0.349	0.588
(7)	0.163	-0.167	-0.193	-0.038	0.564
(13)	0.080	-0.045	-0.102	-0.436	0.509
(4)	0.126	-0.167	-0.169	-0.329	0.502
(10)	-0.054	-0.161	0.077	-0.412	0.473
(18)	0.252	-0.151	-0.225	-0.278	0.463

is named “Tourism.”

Next, the derived five factors from the ST sample are named. The result of the factor score coefficient matrix of ST is shown in Table 8. The questions that factor 1 influences are number (16), (15), and (14). The keywords of this question set are “amusement,” “within the shopping mall,” and among others. Thus, the form of the shopping mall is a consideration for the ST sample. Therefore, factor 1 is named “Amusement facilities within the shopping mall”. The question number that factor 2 influences is number (17). The keywords of this question are “auto teller machines” and “within the shopping mall.” Thus, the form of the shopping mall is a consideration for the ST sample. However, the values of the factor score are negative. Therefore, factor 2 is named “No auto teller machines within

the shopping mall.” The question numbers that factor 3 influences are number (21) and (20). The keywords of this question set are “noise,” “load,” among others. Thus, the environment is a consideration for the ST sample. However, the values of the factor score are negative. Therefore, factor 3 is named “No environmental improvement.” The question numbers which factor 4 influences are number (11), (22), (12), (19), (5), and (6). The keywords of this question set are “space of recreation,” “barrier-free,” “landscape,” among others. Thus, the form of the regional environment is a consideration for the ST sample. However, the values of the factor score are negative. Therefore, factor 4 is named “No regional environment.” The question numbers which factor 5 influences are number (9), (2), (8), (3), (1), (7), (13), (4), (10) and (8). The keywords of this question

Table 9: Named factors

	Named	
	MT	ST
Factor 1	Environmental improvement	Amusement facilities within shopping mall
Factor 2	No principal product	No auto teller machines within shopping mall
Factor 3	Shopping mall	No environmental improvement
Factor 4	Tourism	No regional environment
Factor 5	–	Tourism

set are “principal product,” “tourist,” “festival,” among others. Thus, tourism in Miyashiro is a consideration for the ST sample. Therefore, factor 5 is named “Tourism.” Table 9 shows the named factors. MT places importance on “Environmental importance” of Factor 1, ST places importance on “Amusement of facilities within the shopping mall” of Factor 1 in this questionnaire survey. Thus, there is a difference of consideration between MT and ST about invigorating local communities by establishing a shopping mall in Miyashiro Town in this questionnaire survey. In addition, the higher rank of derived factors of ST influences the establishment of the shopping mall. However, those of MT do not influence the establishment of a shopping mall. In this study, the primary focus is, Factor 1 of “MT”.

**4.4 Examination of influences on Factor 1 of MT**

This section focusses only on the derived factors of MT.” Especially, the influences on factor 1 of MT are examined. Because, derived Factor 1 of MT does not influence the establishment of a shopping mall. The results of factor analysis lead the factor score of each answer. The scatter diagram of the relation between Factor 1 and Factor 2 (higher rank of derived factors of MT) is illustrated in Figure 9 by using the factor score. There is no clear indication of the relation between Factor 1 and Factor 2. Then, the responses of which factor scores of Factor 1 is more than 0 (77 people) are picked up. Table 10 illustrates the relationship between the number of years work-

ing and the factor scores of Factor 1. If the factor score of an answer is bigger than 0, it means that the answer is considered positive to the factor. As shown in Table 10, the ratio of the responses whose numbers of years working is “forty to forty-nine” and “over fifty” are more than 50 %.Therefore, the longer the duration of MT work, the higher are the responses (ratings) of MT considerations for with respect to the environmental improvement in Miyashiro (Factor 1) as per this questionnaire survey.

**4.5 Examination of influences on another factor of MT**

This section focusses only on the derived factors of MT. In addition, answers to retail (29 people) and restaurant (19 people) related questions are addressed in connection with the shopping mall (Factor 3). Figure 10 illustrates the scatter diagram of the relationship between Factor 1 and Factor 3. In this figure, the triangle symbols represent the factor score of answers for retail. The quadrangle symbols represent the factor score of answers for restaurants. The factor scores of answers other than these two are represented by the cruciform. As shown in Figure 10, the number of responses related to retail, where the factors score of Factor 3 is bigger than 0 are seventeen people (58.6 %). Therefore, many of responses concerning retail consider establishing a shopping mall in Miyashiro a positive. The numbers of responses concerning restaurants where the factor score of Factor 3 is more than 0 are four people (21.1 %). Therefore, many of the responses concerning restaurants

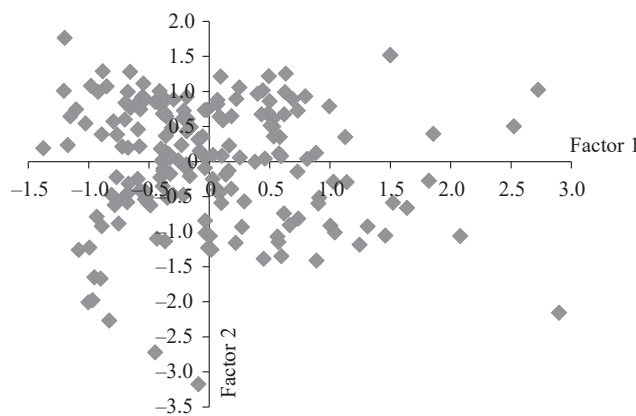


Figure 9: Scatter diagram of the relation between Factor 1 and Factor 2 for MT

Table 10: The relationship between number of years working and factor score of Factor 1

Number of years working	Factor score of Factor 1 > 0	Answers	Ratio
Less than five years	5	14	35.7 %
Five to nine	0	7	0.0 %
Ten to nineteen	10	28	35.7 %
Twenty to twenty-nine	16	35	45.7 %
Thirty to thirty-nine	12	33	36.4 %
Forty to forty-nine	19	38	50.0 %
Over fifty	15	25	60.0 %

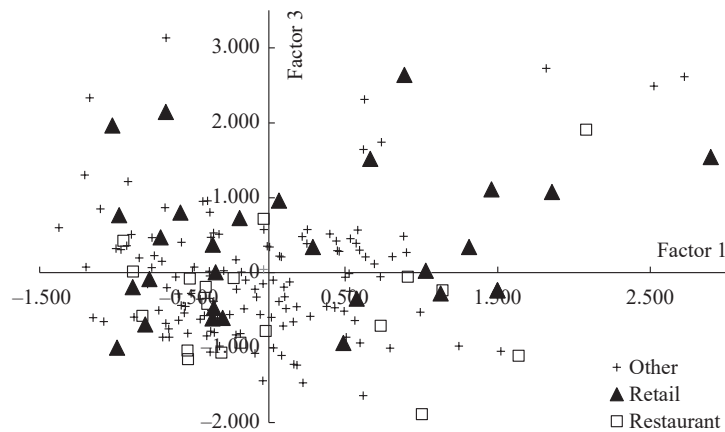


Figure 10: Scatter diagram of the relation between Factor 1 and Factor 3 for MT

feel cynical about establishing a shopping mall in Miyashiro. Thus, there are different considerations while establishing a shopping mall in Miyashiro based on the responses concerning retail and that of restaurants.

## 5. Conclusion

The purpose of this study was to discern the factors and influences required to invigorate these local communities by establishing a shopping mall. A questionnaire survey on invigorating local communities by establishing a shopping mall in Miyashiro was conducted. Based on the results of this survey, the factors and influences for invigorating local communities by establishing a shopping mall in Miyashiro Town were derived using factor analysis. The items in the survey were created to discover indicators for usefully invigorating local communities in Miyashiro. These items consisted of three questions. The total number of the responses collected was 209 (MT) and 128 (ST). A total of 180 (MT) and 115 (ST) responses were regarded as being valid, and the results of the questionnaire survey are shown by using this data. The factors and influences invigorating local communities by establishing a shopping mall in Miyashiro were discovered through a factor analysis using the results from question 3. Based on these results, four factors in the MT sample, and five factors in the ST sample were derived from this analysis. Each factor is named and shown in Table 9. The influences on derived Factor 1 and Factor 3 of MT are examined by using the factor score of the responses. From these examinations are derived the following three considerations, to invigorate local communities by establishing a shopping mall in Miyashiro.

- The longer the duration of MT work, the higher are the responses (ratings) of MT consideration of the environmental improvement in Miyashiro
- Many of the responses concerning retail believe that establishing a shopping mall in Miyashiro is a positive move.
- Many of the responses concerning restaurants believe that

establishing a shopping mall in Miyashiro is a negative move.

A future task would be to suggest detailed means of invigorating the local communities in Miyashiro.

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## Appendix

Other questions posed in this survey are shown below.

- Question No.1: “Please answer the following five points:”
  - (1) Sex
  - (2) Age group
  - (3) Occupation
  - (4) Number of working years
  - (5) Home
- Question No.2: “How do you feel about the following seven items? For each statement, please select a response from the options that are listed (agree or disagree):”
  - (3) “Do you think there is a need to improve the west exit of Tobu Zoo station? Please select one of the following:”
  - (5) “Do you think that Miyashiro Town is a pleasant area? Please select one of the following:”
  - (6) “Do you think that Miyashiro Town is a sightseeing spot? Please select one of the following:”
  - (7) “Do you think that Miyashiro Town is more attractive than neighboring areas? Please select one of the following:”

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