

Factors Determining Customer Satisfaction with Counter Services of Local Government Offices: On-Site Survey Examining Service Quality at Higashihiroshima City Hall, Japan

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Research Article

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Abstract

This study empirically investigated the major factors determining customer satisfaction with counter services in local government offices in Japan, comparing them with the results of similar surveys conducted by the author in 2020. This study considers visitors' direct experience of counter services through an on-site survey conducted at a municipal government building, referring to (1) customer satisfaction research in various countries, especially the expectancy disconfirmation model; (2) the SERVQUAL model; and (3) subsequent methods that emphasise the customer's direct experience. SERVQUAL, as the name suggests, is a five-group scale for evaluating service quality with respect to customer satisfaction. However, in actual organizational settings, five groups of questions may be burdensome to respondents and may reduce the collection rate. The author's research involves conducting on-site surveys on customer satisfaction or service quality of the local government office using an original three-group questionnaire scale and tailoring the question items to a scale for Japanese local administration settings. The surveys comprise three categories of questions, referring to (1) customer satisfaction research in various countries, especially the expectancy disconfirmation model; (2) the SERVQUAL model; and (3) subsequent methods that emphasise the customer's direct experience. A total of 1,000 questionnaires were distributed over four weekdays at the City Hall. As of September 27, 2021, there were 537 respondents (response rate: 53.7%). The regression analysis indicated that the independent variables of group C (service delivery) were most influential, followed by those of groups B (human-related factors) and A (office hardware) (adjusted R^2 value: .58). Service delivery, human factors, and hardware aspects are important, in that order, to ensure customer satisfaction with the City Hall's counter services. This is consistent with the results of the author's Internet survey of users of Osaka City Government's ward offices. Focusing on the second principal component of the service delivery category (C), promptness and short waiting times do not necessarily affect customer satisfaction positively.

Main Text

In the private sector, the study and practice of customer satisfaction have progressed over several decades, with a focus on service quality. This shift is related to goods provided by private companies shifting from tangible to intangible goods or service goods. In the field of public administration, research on the relationship between service quality and other variables is ongoing. More recently, Ziller and Andreß (2021) examined the relationship between quality, efficiency, and fairness of local public service provision and social trust in European cities using cross-sectional survey data over time. As the Literature Review discusses in detail, the background theory of research on customer satisfaction began with Oliver and Winer's (1987) expectancy disconfirmation model, which led to the development of the SERVQUAL model by Parasuraman, Zeithaml, and Berry (1988) and an increasing number of empirical studies in various sectors based on it. The University of Michigan's Johnson and Gustafsson (2000) put forward a model diagram concerning customer satisfaction with convenience stores on p. 65 of their Chapter 4, showing that multiple factors comprising multiple questions that affect customer satisfaction, lead to enhanced reputation and customer loyalty; in Chapter 5, they summarise the method computing each

question group of factors into synthetic variables using principal component analysis, and demonstrate how the most influential factors by multiple regression analysis using these compound variables is examined. SERVQUAL, as the name suggests, is a five-group scale for evaluating service quality with respect to customer satisfaction. However, in actual organizational settings, five groups of questions may be burdensome to respondents and reduce the collection rate. The author's research involves conducting on-site surveys on customer satisfaction or service quality of the local government office using an original three-group questionnaire scale referring to the similar simplified framework of three groups of question items applied in Malaysia by Mansor and Razali (2010) and tailoring the question items to a scale for Japanese local administration settings.

The study of customer or citizen satisfaction in public administration in Japan was derived and developed from the research and practice of policy evaluations and government evaluations with an awareness of the issues of local government reform. Mie Prefecture, in central Japan, implemented a government evaluation system during the 1990s. Local governments across the country followed suit, implementing government evaluation systems. This movement influenced the central government to enact a law mandating all ministries to carry out three types of policy evaluations—performance assessment, program evaluation for constructing infrastructure, and general evaluation with several perspectives—in 2002. Several studies using surveys have indicated that large municipalities such as cities are more assertive in incorporating policy evaluations into local governments' operational activities than small ones such as towns and villages (Author 2015; Tabuchi 2010). Evaluation activities that can be applied to individual concrete situations are now required, and these can be developed through the improvement of more specific operations and introduction of more specific methods of evaluation practice (for the current status of government evaluations in Japan, see Author 2020a). These circumstances necessitate that Japanese municipalities apply evaluation activities to specific conditions through the improvement of more specific operations and the introduction of new methods. More diversified methods are required for specific organizational needs, such as program satisfaction surveys targeting citizens and the use of logic models. *Sesaku Manzoku-do Chosa*, that is, the Program Satisfaction Survey—also known as the 'citizen satisfaction survey'—focuses on the level of importance of and satisfaction with all programs and analyses them in four quadrants. Many local governments in Japan, including that of the city of Higashihiroshima, implement this type of survey regularly. As the survey targets municipal residents, the residents' perceptions and behaviours related to a wide range of local government programs can be collected by mail. Based on the respondents' answers, each program is placed in one of the four quadrants decided by the two elements of importance and performance.

Subsequently, more specific surveys of customer satisfaction emerged in the form of on-site counter-service satisfaction surveys to improve the operations of government offices. For example, Kumano Town in Hiroshima Prefecture has focused on customer satisfaction with counter services. They implemented an on-site survey in 2009 (Kumano Town 2009) and have been conducting similar surveys regularly. Moreover, the city of Ogaki, in Shiga Prefecture, performed a questionnaire survey of 2,000 residents by mail to help consider the rebuilding of a City Hall (Ogaki City Government 2014). The response rate was

47.7%. The residents were questioned about their experience during a previous visit, the purpose of that visit, the means of transportation used, and their experiences with the counter service.

This study used an academic approach to examine the determinants of satisfaction with counter services. In other words, the focus is on the counter service among the services provided by local governments. This study involved a multi-group questionnaire survey of residents, and it examined the factors affecting the overall customer satisfaction level with the counter service statistically using selective multi-group principal component regression analysis (Takahashi and Kawasaki 2019), which combines principal component analysis and multiple regression analysis. Everitt (2005) mentions that in the method of applying principal component analysis, multiple question items can be grouped into several categories before the combined principal component scores of explanatory variables are used in the multiple regression analysis. Thus, the use of the principal component score can weaken the multicollinearity problem between each question item used in the regression analysis. In addition, this study compares the results of the survey conducted by the authors at Higashihiroshima City Hall with those implemented at the Kurose branch office in 2020 and the Internet survey of other cities. Based on Mansor and Razali (2010), the questionnaire includes three groups of factors: hardware, including physical aspects such as buildings and access; software, including staff response, among others; and service delivery. Hardware, which was relatively unimportant in relation to the cost explanatory variables in the regression analysis of the Kurose branch survey results, is examined in more detail in this survey.

Research on policy evaluation and administrative evaluation in Japan has focused mainly on the introduction of overseas evaluation theories and the examination of advanced examples of domestic practice, such as the evaluation system for administrative projects. However, research from the perspective of specific methods for improving actual evaluation practices based on overseas evaluation theories has not progressed much. This study makes it possible to grasp the factors that determine the level of satisfaction with counter services and to examine the constituent items of each group to understand those aspects that lead to the improvement of customer satisfaction with government office counter services scientifically and academically.

This research is unique in that it provides suggestions for practical use through on-site research at Higashihiroshima City Hall. For this purpose, this study applied the method adopted by research in the business field investigating private corporations. Noda (2013, 2014, 2019) already focuses on the citizen satisfaction concept when dealing with residents of local governments in Japan by conducting survey studies.

This article compares the results of the 2020 and 2021 surveys conducted at the Kurose branch office and Higashihiroshima City Hall, respectively. The current municipal territory of Higashihiroshima city was formed by the municipal merger of the old Higashihiroshima city and the five towns of Kurose, Fukutomi, Toyosaka, Kochi, and Akitsu in February 2005. Its population was 189,196 as of July 31, 2021 (Higashihiroshima City Government 2021), and it ranks fourth in terms of population in Hiroshima Prefecture. The new city established branch offices at the locations of the five towns consolidated in

2005, which perform almost all of the same functions that the old towns did before the municipal merger, except for citywide functions such as urban planning. Citizens can carry out many administrative procedures at nearby branch offices even after the merger. Accordingly, a survey was conducted in the Kurose branch office in August 2020, and another was performed at Higashihiroshima City Hall in August 2021 as a part of the present study.

Author (2021) presents the results of an Internet survey of ward offices in Osaka city. Similarly, this study attempts to discover the determinants of satisfaction of the local government's counter services by referring to the method of customer satisfaction surveys targeting private companies. There are many municipalities, including the city of Higashihiroshima, that survey citizen satisfaction with programs and focus on the level of importance and satisfaction with each program. By contrast, there are only a few municipalities in Hiroshima Prefecture, such as Kumano Town, that survey visitors to the office, focusing on customer satisfaction with counter services. This study seeks to identify the primal factors that influence the level of satisfaction with counter services. To explore the determinants of customer satisfaction with the counter service and to compare it with the survey already conducted in 2020 at the Kurose branch office, Higashihiroshima, the current study was performed at Higashihiroshima City Hall, located at Saijo Sakae-Machi, in the Saijo area. This study assumes three groups of factors composed of multiple questions: (A) hardware, (B) software, and (C) service delivery at the City Hall, referring to Mansor and Razali (2010), who also apply three similar groups of question items.

Literature Review

Research publications that are closely related to the findings at the City Hall reported in this article include Author (2020b) and Author (2021). This section first discusses these outlines and how they relate to the results and implementations of the current study. Thereafter, it presents an overview of the customer satisfaction research in the public sector.

After distinguishing the differences in the administrative evaluation concept between Japan and the United States, Author (2020b) analyses the results of a questionnaire survey of towns and villages in Japan that has been widely administered by Japanese local governments since the 1990s. The results indicated that there is a large difference in the implementation status between the larger city governments and the small municipalities, which face the challenge of a lack of resources such as expertise and personnel because of fiscal constraints.

Author (2021) summarises the results of an online survey of visitors to the ward offices of Osaka, which was conducted to investigate the determinants of satisfaction of citizens with the offices of local governments. This study compares its results with a similar survey conducted in the Kurose branch office, Higashihiroshima, in August 2020. Unlike the survey in Kurose, which emphasised the importance of human factors such as the response of staff, in Osaka, the service delivery factor had the strongest effect on the visitors' overall satisfaction with the counter service.

Customer satisfaction research in the public sector has referred to the accumulation of research on marketing by private corporations. Oliver and Winer's (1987) prominent study pioneers this research, focusing on the discrepancy between expectations and perceptions of performance afterwards as determining factors of customer satisfaction. Using their view as the foundation of analysis, Zeithaml (1988) treats the intrinsic and extrinsic attributes as influential factors of perceived service quality (4). In this study, 'hardware' corresponds with Zeithaml's extrinsic attributes.

Later, in 2010, Oliver published his theories and perspectives on customer satisfaction in a book entitled *Satisfaction*, and Oliver (2015) updated the book's content in its second edition. Following Oliver's expectancy disconfirmation theory, many public administration studies considering citizens as customers have been published in academic journals (Van Ryzin 2004, 2006; Van Ryzin and Immerwahr 2007; Van Ryzin et al. 2004). Morgeson and Petrescu (2011) analyse citizen data on six federal government agencies and find that the factors that contribute to satisfaction and trust in government include perception of the quality of service, information provided by the government, demographic factors, citizen expectations, and e-government adoption. Further, an empirical study by Morgeson (2012) adds respondents' political ideology, party identification, and overall trust in the federal government as other factors determining citizen satisfaction. Kelly (2003) examines the relationship between overall customer satisfaction and the fire and police services' performance in local public administration. Kelly and Swindell (2002) also examine the relationship between the indicators of actual program performance and the overall customer satisfaction of local governments statistically.

The SERVQUAL model explained by Parasuraman, Zeithaml, and Berry (1988), following Oliver's theory, focuses on the exceptional gap between expectations and actual performance. This model had a strong influence on subsequent research on measures of service quality and customer satisfaction. Shortly after this study on SERVQUAL, other research has been conducted on SERVQUAL, including Carman (1990), Reidenbach and Sandifer-Smallwood (1990), and Finn and Lamb (1991). Since then, many studies have continued to examine the five elements of factors influencing service quality. The identified proponents of SERVQUAL are tangibles, reliability, responsiveness, assurance, and empathy. Each element comprises multiple items. The 'tangibles' category of the model is equivalent to the hardware category in the current study. Assurance, empathy, and responsiveness—the multiple human factor-related elements—of the SERVQUAL scale are equivalent to the software category in this study. Wilson et al. (2021, 89–91) detail the SERVQUAL model in their latest edition of *Services Marketing: Integrating Customer Focus Across the Firm*, a prominent textbook in the service marketing field. Among the studies on public administration, Wisniewski (2001) shows broad usage of the SERVQUAL-based model by Scottish Council services in the United Kingdom.

Customer satisfaction studies after 2010 in the public sector shift toward examining the direct service experience. Studies on patient experience derived from patient satisfaction are an example in the medical field (Manary et al. 2013; Wolf et al. 2014). *The Patient Experience Journal*, specialising in this field, was launched in 2014. Further, the Japan Patient Experience Research Association developed a standardised questionnaire index on patient experience in the Japanese language, tailored for medical practice in

Japanese hospitals. As for the private sector, 1 study discusses positive experiences and customer satisfaction in the Lithuanian hotel industry and applies the value co-creation-dialogue, access, risk assessment, transparency (DART) model in marketing research (Solakis et al. 2021). Solakis, Peña-Vinces, and Lopéz-Bonilla (2017) focus on the four aspects of DART in consumer behaviour in the Greek hotel industry, which is the basis for the aforementioned study. Referring to these recent studies on customer experience in the public sector, including the medical field, the current study recognises that customers' direct experiences influence their overall satisfaction with counter services and that expectations are an important factor of customer satisfaction. A series of studies by the author intends to examine whether there are differences in the primal factors of customer satisfaction with government counter services in different environmental conditions using a simplified three-factor model.

In the public sector context, Wagenheim and Reurink's (1991) Figure 1 presents a conceptual diagram on the relationships among various elements from a customer service perspective in public administration. Specifically, the four elements involved in the government's efforts and perceptions related to customer satisfaction lead to satisfaction with internal and external customer service needs (customer service), which in turn creates organizational efficiency and effectiveness. Many studies following this model examine customer or citizen satisfaction in the public sector worldwide. This study applies the simplified framework of Mansor and Razali (2010), who conduct research in Malaysia using three question-item categories related to the determinative factors of customer satisfaction with the municipal government's counter service. For service quality evaluation, the current research uses a three-group scale that is simpler than SERVQUAL's five-group scale. Agus, Barker, and Kandampully (2007) utilise a similar study concept in the Malaysian public sector. They conduct two different surveys targeting customers and managers in government branches and present the co-relationships among service quality dimensions, service performance, and customer satisfaction.

Similar studies have been conducted in neighbouring countries in Southeast Asia. In Indonesia, Surapto (2014) conducts a survey targeting 200 residents from urban villages in South Tangerang. McMahon (2004) carries out a study on citizens' customer satisfaction with three local governments in Australia, implementing a mail-based survey among 1,500 residents in the city of Perth. Hsiao and Lin (2008) in Taiwan and Huque and Hayllar (1999) in Hong Kong conduct other prominent studies on customer satisfaction with government services in Asia. Akinboade, Kinpack, and Mokwena (2012) conduct a similar study in South Africa. As explained above, research on customer satisfaction in the field of public administration—sometimes referred to as citizen satisfaction—began in Europe and the United States and has spread to Asia and Africa.

[Figure 1 here]

Considering the related studies conducted to date, this study draws implications for research on customer satisfaction by considering visitors' direct experience through an on-site survey held at a government building. Statistical examination of the survey results can reveal the possible determinants for counter services provided at branch offices of the municipal government.

Research Methods

After research at the Kurose branch office and an Internet survey on the Osaka City Government in 2020, a self-administered on-site questionnaire survey was conducted in August 2021 at Higashihiroshima City Hall for citizens who visited and completed their business at this government facility. The questionnaire was four pages long. The survey was conducted over four weekdays, and 1,000 sets of questionnaires were distributed at two places at the City Hall: the main entrance hall and the area around the side of the service entrance.

The researcher and research assistants (third- and fourth-year students of the Public Administration seminar, Faculty of Law) waited in the office and guided visitors from the counter. There were five research assistants in total, with a maximum of three working simultaneously.

Kurose Branch Office, August 2020

For the questionnaire survey conducted at the Kurose branch office of Higashihiroshima, in August 2020, Author (2020a) provides a detailed description of the survey methodology. Customers of the Kurose branch office who completed their business received a four-page-long self-administered questionnaire. Researchers were waiting at the desks on the opposite side of the office counter. A total of 240 participants completed the questionnaires on the spot. The survey lasted for six business days (August 24–31, 2020). Based on the number of distributed flyers, the survey participation rate was approximately 60%. The questionnaire included items based on four concept groups, A–C, and a group of questions related to the dependent variable Y. This framework of the research design is similar to the design of the study at the City Hall presented in this article.

Survey at Higashihiroshima City Hall, August 2021

A self-administered questionnaire survey was conducted at Higashihiroshima City Hall for visitors who had completed their business. The questionnaire was four pages long. The researcher and two research assistants positioned themselves at two places—the entrance hall and the area around the service exit—at the City Hall and asked visitors to cooperate with the questionnaire survey of Hiroshima University, offering them a gift to do so. The authors handed out (1) a letter requesting survey participation, explaining the cooperation agreement between the Higashihiroshima City Government and Hiroshima University, which were working together to create an international research centre in Higashihiroshima; (2) a questionnaire; (3) an envelope for returning the questionnaire; and (4) a ballpoint pen in a paper box, all sealed in an A4-sized paper envelope. Visitors who accepted the questionnaire filled out the form after returning home and mailed it to Hiroshima University with a pre-stamped envelope. The survey was conducted over four weekdays from Monday to Thursday, and 1,000 envelope sets were distributed to citizens visiting the office. A list of these questions is presented in Table 1. Figure 1 illustrates an analytical model with the question items for the explanatory variables classified into three groups. Table 2 presents the total number of copies distributed by day of the week, and Table 3 presents the total number of copies distributed by time slot in a day (excluding Thursday). The original research plan was

to distribute the survey over five days from Monday to Friday, but distribution went smoothly, and the distribution of 1,000 copies finished a little after 1:00 p.m. on Thursday, August 26. During the period, Higashihiroshima was a target area for priority measures to prevent the spread of COVID-19 based on the Act on Special Measures concerning Influenza Pandemic (Novel Influenza or Re-Emerging Influenza). From Friday, the day after the actual survey period, Hiroshima Prefecture became an area subject to the declaration of a state of emergency as stipulated by the Act on Special Measures against Influenza Pandemic. As described below, the questionnaire also includes questions on measures to prevent the transmission of COVID-19 in the City Hall.

Table 1
Outline of the survey question items related to customer satisfaction

Concept Groups	Question Items
A) Office hardware (buildings, tables, chairs, lighting, and others)	AQ1 (Q6_1) Location (access from home)
	AQ2 (Q6_2) Tables and chairs in the building
	AQ3 (Q6_3) Indoor atmosphere
	AQ4 (Q6_4) Ease of understanding the layout of the floors and offices inside the building
	AQ5 (Q6_5) Ease of understanding the buildings' locations and entrances at the site of the City Hall
	AQ6 (Q6_6) Countermeasures against COVID-19 infection in buildings (partitions, sanitisers at entrances, etc.)
B) Software (staff responses)	BQ1 (Q6_7) Courteousness of the staff in charge
	BQ2 (Q6_8) Ease of consultation and asking the staff in charge questions
	BQ3 (Q6_9) Ease of understanding oral explanations from the officer in charge (speed)
	BQ4 (Q6_10) Clarity of explanation given by the officer in charge (content)
C) Service delivery	CQ1 (Q7_1) Planned business in the City Hall was completed after this visit
	CQ2 (Q7_2) Length of time to complete customer requests is short
	CQ3 (Q7_3) The problem was solved after this visit to the City Hall
	CQ4 (Q7_4) The worries and concerns of customers were alleviated after this visit to the City Hall
	CQ5 (Q7_5) This time, I was able to run my errands at the City Hall more smoothly than expected
Y) Degree of customer satisfaction with counter services at the City Hall	YQ1 (Q8_1) Satisfaction with the experience at the City Hall this time
	YQ2 (Q8_2) I want to tell people about this experience at the City Hall and how good it was
	YQ3 (Q8_3) The administrative services provided by the City Hall are convenient

Table 2
Number of questionnaires distributed (August 2021)

Day of the Month	Weekday	Count	Ratio
23	Monday	382	38.2%
24	Tuesday	229	22.9%
25	Wednesday	277	27.7%
26	Thursday	101	10.1%
Distribution date unknown		11	1.1%
Total		1,000	100.0%
Note: Thursday's distribution ended at about 1:05 p.m.			

Table 3
Number of questionnaires distributed in each time slot (August 2021)

8 a.m.	9 a.m.	10 a.m.	11 a.m.	12 p.m.	13 p.m.	14 p.m.	15 p.m.	16 p.m.	17 p.m.	Monday through Wednesday
25	67	129	131	106	102	160	118	44	6	888
2.8%	7.5%	14.5%	14.8%	11.9%	11.5%	18.0%	13.3%	5.0%	0.7%	100.0%

[Table 1 here]

[Table 2 here]

[Table 3 here]

The letter requesting survey participation included in the envelope detailed the scope and significance of the survey. The enclosed request letter included an explanation of the significance of the research and the agreement between Higashihiroshima city and Hiroshima University on the formation of an international research centre in Higashihiroshima. The letter also included the telephone number and e-mail address of the author as the principal investigator, so that the visitors could inquire about any points that they might have been unclear about.

To compare the results of the survey at the Kurose branch office and the survey of users at the ward office in Osaka, both in 2020, with the results of this survey, the part of the questionnaire regarding the satisfaction level was left unchanged. Moreover, in the survey considered in this article, the three question items for the overall satisfaction of the dependent variable are convenience of the service, satisfaction with the experience, and others' recommendation of the service, based on similar surveys in the private sector. The first change made was to add a question on countermeasures against COVID-19 infections in the hardware of the government building (Group B) in response to a request from the City Hall. Next, in

relation to the previous point, questions about lighting in the building and the non-smoking/smoking environment from the hardware group were removed. In addition, the question about 'time (shortness) to finish errands', which was included in group B in the previous survey, was moved to one of the question items of group C about service delivery (CQ2). CQ5, on the smoothness of service delivery, was also added in this survey. The other three questions in Group C are the same as those in the previous two surveys. In addition to the three groups of questions related to causal factors of customer satisfaction as well as question items corresponding to components of overall customer satisfaction, which are common to the 2020 survey at the Kurose branch office and the Internet survey for Osaka and have been surveyed continuously, questions on visitors' attributes, errands to be done at the office, and transportation access to the office were also included. In particular, questions about the *sogo madoguchi* (general counter), which has become a keyword for improving administrative counter services in Japan, were added. In Japanese public administration, the problem of *taraimawashii*, or the need to visit multiple counters instead of just one to complete errands, has often been pointed out as a major problem in bureaucratic work (*oyakusyo shigoto*). Saga City and Matsuyama City are experimenting with a general counter system that allows people to complete all procedures from the birth of a child to moving to a local government by simply visiting one counter. The reason that question 10 asks about the use of the general information desk (reception desk) and question 4 asks about the number of counters used before running errands is to examine the necessity of introducing the general counter approach mentioned above.

Figure 1 indicates the relationships assumed between customer satisfaction with the counter services at municipal offices based on the abovementioned questionnaire categories (A–C), the explanatory variables, and the items in group Y. Using the principal component analysis based on each category, scores of the first and second principal components of each group are circulated for the following regression analysis.

Results

A total of 1,000 sets of questionnaires were distributed during the four-day survey period. Table 2, displaying the number of questionnaire sets distributed each day, shows that the fewest questionnaires were distributed on Thursday, August 26, 2021, whereas the most were distributed on Monday, August 23. The distribution of the scheduled number of questionnaires was completed after 1:00 p.m. on August 26, a day earlier than planned. By September 27, 2021, 537 surveys had been collected, with a response rate of 53.7%. One of the questionnaires was largely unfilled and contained only attribute data. The rest of the questionnaires contained valid answers to many of the questions.

To avoid multicollinearity in the regression analysis, the author first summarises the explanatory variables into composite variables using principal component analysis for each group. Figure 2 depicts the results of the principal component analysis for questions in category Y. As a new column, the principal component scores for the first and second components were appended to the dataset as variables ZY1 and ZY2. Figure 2 also shows that YQ1 (Q8_1), which is depicted at the top of the figure, had considerable effects on the second principal component—'convenience and recommendation to others'—whereas the first component was interpreted as 'experience satisfaction'.

Table 4 presents the correlation coefficients between the question items in groups A to C and ZY1 of Y category. Question items with correlation efficiencies higher than .40 were selected for use in the principal component analysis for each category. Figure 3 presents the principal component analysis results for the question items in category A. After this analysis, the dataset included the column of principal component scores for the first and second components of variables ZA1 and ZA2. We find that AQ6 (Q6_6), related to COVID-19 infection prevention in the building, had significant effects on the second principal component. Regarding the first principal component, each question item shows the same directional characteristics. When checking details of the figure for AQ4 (Q6_4) and AQ5 (Q6_5), the clarity of the layout of the buildings on the site and locations of divisions inside the buildings are to the extreme right, strongly indicating the characteristics of the first principal component. Considering the relevant question items, we interpreted component 1 as 'ease of finding building locations and understanding the divisions' layout in the building'. We can then interpret component 2 as the 'COVID-19 infection prevention measures in the building'.

Table 4
Co-relationship between component ZY1 and the question items

Question Items	<i>r</i>
AQ1 (Q6_1)	0.234**
AQ2 (Q6_2)	0.375**
AQ3 (Q6_3) *	0.494**
AQ4 (Q6_4) *	0.463**
AQ5 (Q6_5) *	0.453**
AQ6 (Q6_6) *	0.455**
BQ1 (Q6_7) *	0.615**
BQ2 (Q6_8) *	0.602**
BQ3 (Q6_9) *	0.613**
BQ4 (Q6_10) *	0.609**
CQ1 (Q7_1) *	0.458**
CQ2 (Q7_2) *	0.419**
CQ3 (Q7_3) *	0.502**
CQ4 (Q7_4) *	0.628**
CQ5 (Q7_5) *	0.589**
Note: Questionnaire items with correlation coefficients of 0.4 or higher have a single asterisk. These questions were used in the principal component analysis for each category.	
** $p < .01$	

[Figure 2 here]

[Figure 3 here]

Similarly, principal component analysis was conducted for group B (Figure 4). Variables ZB1 and ZB2 calculated from the principal component analysis as the first and second components scores were included in this study. Figure 4 shows that BQ1 (Q6_7) to BQ2 (Q6_8) had greater effects on component 2 (ZB1). Further, BQ3 (Q6_9) and BQ4 (Q6_10) are related to ease of understanding explanations given by the officers. Component 1 was thus interpreted as 'courteousness and responsiveness of the staff in charge'. Component 2 (ZB2) was interpreted as 'ease of understanding explanations given by the officers' if we focus on the contents of BQ3 (Q3_9) and BQ4 (Q3_10).

[Figure 4 here]

Similarly, Figure 5 presents the principal component analysis results for the question items in category C. New columns were created for variables ZC1 and ZC2 from the principal component scores for the first and second components. For the second principal component, CQ2 (Q7_2) and CQ4 (Q7_4) showed opposing characteristics. Further, CQ2 (Q7_2) and CQ5 (Q7_5), related to waiting time and processing time, were in the same direction. For the first principal component, CQ3 (Q7_3), a question item about problem solving, is the most to the right. Component 1 is interpreted as 'solving the customer's problems and concerns'. Component 2 could be interpreted as 'waiting and processing time in the building' by focusing on the meaning of CQ3 (Q7_3).

[Figure 5 here]

Using these variables, multiple regression analysis was conducted using the variable increase/decrease method in a stepwise approach, with ZY1 as the explained variable (Table 5). The synthetic variables used were ZA1, ZA2, ZB1, ZB2, ZC1, and ZC2, which were generated from the categories of explanatory question groups A–C. Table 5 indicates that the standardised partial regression coefficient in ZC1 was the highest at .40, significant at the 1% level. ZC1 was defined as 'solving customers' problems and concerns' and was the most important variable for explained variable ZY1. Following this variable, significant at the 1% level, ZB1 and ZA1 had positive effects on the objective variable, in that order. ZC2 was significant at the 5% level and had a negative coefficient. Focusing on the second principal component of the service delivery category it was found that promptness of service delivery and short waiting time do not necessarily affect customer satisfaction positively. As each variance inflation factor was under 2.00, independence among the explanatory variables in the model was maintained.

Table 5
Multiple regression predicting the overall customer satisfaction
(component ZY1)

	Zero Order <i>r</i>	β	<i>p</i>	VIF
ZA1	.540**	0.24**	< .0001	1.49
ZB1	.650**	0.28**	< .0001	1.96
ZC1	.641**	0.40**	< .0001	1.50
ZC2	-.073	-0.06*	.0383	1.00
Note: $R^2 = .58$; Adjusted $R^2 = .58$; VIF = variance inflation factor.				
** $p < .01$ * $p < .05$				

[Table 5 here]

Discussion

This study conducted at Higashihiroshima City Hall aimed to identify the determinants of customer satisfaction with counter service in the context of municipalities in Japan. The survey was conducted on four business days (August 23–26, 2021), resulting in a total of 528 responses, with a response rate of 52.8%. The question items related to the regression analysis were categorised into three groups of explanatory questionnaire variables and one group of the explained variable of counter service satisfaction at the City Hall. The three question items for overall satisfaction with the dependent variable are convenience of the service, satisfaction with the experience, and others' recommendation of the service, based on similar surveys in the private sector. There is also an open-ended question about opinions on general improvement in government services. The questionnaire included question items in four categories (A, B, C, and Y), constituting a simplified model compared with SERVQUAL's five-group categories for determinative factors. A two-stage analysis, the selective principal component regression analysis, was applied to the survey dataset. The regression analysis showed that the composite variable ZC1 of service delivery was the most important for the dependent variable ZY1, followed by groups B and A with an adjusted R^2 value of .58. The β of ZC1 was .58. These results support the findings of a previous study conducted on Osaka city residents visiting its ward offices (Author 2021).

There were differences among the results of the surveys conducted at the Kurose branch office, ward offices of Osaka, and Higashihiroshima City Hall. The latter two surveys' results indicated that service delivery of ZC1 was more important than that of ZB1 based on the principal component scores of counter staff responses or human-related factors. The differences between the results of the three studies may be due to differences in the services provided by the three types of government offices of these ordinance-designated cities: branch office, ward office, and the City Hall. Further, the differences between these government offices are linked to each visitor's attributes and characteristics.

Conclusion

This study has examined citizens' direct experience of counter services through an on-site survey held with visitors of a municipal government building. The regression analysis revealed that service delivery, human factors, and hardware aspects are important, in that order, concerning customer satisfaction with the services of the City Hall. The service-delivery-related component, ZC1, was more important than the hardware of the building (tangibles in SERVQUAL) and human-related factors. Regarding the second principal component of service delivery, the results showed that promptness of service delivery and short waiting time do not necessarily affect customer satisfaction positively. Among studies in the healthcare field, which is close to the field of government, some show that waiting time in hospitals has an effect, especially a negative effect, on patient satisfaction (Alrasheedi et al. 2019). By contrast, previous studies have shown that it is not the waiting time itself—or 'objective waiting time'—that affects patient satisfaction but the way the patient waits or their 'waiting environment' (Pruyn and Smidts 1998). Pruyne and Smidts (1998) also examine the influence of the waiting room's attractiveness and presence of television. The first floor of Higashihiroshima City Hall, the government office examined in this study, has

LCDs in front of the waiting chairs. This type of waiting environment is a subject for future research by the author.

The authors would like to explore models and questionnaires that can better grasp customer satisfaction at government offices by conducting a follow-up survey in the same Kurose branch office in the future. The results of these three surveys up to 2021 could be compared with those of future research to examine the effect of different characteristics of government organizations on the determinants of customer satisfaction. Further research can not only help examine the order of importance among the three groups of questionnaire items, which is an academic analysis but also identify the items of importance within each question group. The results can provide feedback to the local governments that cooperated in the implementation of the survey studies with suggestions that will lead to improvement of specific administrative tasks.

Declarations

Data availability: The datasets generated and/or analysed during the current study are not publicly available due to the data anonymity guarantee given to the City Hall. The aggregated statistics of each question items are available from the corresponding author on reasonable request.

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References

Agus A, Barker S, Kandampully J. (2007) An exploratory study of service quality in the Malaysian public service sector. *Int J Qual Rel Manag* 24(2):177–190.

Akinboade OA, Kinfaek EC, Mokwena MP. (2012) An analysis of citizen satisfaction with public service delivery in the Sedibeng district municipality of South Africa. *Int J Soc Econ* 39(3):182–199.

Alrasheedi KF, Al-Mohaithef M, Edrees HH, Chandramohan S. (2019) The association between wait times and patient satisfaction: Findings From primary health centers in the Kingdom of Saudi Arabia. *Health Services Research and Managerial Epidemiology*. *Health Serv Res Mang Epidemiol* 6. <https://doi.org/10.1177/2333392819861246>

Author. 2015. "Gyosei Hyoka Bumu-Go no Jichitai ni Okeru Seisaku Hyoka Seido no Henka to Kadai: 'Hyoka Fuan' Gainen o Tegakari ni Shita Zenkoku Chosa ni Motodzuku 'Hyoka Dsukare' no Kento" [Changes and Challenges After the Evaluation Boom Years in Japanese Local Governments: An Examination of Evaluation Exhaustion Based on the Data from a Nationwide Survey Focusing on the Concept of Evaluation Anxiety]. *Chihoujichi Kenkyu* [Journal of Urban Management and Local Government Research] 30, no. 2: 1–17.

Author. 2020a. "A Questionnaire Survey on Customer Satisfaction with Services at Branch Offices of Higashihiroshima City in Hiroshima Prefecture: Focusing on Office Hardware, Customer Service Provided by Counter Officers, and Service Delivery Quality." *Advance Preprint*. <https://doi.org/10.31124/advance.13072997.v1>.

Author. 2020b. "Government Evaluations in Japan's Municipalities Based on Nationwide Survey Data." *Journal of Japanese Management* 5, no. 1: 35–50.

Author. 2021. "Customer Satisfaction with Services at the Ward Offices of Osaka City Government." *Journal of Urban Management and Local Government Research* 36, no. 1: 91–103.

Carman JM. (1990) Consumer perceptions of service quality: An assessment of the SERVQUAL dimensions. *J Retail* 66(1):33–55.

Everitt BS. (2005) *An R and S-PLUS companion to multivariate analysis*. Springer Science & Business Media, London.

Finn DW, Lamb CW Jr. (1991) An evaluation of the SERVQUAL scales in a retailing setting. *Adv Consum Res* 18:483–90.

Higashihiroshima City Government. (2021) 2021 (Reiwa 3) Nendo owaza betsu jinko oyobi nenrei betsu jinko-to [Population by area and age in 2021]. <https://www.city.higashihiroshima.lg.jp/shisei/tokeijoho/1/28273.html>. Accessed 11 Aug 2021

Hsiao CT, Lin J. (2008) A study of service quality in public sector. *International Journal of Electron Bus Manag* 6(1):29–37.

Huque AS, Hayylar MR. (1999) The limits of customer satisfaction: The case of the Companies Registry Trading Fund in Hong Kong. *Asian Rev Public Admin* 6(2):100–113.

Johnson M, Gustafsson A. (2000) *Improving customer satisfaction, loyalty and profit: An integrated measurement and management system*. John Wiley & Sons, Hoboken.

Kelly JM. (2003) Citizen satisfaction and administrative performance measures: Is there really a link? *Urb Aff Rev* 38(6):855–866.

- Kelly JM, Swindell D. (2002) A multiple-indicator approach to municipal service evaluation: Correlating performance measurement and citizen satisfaction across jurisdictions. *Public Admin Rev* 62(5):610–621.
- Kumano Town. (2009) Madoguchi sabisuanketo chosa kekka [Results of questionnaire on counter service]. <https://www.town.kumano.hiroshima.jp/www/contents/1248846633875/index.html>. Accessed 8 Apr 2021
- Manary MP, Boulding W, Staelin R, Glickman SW. (2013) The patient experience and health outcomes. *N Engl J Med* 368(3):201–203. <https://doi.org/10.1056/NEJMp1211775>
- Mansor N, Razali CHCM. (2010) Customers' satisfaction towards counter service of local authority in Terengganu, Malaysia. *Asian Soc Sci* 6(8):197. <https://doi.org/10.5539/ass.v6n8p197>.
- Morgeson FV. (2012) Expectations, disconfirmation, and citizen satisfaction with the US federal government: Testing and expanding the model. *J Public Admin Res Theor* 23(2):289–305.
- Morgeson FV, Petrescu C. (2011) Do they all perform alike? An examination of perceived performance, citizen satisfaction and trust with US federal agencies. *Int Rev Admin Sci* 77(3):451–479. <https://doi.org/10.1177/0020852311407278>.
- Noda Y. (2013) *Shimin manzoku-do no kenkyū* [Research on citizen satisfaction]. Nippon Hyoronsha, Tokyo.
- Noda Y. (2014) Nonlinear effects on citizen satisfaction and different levels of governments in Japan. *Asian Rev Public Admin* 25(1):74–91.
- Noda Y. (2019) Citizen expectations and satisfaction of service performance: Lessons from subnational governments in Japan. *Asia Pacif J Public Admin* 41(3):142–156.
- Ogaki City Government. (2014) Shin chosha kensetsu shimin anketo chosa hokoku-sho [Citizen questionnaire survey report for considering new government building construction]. <https://www.city.ogaki.lg.jp/cmsfiles/contents/0000017/17968/anketoshuukei>. Accessed 8 Apr 2021
- Oliver RL. (2015) *Satisfaction: A behavioral perspective on the consumer*, 2nd ed. Routledge, London and New York.
- Oliver RL, Winer RS. (1987) A framework for the formation and structure of consumer expectations: Review and propositions. *J Econ Psychol* 8(4):469–499.
- Parasuraman A, Zeithaml VA, Berry LL. (1988) SERVQUAL: A multiple-item scale for measuring consumer perceptions of service quality. *J Retail* 64(1):12–40.

- Pruyn A, Smidts A. (1998) Effects of waiting on the satisfaction with the service: Beyond objective time measures. *Int J Res Mark* 15(4):321–34.
- Reidenbach RE, Sandifer-Smallwood B. (1990) Exploring perceptions of hospital operations by a modified SERVQUAL approach. *J Health Care Mark* 10(4):47–55.
- Solakis K, Peña-Vinces JC, López-Bonilla JM. (2017) DART model from a customer's perspective: An exploratory study in the hospitality industry of Greece. *Probl Perspect Manag* 15(2):536–548. [http://dx.doi.org/10.21511/ppm.15\(si\).2017.07](http://dx.doi.org/10.21511/ppm.15(si).2017.07).
- Solakis K, Peña-Vinces JC, Lopez-Bonilla JM, Aguado LF. (2021) From value co-creation to positive experiences and customer satisfaction: A customer perspective in the hotel industry. *Technol Econ Dev Econ* 27(4):948–969. <https://doi.org/10.3846/tede.2021.14995>
- Surapto D. (2014) The influence of people satisfaction on services organization public performance of village district in south of Tangerang. *J Manag Bus* 13(2):169–176.
- Tabuchi Y. (2010) Chihou jichitai ni okeru gyosei hyoka 12 nen no ayumi to kongo no kadai [Progress of public sector evaluation in local government in 12 years and future prospects]. *Mitsubishi Sogo Kenkyujo Hou* [Mitsubishi research institute report] 53:30–53.
- Takahashi T, Kawasaki S. (2019) Anketo ni yoru chosa to kaso jikken: Kokyakumanzoku-do no haaku to kojo [Survey and virtual experiments by questionnaire: Understanding and improving customer satisfaction]. Tokyo: Nikkagiren.
- Van Ryzin GG. (2004) Expectations, performance, and citizen satisfaction with urban services. *J Policy Anal Manag* 23(3):433–448.
- Van Ryzin GG. (2006) Testing the expectancy disconfirmation model of citizen satisfaction with local government. *J Public Admin Res Theor* 16(4):599–611.
- Van Ryzin GG, Immerwahr S. (2007) Importance–performance analysis of citizen satisfaction surveys. *Public Admin* 89(1):215–226.
- Van Ryzin GG, Muzzio D, Immerwahr S, Gulick L, Martinez E. 2004. Drivers and consequences of citizen satisfaction: An application of the American Customer Satisfaction Index Model to New York City. *Public Admin Rev* 64(3):331–441.
- Wagenheim GW, Reurink JH. 1991. Customer service in public administration. *Public Admin Rev* 51:263–269.
- Wilson A, Zeithaml VA, Bitner MJ, Gremler DD. 2021. *Services marketing: Integrating customer focus across the firm*, 4th European ed. McGraw Hill, Maidenhead.

Wisniewski M. 2001. Assessing customer satisfaction with local authority services using SERVQUAL. *Total Qual Manag* 12(7–8):995–1002.

Wolf JA, Niederhauser V, Marshburn D, LaVela, SL. 2014. Defining patient experience. *Patient Exp J* 1(1):7–19.

Zeithaml VA. 1988. Consumer perceptions of price, quality, and value: A means-end model and synthesis of evidence. *J Mark* 52(3):2–22.

Ziller C, Andreß H. 2021. Quality of local government and social trust in European cities. *Urb Stud*. <https://doi.org/10.1177/00420980211019613>.

Note: For references that do not have English translation titles, the English titles in square brackets are translated by the author of this article from the original Japanese titles.

Figures

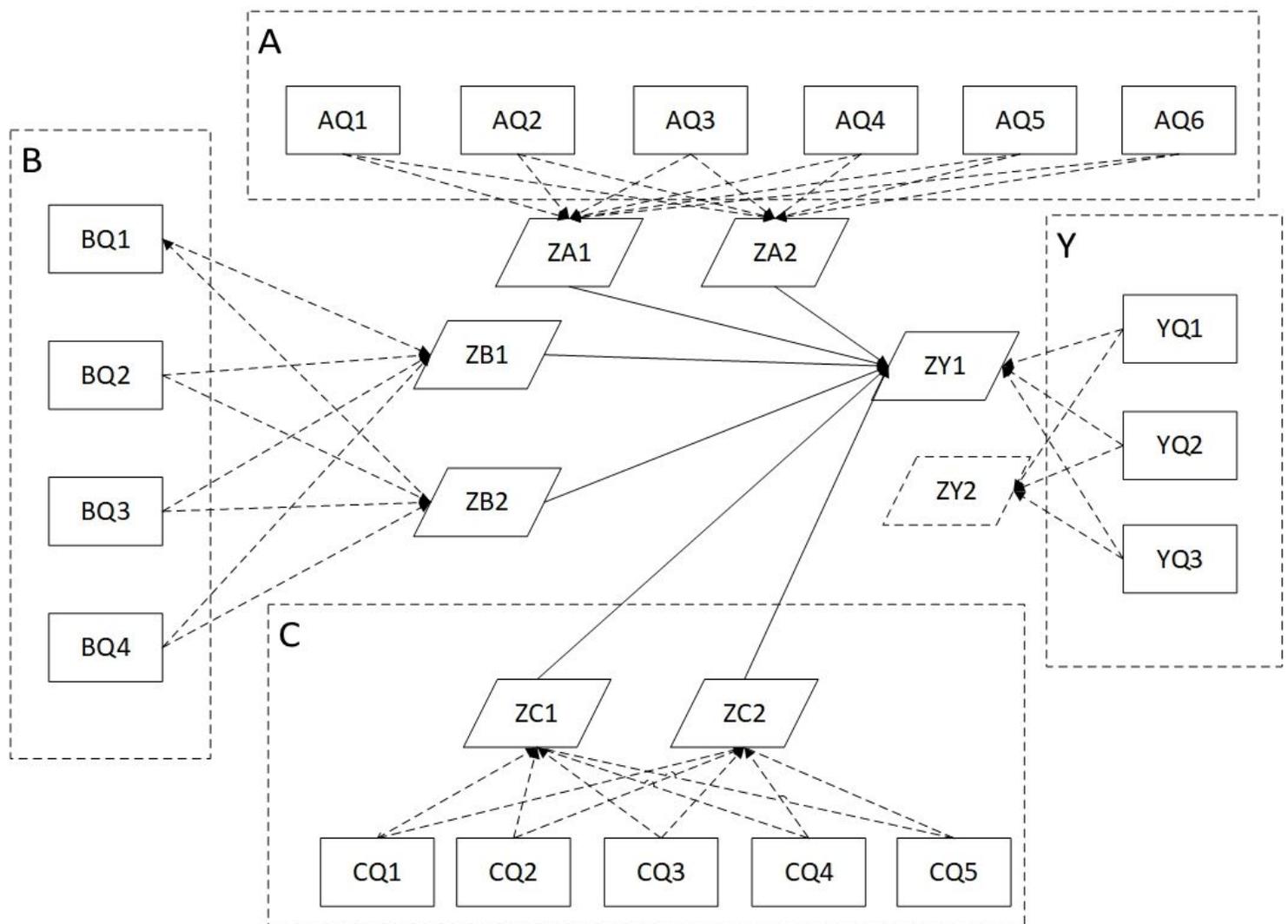


Figure 1

Research analysis model

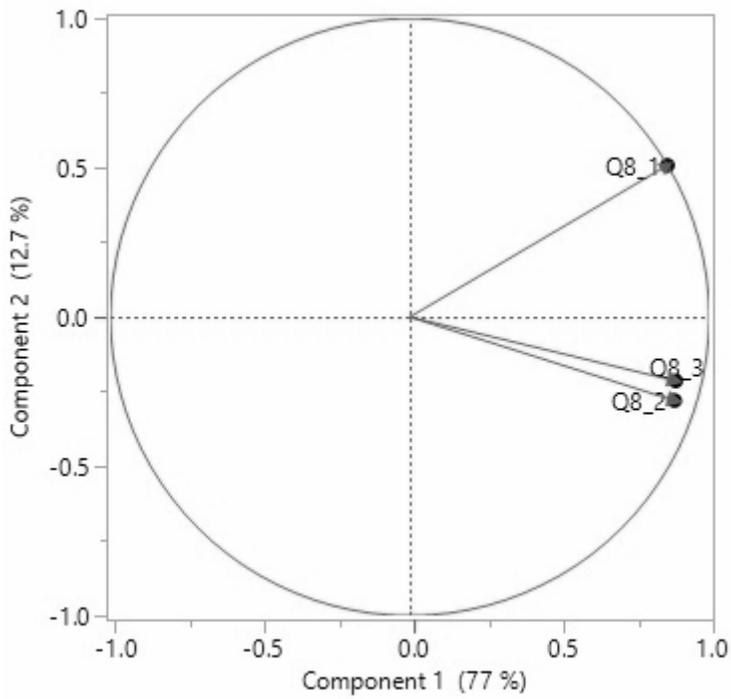


Figure 2

Factor loadings related to Y (overall customer satisfaction with counter services)

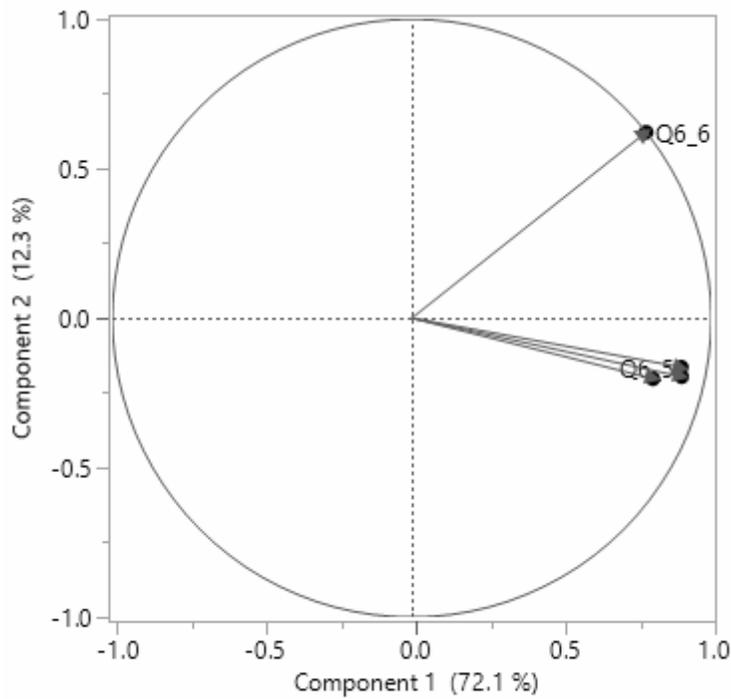


Figure 3

Factor loadings related to A

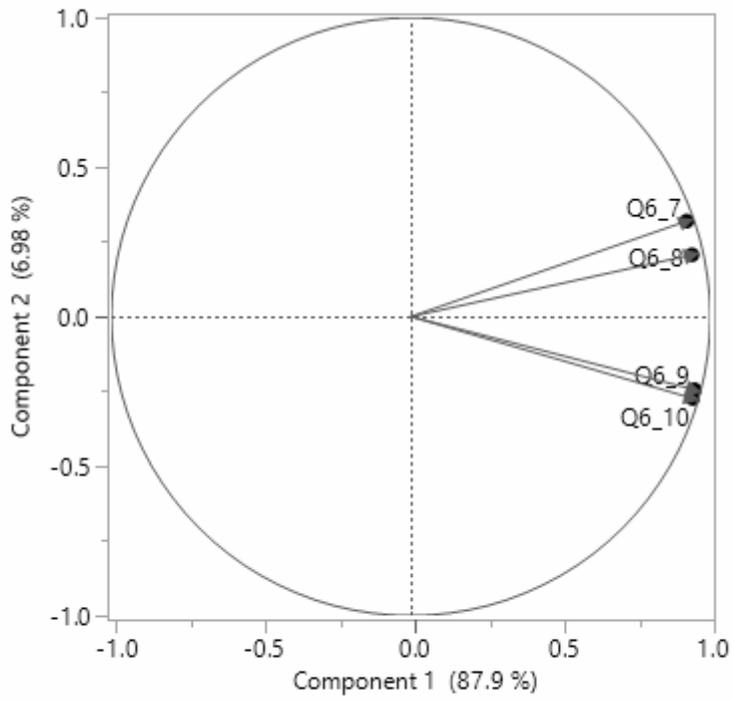


Figure 4

Factor loadings related to B

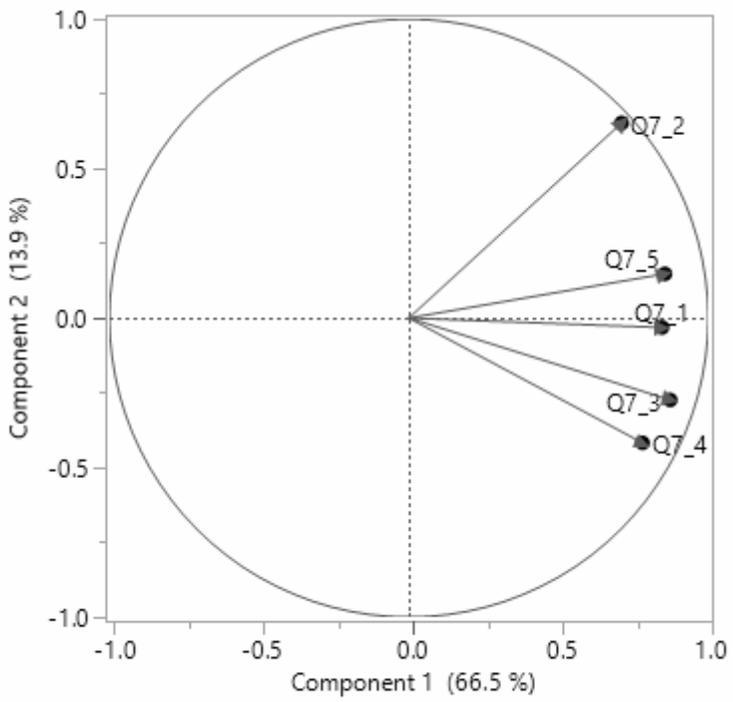


Figure 5

Factor loadings related to C