Impression Evaluation for design of Plant Factory within restaurants

A Comparison between Japan and China

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1.Background
There are various of benefits by setting Plant Factory in restaurants such as reduce of food mileage by ’shop production on shop consumption’ model, provision of vegetables with high quality and freshness, reduce of transportation costs. And increase of efficiency due to downsizing. Plant Factory featured restaurants create a new potential value of places where people can get in touch with plants.

Being placed under the view of the customers, other than requirements of large scale Plant Factory like production efficiency and taste of vegetables or herbs, new elements such as impression of Plant Factory as part of interior become important. Until now, there is seldom research about Plant Factory involved on the role of Plant Factory as part of the interior. Finding out where are consumers looking at, in which way they feel and how they evaluate Plant Factory while using Plant Factory featured restaurant. The research provides estimation to evaluation standard for installing Plant Factory into restaurants.

2.Purpose
The purpose of this study is finding out where consumers looking at, in which way they feel about and how they evaluate Plant Factory while using Plant Factory featured restaurant. The research provides estimation to evaluation standard for installing Plant Factory into restaurants.

3.Definition of Plant Factory in this study
Plant Factories can be broadly divided into two types: “Artificial Light type” which completely uses artificial light instead of sunlight in a closed environment such as building and “Sunlight Type” in semi-closed environment such as a greenhouse, of which the lighting system is basically from sunlight, but with light supplement during rainy and cloudy weather.

Plant Factory in this study refers to “Artificial Light type” enclosed or not enclosed by showcase, which is or expected to be installed into restaurants.

4.Sample Analysis
This chapter provides a brief summary of current trends and characteristics of Plant Factory and divided all samples into 4 types using quantification theory type iii.

Images of 30 Plant Factories within restaurants running in Japan are collected as materials for analyzing.

After observation and analysis of Plant Factory samples, on the base of preceding studies 8 items and 24 categories as shown in table 1 were decided as standard to classification the samples.

 Samples are classified into 4 clusters by Cluster analysis. (Figure-1)

Features of cluster 1: Curtain style. Plant Factory set on cell or vertical surface. Other than leaves, fruits can be seen in some samples. Lighting colors are bright and based on a warm tone. All samples are full of greenery and have a relatively natural appearance in common.

Features of cluster 2: Field style. Plant Factory set on lower positions like floor or flowerbeds. Several kinds of plants are
mixed up in one Plant Factory. Leaves and flowers can be seen in some samples. Soil can be seen from appearance. Lighting colors are comparatively dark. Warm tone and cold tone confounded in all samples. This cluster has a relatively natural appearance.

Features of cluster 3: Bowl Style. Plant Factory with a glass or plastic exterior setting on lower positions. Samples of cluster 2 have a comparatively small size shape, being scattered in whole space. In individual cases, roots of the plants can be seen. Lighting colors are comparatively dark. Samples could be placed extremely close to customer seating.

Features of cluster 4: Showcase Style. Plant Factory with enclosure showcases. Lighting systems are completely supported by artificial light and are mostly based on cold tone. The shape is very much similar to large scale Plant Factories.

5. Suitability of Plant Factory for different purposes
This part aims at finding out the most suitable type for variety of dining situations. Result shows that most of the purposes don’t have clear tendency to one sample. However, the most significant result shows on purpose “Date & Anniversary” of cluster 3. The same result could be seen on both Chinese & Japanese users.

6. Effect of Plant Factory on sense of taste
The most significant tendency could be seen on taste of “refreshing”. Samples with Plant Factory have apparently more effect on appetizing refreshing foods. The same tendency could be seen on both Japanese and Chinese users. Another tendency could be seen is that sampling 4 effects on Chinese users on sense of warmth. But on the contrary doesn’t have obvious effect on Japanese users.

7. Evaluation structure of Japanese and Chinese users
The Evaluation structure shown as Figure-2. The result of this section could be explained as: Plant Factory full of greenery and with a warm atmosphere will make Japanese users feel mentally peaceful and like getting closer to the plant. On the other side, Chinese users tend to concentrate on the sense of space, which means Plant Factory with a wide field vision is ideal for Chinese users.

The other point is that with Plant Factory have an effect on Japanese users as mentally healing, effect on Chinese users seems to be more about appetizing.

8. Summarize
In the first part of the thesis, a brief summary of current trends and characteristics of Plant Factory are provided, divided all samples into 4 types using quantification theory type iii.

The second part found out the most suitable type for variety of dining situations.

The third part found out effect of Plant Factory on sense of taste.

The forth part shows in which way Japanese and Chinese users look at Plant Factory, how they feel and evaluate it.

With the results of this study, it could provide a conclusion to help with the future development of Plant Factory featured restaurants both in Japan and China.

Reference
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