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MEASURES TO REVITALIZE INDUSTRIAL TOURISM IN THE NAGOYA AND CHUKYO AREAS OF JAPAN USING STRUCTURAL EQUATION MODELING

Nasuno I*

Department of Business Administration, Faculty of Business Administration,

Osaka Sangyo University, Japan

Abstract: During the COVID-19 pandemic, the number of tourists dropped dramatically in most tourist destinations. Industrial tourism can be regarded as a powerful form of community-based tourism in a post-COVID-19 world. This study proposes measures to revitalize industrial tourism in Japan through a case study Nagoya and Chukyo. It analyzes questionnaire survey results from users of industrial tourism facilities using structural equation modeling. Four hundred users of six industrial tourism facilities were surveyed. First, an exploratory factor analysis on the results of the questionnaire surveys was conducted. Then, three factors—"Smooth facility tour", "Dynamism and novelty of the exhibition", and "Purchase of products and services encountered"—were extracted and analyzed using structural equation modeling. The following results were obtained; the latent variables "Smooth facility tour (pass coefficient of standardized solution: 0.600)" and "Purchase of products and services encountered (0.237)" had a positive effect on the observation variable "Satisfaction with the facility". Furthermore, "Dynamism and novelty of the exhibition (-0.332)" had a negative effect on "Satisfaction with the facility". Therefore, the results suggest that new attractions should be added for users who seek dynamic and novel industrial exhibitions in Nagoya and Chukyo. Specific examples include more immersive exhibitions, provision of experience-based programs, and proposals for model courses that include other facilities.

Keywords: industrial tourism, exploratory factor analysis, structural equation modeling, Nagoya, Chukyo

Introduction

Research Purpose and Problem Consciousness

The purpose of this study is to propose measures to revitalize industrial tourism in Japan. Specifically, I focus on the Nagoya and Chukyo areas of Japan. I use structural equation modeling to analyze questionnaire surveys completed by users of industrial tourism facilities. “Industrial tourism” is “a form of tourism that targets the manufacturing processes, technologies, and products of various industries”; in particular, it emphasizes “learning” and “visiting and experiencing” (Hata and Chono, 2007). Industrial tourism can increase the number of repeat tourists, promote sustainable exchanges between tourists and the region, and satisfy tourists’ intellectual curiosity (Industrial Tourism Promotion Council, 2014). Notably, industrial tourism can be regarded as a powerful form of community-based tourism in a post-COVID-19 world. For example, in European countries, which are considered to be

*Corresponding Author’s Email: nasuno@adm.osaka-sandai.ac.jp

advanced regions of industrial tourism, there are various industrial tourism initiatives, such as those in Ironbridge in the United Kingdom, Rotterdam in the Netherlands, and the Rule region in Germany.

My previous research on industrial tourism in Japan uncovered four problems related to industrial tourism in the nation (see Nasuno, 2016; 2019).

First, basic data is not known. Currently, in many areas engaged in industrial tourism, the STP of marketing—that is, the "who, what, and how"—is not clear (Kotler and Keller, 2006). Furthermore, even basic data, such as the number of tourists and economic effects, which are the premise, cannot be grasped.

Second, the operating system is not clear. In many areas engaged in industrial tourism, local governments and chambers of commerce only publish introductory booklets. It remains unclear which actors are involved in what projects, such as formulating an overall plan, implementing investment, attracting tourists, and conducting events and tours.

Third, the profitability of companies are not taken into consideration. Industrial tourism in Japan is still generally thought of as part of corporate CSR and public relations activities, and is thus often positioned as a bonus source of income for a business. For this reason, the profitability of industrial tourism is not very important. Companies lack the will to earn money from industrial tourism itself and thus do not often link industrial tourism to sales strategies, as they do for their other products and services.

Fourth, industrial tourism does not provide tourists with a wide range of services; that is, industrial tourism facilities are not sufficiently linked with food and accommodation facilities. Therefore, tourists must research and determine their own transportation, dining, and accommodations when visiting industrial tourism facilities.

Solving the above four problems is necessary to further develop Japan's industrial tourism in step with that of the developed regions of European countries.

Related study trends and positioning the study

Preceding studies on industrial tourism in Japan are mostly in the field of regional research or tourism, such as those by Hata and Chono (2007) and the Industrial Tourism Promotion Council (2014). Notably, Suda (2015) and Satou (2021) have studied Nagoya and Chukyo, which this study also takes up. An overview of these previous studies reveals that industrial tourism can contribute to the increase in the exchange population and the revitalization of the region. However, these preceding studies only comprehensively discuss the positive aspects of Japan's industrial tourism from a qualitative point of view and do not approach industrial tourism from a quantitative point of view. Moreover, they do not address the above-mentioned four problems.

I have been researching solutions to the four problems with Japan's industrial tourism by looking to Ruhr, Germany, an area with advanced industrial tourism. In an earlier paper, I unpack the factors of Ruhr's success and consider how they may be applied in Japan to present solutions to the first and second problems listed above (Nasuno, 2021). Specifically, in Ruhr, industrial tourism is being developed by utilizing industrial heritage related to coal and steel.

Regarding the first problem, marketing should consider basic data (Proposition 1). In Ruhr, marketing was carried out by experts after grasping basic data; for example, the annual number of tourists was

about 7.25 million and the job creation effect was about 760. The marketing targets were also clarified, such as young people and children. To solve the first problem, basic data should be collected and applied to optimize tourism marketing.

Regarding the second problem, sustainable management by various organizations is necessary (Proposition 2). In Ruhr, various organizations, such as the State of Nordrhein-Westfalen, the Regionalband Ruhr, and Stiftung Zollverein, play different roles in supporting industrial tourism. The division of roles was clearly defined, and in each organization, long-term staff with specialized knowledge were in charge of building management and marketing. In addition, each organization was given generous public support; for example, Regionalband Ruhr received about EUR 5.2 million for its operations from cities and towns and Stiftung Zollverein received about EUR 23.2 million from the State of Nordrhein-Westfalen and the Regionalband Ruhr.

My solutions to the third and fourth problems emerge from an analysis of industrial tourism in Autostadt, Germany. Autostadt is a car theme park built by Volkswagen and is a popular tourist destination with an average daily visitor of about 6,000. Currently, I am planning an interview and field survey with Volkswagen and the city of Wolfsburg to obtain primary data; this work has been delayed by the COVID-19 pandemic.

Regarding the third problem, I argue that marketing should collaborate with the retail sector (Proposition 3). A notable feature of Autostadt is its comprehensive strength centered on the "familiar and premium products and services" of automobiles. Facilities such as a museum, a car exhibition, and a glass-walled car tower are offered on the factory premises. Autostadt is proud of its ability to attract customers by providing services, such as a delivery ceremony for new owners, test runs of new models, and car design experiences. These efforts are likely to target adults who are interested in cars and children who may be future customers. In other words, Autostadt's efforts can be seen as a marketing strategy that collaborates with the automobile retail sector.

Regarding the fourth problem, areas should be made more attractive for industrial tourism (Proposition 4). In Autostadt, in addition to automobile-related facilities, designer buildings and objects are scattered on lush green grounds, creating a space like a park or museum. There is a three-star Michelin restaurant (Aqua), food courts, cafes, and other dining facilities and a Ritz-Carlton hotel. These features likely make Autostadt attractive to tourists.

In this study, I apply the above four propositions to consider how best to further the development of industrial tourism in Japan.

Research Method

Analysis Target: Industrial Tourism in Nagoya and Chukyo

This section presents an overview of industrial tourism in Nagoya and Chukyo. In 2001, the first National Industrial Tourism Summit was held in Nagoya and Chukyo, where manufacturing industries (e.g., machinery, automobiles, textiles), infrastructure industries (e.g., energy, transportation), and traditional industries (e.g., ceramics, textiles, brewing) are flourishing; accordingly, these areas play a central role in industrial promotion in Japan. The first major opportunity for industrial tourism initiatives in these areas was the 2005 Aichi Expo. The Expo prompted the areas to determine how to entertain visitors; they focused on industrial tourism that made use of existing corporate agglomerations

and museums. For this reason, these areas engaged in industrial tourism initiatives ahead of other areas in Japan.

In industrial tourism in Nagoya and Chukyo, the Aichi Museum and Industrial Sightseeing Conference (AMIC) has played a central role in improving systems for welcoming tourists and disseminating information. The AMIC secretariat is the Nagoya Chamber of Commerce and Industry. In April 2022, 29 industrial tourism facilities were members of the AMIC (Table 1). This evidences that Nagoya and Chukyo are active in manufacturing and are positioned as the birthplace of Japanese industrial tourism. Therefore, the findings obtained from an analysis of Nagoya and Chukyo can be applied to all industrial tourism in Japan.

Table 1: The 29 facilities that are members of the AMIC (April 2022) (1)

No.	Facility name	Industrial field	Founding entity	Annual number of visitors 2019
1	Aichi Prefectural Ceramic Museum	Ceramic	Aichi-prefecture	76,639
2★	Aichi Airlines Museum	Aircraft	Aichi-prefecture	278,194
3	Ama City Shippo-Yaki Art Village	Ceramic	Ama-City	120,236
4	Arimatsu-Narumi Shibori Kaikan	Textile	Arimatsu Shibori Commerce and Industry Cooperative	90,334
5	INAX Live Museum	Ceramic	Lixil Co., Ltd.	67,509
6	Kakukyu Haccho Miso no Sato	Miso	Haccho Miso L.P.	145,144
7★	Gifu Kakamihara Aerospace Museum	Aircraft	Kakamihara- City	269,066
8	International Design Center	Design	Aichi- prefecture, Nagoya-city, etc.	23,520
9	Setozo Museum	Ceramic	Seto-City	35,994
10	Takahama-City Pottery Village Kawara Museum	Ceramic	Takahama- City	50,337
11	Electrical Science Museum	Electric	Chubu Electric Power Co., Ltd.	307,988
12	Toho-Gas Gas Energy Center	Gas	Toho Gas Co., Ltd.	22,011
13	Tokugawa Museum	Tradition	Tokugawa Reimeikai PIIF.	206,291

Source: Created by the author based on Satou (2021) and materials provided by Nagoya Chamber of Commerce and Industry.

Table 2: The 29 facilities that are members of the AMIC (April 2022) (2)

No.	Facility name	Industrial field	Founding entity	Annual number of visitors 2019
14★	Toyota Kaikan Museum	Automobiles	Toyota Motor Co., Ltd.	241,455
15★	Toyota Commemorative Museum of Industry and Technology	Machine tools, weaving machines, automobiles	Toyota Group	419,317
16	Hometown of Japanese paper in Toyota-City	Japanese paper	Toyota-City	22,505
17★	Toyota Automobiles Museum	Automobiles	Toyota Motor Co., Ltd.	233,311
18	Naito Memorial Medicine Museum	Pharmaceutical	Eisai Co., Ltd.	40,913
19	Nagoya-City Science Museum	Science and technology	Nagoya-city	1,328,867
20	Nagoya City Museum	Local industry	Nagoya-city	488,772
21	Nex Plaza	Expressway	Nagoya Expressway Public Corporation	33,373
22	Noritake Garden	Ceramic industry	Noritake Co., Ltd.	306,464
23	Museum Meiji Village	Architecture	Nagoya Railway Co., Ltd.	485,385
24	Brother Museum	Sewing machines, OA equipment	Brother Industries Co., Ltd.	20,188
25	MIZKAN MUSEUM	Brewing	Mizkan Group	131,045
26	Mitsubishi-UFJ Bank Monetary Museum	Finance	Mitsubishi UFJ Bank	24,616
27	Morita Aji no Yakata	Brewing	Morita Co., Ltd.	35,637
28	Yamazaki Mazak Machine Tools Museum	Machine tools	Yamazaki Mazak Machine Tools Museum	―
29★	SCMAGLEV and Railway Park	Railway	Central Japan Railway Co., Ltd.	395,258

Source: Created by the author based on Satou (2021) and materials provided by Nagoya Chamber of Commerce and Industry.

Data Source and Analytical Model

In this study, I more concretely narrow down the analysis target. First, I focus on the “transportation” industries unique to Nagoya and Chukyo. The areas are home to many automobile, railway, and airline-related companies. Notably, the areas include the headquarters of Toyota Motor Co., Ltd., which has highest global automobile sales (about 9.52 million units in 2020) and Central Japan Railway Co., Ltd., which operates the world's first high-speed railway, Tokaido Shinkansen. In addition, since 2011, these areas have been designated as the National Strategic Comprehensive Special Zone, Asia's No. 1 Aerospace Industry Cluster Formation Special Zone, and has been the site of work to foster the aerospace industry. Accordingly, aircraft-related companies, such as Mitsubishi Heavy Industries Co., Ltd. and Kawasaki Heavy Industries Co., Ltd. are concentrated in these areas.

Second, I focus on “familiar and premium products and services” for consumers; that is, I take up automobiles, rail transportation services, and air transportation services from various industries that exist in Nagoya and Chukyo. These are “familiar and premium products and services” that consumers will want to use someday. I expect a bigger economic percussion by paying the attention to these. For example, Germany's Autostadt focuses on automobiles, and Seattle (home of Boeing) in the United States and Toulouse (home of Airbus) in France focus on aircraft. In other words, these areas have succeeded in attracting a large number of tourists due to their comprehensive strength centered on “familiar and premium products and services”.

Based on the above recognition, from April 4th (Mon) to 6th (Wed), 2022, I conducted a user questionnaire survey via the Internet on behalf of a contractor. In this user questionnaire survey, I targeted users of 6 of the 29 facilities listed in Tables 1 and 2 (No. 2 Aichi Airlines Museum, No. 7 Gifu Kakamihara Aerospace Museum, No. 14 Toyota Kaikan Museum, No. 15 Toyota Commemorative Museum of Industry and Technology, No. 17 Toyota Automobiles Museum, and No. 29 SCMAGLEV and Railway Park). These 6 facilities are industrial tourism facilities involved in airlines, automobiles, and railways. I conducted a user questionnaire survey, shown in Table 3 and 4, with 400 users who had visited these 6 facilities within the last six months. The survey consisted of twenty-one questions based on the solutions (propositions) offered above for four problems I identified in Japan’s industrial tourism. Questions Nos. 1 to 20 asked participants to respond by selecting one of five choices: "1. I don't think so," "2. I don't really think so," "3. Unsure," "4. I think a little," and "5. I think so.". Question No. 21 asked participants to respond by selecting one of five choices: "1. Dissatisfied," "2. Slightly dissatisfied," "3. Normal," "4. Generally satisfied," and "5. Satisfied.”

Table 3: Question items of user questionnaire survey (1)

Related propositions	No.	Question items
Proposition 1: Marketing considering basic data	1	It was relatively easy to gather information about the facility in advance (e.g., exhibition contents, access, fees).
	2	It was relatively easy to understand the necessary procedures and reservation methods for facility admission, experience courses, meals, etc.
	3	It would have been better if it could be more clearly shown about "what kind of customers can enjoy and how at this facility" (e.g., hands-on learning for elementary and junior high school students, theme parks for adults, Japanese manufacturing experience for foreigners).
	4	It would have been better if there was a proposal for a tour model course that included sightseeing spots, dining, accommodation, leisure, etc. around the facility.
	5	It would have been better if there was a proposal for a model course on industrial tourism across Nagoya and Chukyo (e.g., thematic—automobile, food, traditional industry, etc.—courses, hands-on learning courses for parents and children).
	6	If there are paid industrial tourism tours sponsored by travel companies in Nagoya and Chukyo, I would like to participate.
Proposition 2: Sustainable management by various organizations	7	I was able to deepen my understanding of the contents and concepts of the facility.
	8	I would like to see a more immersive exhibition in order to gain a deeper understanding of the contents and concept of the facility (e.g., detailed explanations by field workers, exhibitions using digital signage).
	9	In order to gain a deeper understanding of the contents and concept of the facility, I would like to have an experience-based and participatory program that tickles

		intellectual curiosity (e.g., experience of assembling, painting and designing miniature models, driving experience in a model course).
	10	In the future, if the facilities are more complete than they are now, I may pay more money (e.g., admission fees, guide fees, experience fees).

Source: Created by the author

Table 4: Question items of user questionnaire survey (2)

Related propositions	No.	Question items
Proposition 3: Marketing in collaboration with the retail sector	11	After visiting the facility, I felt like buying souvenirs and goods related to the facility.
	12	After visiting the facility, I became more familiar with the products and services that I had visited (e.g., automobiles, railway transportation services, airline transportation services—these examples can also be used to clarity the below statements).
	13	After visiting the facility, I became more motivated to purchase and use the products and services that I had seen.
	14	After visiting the facility, I thought it would have been better if the facility had a purchase consultation desk regarding products and services that I had seen. (e.g., consultation for automobiles purchase, railway travel, overseas travel by airlines, the same shall apply hereafter).
	15	It would be better to be able to hold public and private events at the facility (e.g., family weddings, anniversary celebrations, company meetings and receptions).
Proposition 4: Improving the attractiveness of the area centered on industrial tourism	16	In order to fully enjoy the facilities, it is better to have more dining options (e.g., cheap restaurants for families, high-class restaurants for elderly customers).
	17	In order to fully enjoy the facilities, it is better to have accommodations that are integrated with or close to the facility.
	18	It would have been better if the facility had a space where I could relax for a day, such as a park or museum.
	19	It would have been better if the facility held various events, such as exhibitions, product exhibitions, and concerts.
Overall satisfaction	20	I would like to visit the facility again someday.
	21	Please tell me your level of satisfaction with the facility.

Source: Created by the author.

Analysis of the Results and Interpretation

Exploratory Factor Analysis

I conducted an exploratory factor analysis on the results of the user questionnaire survey (Table 5). The maximum likelihood estimation is adopted as the factor estimation method, and the promax rotation is adopted as the factor rotation. As a result, it became clear that the following three factors can explain more than 50% of information. Factor 1 had an eigenvalue of 8.747 (contribution ratio 37.8%; the same shall apply hereafter), Factor 2 had one of 1.251 (6.59%), and Factor 3 had one of 0.750 (3.95%) (cumulative contribution ratio 56.58%).

Factor 1 has a large factor loading in variables related to more satisfying exhibitions and programs (Nos. 3, 8, 9) and variables related to a wide range of visits to tourist facilities (Nos. 4, 5). Therefore, I interpret Factor 1 as “Dynamism and novelty of the exhibition”. Factor 2 has a large factor loading in variables

related to familiarity with or purchase of the products or services encountered (Nos. 6, 11, 12, 13, 14, 15, 17). Therefore, I interpret Factor 2 as "Purchase of products and services encountered". Factor 3 has a large factor load in variables related to information gathering, reservation procedures, and promotion of understanding of contents and concepts (Nos. 1, 2, 7). Therefore, I interpret Factor 3 as "Smooth facility tour".

Table 5: Results of exploratory factor analysis.

Source: Created by the author.

No.	Variables	Factor 1: Dynamism and novelty of the exhibition	Factor 2: Purchase of products and services encountered	Factor 3: Smooth facility tour
1	Easiness of gathering information	0.0523	-0.0725	**0.7494**
2	Easiness of reservation procedure	0.0118	-0.0089	**0.7923**
3	Clarification of target customers	**0.5818**	0.1754	0.0136
4	Requests for a tour model course (dining, accommodation, leisure)	**0.6330**	0.1602	-0.0586
5	Requests for industrial tourism model course	**0.5945**	0.2734	-0.0779
6	Requests for paid industrial tourism tour	0.3089	**0.5326**	-0.1022
7	Promote understanding of contents and concepts	0.1032	0.1050	**0.6543**
8	Requests for an immersive exhibition	**0.7059**	-0.0406	0.2327
9	Requests for experience-based program	**0.6894**	-0.0756	0.2971
10	Willingness to pay a large amount for a fulfilling exhibition	0.3589	0.1687	0.3297
11	Willingness to buy souvenirs and goods	-0.0206	**0.6505**	0.1884
12	Familiarity with the products and services to be visited	-0.1229	**0.5428**	0.4701
13	Willingness to purchase products and services encountered during the tour	-0.0619	**0.7390**	0.2198
14	Requests for purchase consultation desk regarding products and services encountered during the tour	0.3449	**0.6089**	-0.0960
15	Requests for holding events, both public and private	0.2857	**0.6081**	-0.0816
16	Requests for enhancing dining options	0.3217	0.2895	0.2395
17	Requests for enhancing accommodations	0.3688	**0.5087**	-0.1340
18	Requests for relaxing spaces (parks or museums)	0.4620	0.0220	0.3034
19	Requests for holding various events (exhibitions, product exhibitions, concerts)	0.3721	0.2797	0.1598

Structural Equation Modeling

Based on the above-mentioned 3 factors and 15 variables with a factor loading of 0.5 or more, I performed an analysis using structural equation modeling. The model was constructed based on the recognition of how to increase user satisfaction and willingness to return (Figure 1).

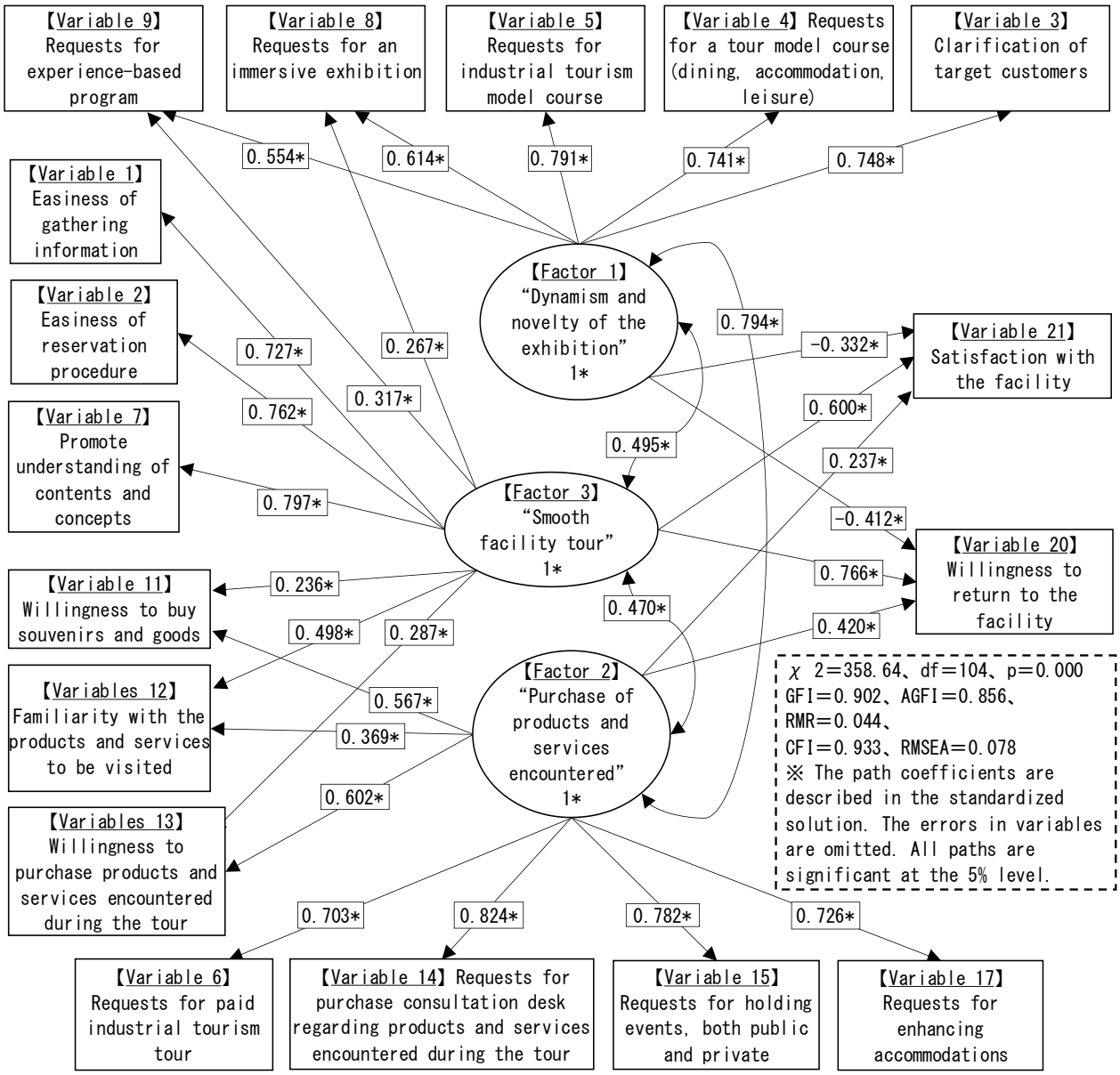

Figure 1: Model on measures to revitalize industrial tourism in Nagoya and Chukyo.

Source: Created by the author.

The results of the goodness-of-fit test for this model were $\chi 2 = 358.64$, degrees of freedom (df) = 104, and p = 0.000. At first glance, the model seems to have been rejected. However, the sample size of the questionnaire survey in this study is as large as 400. As the number of samples increases, the extraction power of the goodness-of-fit test increases, and most models are rejected. Therefore, I look at the values of typical goodness-of-fit indicators; that is, Goodness of Fit Index (GFI) = 0.902, Adjusted GFI (AGFI) = 0.856, Root Mean Square Residual (RMR) = 0.044, Comparable Fit Index (CFI) = 0.933, and RMSEA = 0.078. In general, if GFI, AGFI, and CFI are greater than 0.9 or 0.95 and RMR and RMSEA are less than 0.1 or 0.05, it is considered a good model. Accordingly, this model (Figure 1) is not acceptable according to the goodness-of-fit test because the number of samples is as large as 400, but all of the goodness-of-fit indicators show values that are "generally acceptable" (Asano et al., 2005).

Next, I consider the model in Figure 1. First, users desire a “Smooth facility tour”. Along these lines, users favor easy information gathering and reservation procedures (Nos. 1, 2), and promotions of their understandings of the contents and concepts of facilities (No. 7). From “Smooth facility tour” to “Satisfaction with the facility” (pass coefficient of standardized solution: 0.600) and “Willingness to return to the facility" (0.766), positive passes were drawn respectively. Since the value of the coefficient is also relatively large, it is highly necessary for industrial tourism facilities to meet user needs related to a “Smooth facility tour”. In this study, I consider users who have such needs for a “Smooth facility tour” “General tourists”.

Second, some users desire “Dynamism and novelty of the exhibition”. Specifically, on the one hand, the results suggested that we need to clarify the target customers of industrial tourism facilities (No. 3) and to have immersive exhibitions and experience-based programs (Nos. 8, 9). On the other hand, there are requests for tour model courses (dining, accommodation, leisure) and industrial tourism model courses (Nos. 4, 5). From “Dynamism and novelty of the exhibition,” to “Satisfaction with the facility” (pass coefficient of standardized solution: -0.332), and “Willingness to return to the facility” (-0.412), negative passes were drawn respectively. This means that it is difficult to increase “Satisfaction with the facility” and “Willingness to return to the facility” even if one industrial tourism facility is used to meet the user need for a dynamic and novel exhibition. In this study, I would like to consider users who desire a dynamic and novel exhibition “Active tourists”.

Third, other users desire “Purchase of products and services encountered”. Specifically, on the one hand, users need opportunities to purchase products and services they may have seen or to visit a purchase consultation desk (Nos. 13, 14). On the other hand, many also reported a willingness to pay; users requested paid industrial tourism tours, enhanced accommodations, and events (Nos. 6, 15, 17). From “Purchase of products and services encounter” to “Satisfaction with the facility” (pass coefficient of standardized solution: 0.237) and “Willingness to return to the facility” (0.420), positive passes were drawn respectively. In this study, I would like to consider users who have such needs for purchasing tour-related products and services “Expenditure tourists”.

Conclusion

Measures to Revitalize Industrial Tourism in Nagoya and Chukyo

Based on the above analysis results, I would like to propose measures to revitalize industrial tourism in Nagoya and Chukyo. Specifically, I advise strengthening existing responses to what I term “Active tourists” and “Expenditure tourists”. Currently, such efforts are lacking.

First, “Active tourists” expect more “dynamic” exhibitions and programs at industrial tourism facilities. They seek unprecedented or “novel” attractions, including excursions to other industrial tourism facilities, dining, accommodation, and leisure opportunities. In other words, more industrial tourism facilities are required to increase active tourists’ satisfaction with the facility and willingness to return. Accordingly, individual industrial tourism facilities should offer more and improved exhibitions and programs, and that the needs of "Active tourists" should be met by coordinating multiple industrial tourism facilities, restaurants, accommodations, and leisure facilities. Currently, The Nagoya Chamber of Commerce and Industry introduces multiple industrial tourism facilities in the form of a model course, but I would like to propose that this should be offered to tourists as a package that includes elements such as dining, accommodation, and leisure facilities. This ideal form is inspired by Germany's Autostadt, which, as noted above, provides tourists with many different options for dining and

accommodation. However, in Nagoya and Chukyo, it is difficult for one industrial tourism facility to provide all of these. Therefore, multiple industrial tourism facilities should coordinate to meet the demands of active tourists.

Second, "Expenditure tourists" are motivated to purchase the products and services they may encounter during their tours; notably, their motivation to consume may increase if they are offered more options, such as different accommodation and the opportunity to hold user-centered events. In response, I make two suggestions. That is, (1) industrial tourism facilities should give users opportunities to purchase related products and services. In addition, (2) industrial tourism facilities should respond to the diverse consumer motivations of their users and offer paid industrial tourism tours, enhanced accommodations, and opportunities to hold user-centered events. If such things prove difficult to implement at one industrial tourism facility, then, as above, multiple industrial tourism facilities should cooperate to meet the needs of expenditure tourists; indeed, local companies and local governments should also be involved in such initiatives. This approach is also exemplified by the Autostadt through things such as delivery ceremonies and test drives. These efforts have succeeded in fostering a premium feeling for expenditure tourists. Currently, such efforts are rarely seen in Nagoya and Chukyo.

Summary and Future Problems

In this study, I focused on (1) "transportation" industries unique to Nagoya and Chukyo and (2) "familiar and premium products and services" for consumers. I conducted a questionnaire survey targeting users of six industrial tourism facilities in these areas and analyzed the results using structural equation modeling. Based on the results, I advise industrial tourism in Nagoya and Chukyo may be revitalized by strengthening responses to "Active tourists" and "Expenditure tourists". In the future, I would like to consider whether these proposals can be applied to all aspects of industrial tourism in Japan.

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Declaration of Interest Statement

I declare that I have no conflict of interests.

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