Improving restaurant productivity
Introducing service engineering

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Corporate Introduction

- **Name**: Ganko Food Service co., ltd
- **Established**: Apr, 1963 in Osaka city
- **Business Category**: Management of restaurant
  Production and export of food item
- **Employees**: Approximately 4,000 (include part timer)
- **Sales revenue**: $300 million (US)
- **Stores**: 100
Business environment of Japanese restaurant industry
Chain store management system

- Eating out was luxurious leisure because restaurant was expensive
- Chain store system realize low price restaurant.
  → Eating out has become popular leisure since 1970’s

Central Kitchen

- to reduce cooking staffs at each restaurant store
- to reduce kitchen equipment at each restaurant store
- to stabilize quality of food products

Multi store operation

- to reduce ingredient cost by volume purchasing
- to reduce investment cost by volume construction

Simplification of menu and service

- to reduce labor cost by introducing part timer
- to reduce total kinds of operations at store
Growth of Japanese restaurant industry

In 1969, Japanese Government permit foreign companies to invest in the Japanese restaurant market.

In early 1970’s, Innovative Japanese restaurant companies introduce chain store management system.

Fig: Market size of restaurant industry in Japan
Japan Food Service Association (20113)
Key Industry

As the market size of restaurant expand, the restaurant industry has become one of the key industry in Japanese economy

Fig: Market scale of industries in Japan
Japan Food Service Association (20113)
<table>
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Changing Market Environment

Demand side “Diversification of customer taste”

- Customers have experienced various types of restaurants
- Therefore, customers have become “well-experience”, and their preferences are very diverse
Changing Market Environment

Supply side “Market has become Competitive”
■ Sluggish Japanese economy

- Japanese GDP had been increased for more than a century
- “The burst of bubble economy” bring sluggish economy
- Further, economical and natural disaster hit Japanese economy

![Graph showing Japanese GDP from 1989 to 2009 with significant events marked: The Lehman's Shock, Burst of "the bubble economy", Huge Earthquake.]
Japanese restaurant business in recent years

- In 1990’s, revenue-growing stop, and gradually reduce in recent years
- Overstores, Reduction of Population, Long-Term Deflation
- Most critical reason is customers’ change in taste

Fig: Market scale of restaurant industry in Japan
Japan Food Service Association (2011)
Reduction of population

- Japanese population started decreasing since 2006
- Aged people increased, and young people decreased
- Industrialized countries face the same problem as well as Japan
The crisis of the traditional restaurant

In Japan, the market scale of the traditional Japanese restaurant has been decreasing for several decades. Customer’s preferences have changed for decades. In contrast, traditional restaurant persist to provide traditional (out of date) cuisine.

→ The traditional restaurant should bring the taste and dishes up to date for current customer.

Fig: Transition of total of traditional Japanese restaurants
Ministry of General Affairs (2009)
Summery

◇ Changing market environment
  • As market size expand, restaurant industry has become competitive
  • Customer preferences has become diversify. Therefore, Chain store system (Simplification) should be advanced to adopt customer change

◇ Market shrink
  • Long-term depression and deflation bring reduction of average customer budget and frequency of eating out
  • In recent decades, customer prefer western style, therefore, market size of Japanese traditional restaurant shrink rapidly

◇ Changing social structure
  • Reduction of population will bring further restaurant market shrink
  • Reduction of population will also bring labor shortage because restaurant industry is a labor intensive service
Management Strategy

-How to maximize add-value?-
The concept of management strategy

Productivity = \frac{Add\ Value}{Labor\ Input} \rightarrow Our\ main\ focus\ for\ management\ strategy

Productivity = \frac{Add\ Value}{Labor\ Input} \rightarrow Our\ main\ focus\ for\ service\ engineering

How to increase add value?

- not high price, but new value will increase add value
- create and offer new style Japanese cuisine for customer
- Craftsman-based production, but realize reasonable price
Combination of contents - a way to create new value -

Nishijin textile and Italian Bag

Iron plate and Stationary

Event and Tea Ceremony

Yuzen textile CG technology
Combination of restaurant and culture  
-creating new value for customers-

◇General trend — Simplification
  • In general, restaurant simplify food and service to improve productivity

◇Our way — Combination
  • Our company try to combine restaurant and Japanese culture to create new value and improve productivity

Restaurant and culture
How to differentiate from competitor?

- Traditional Restaurant
- Combined Restaurant
- Chain Store Restaurant

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Combination of food “Sushi and Kaiseki”
-how to create new style Japanese restaurant? 50 years ago-

Combine Sushi and Retail Business

Introduce big showcase to show Ingredients to customers
Indicate fixed prices to customers
(Sushi was close to price before)

Combine sushi and Japanese traditional cuisine
In the restaurant industry, which involves both manufacturing and sales elements, the optimization of procedures is crucial in improving productivity. Production procedures need to be optimized in both hardware and software.

■ Combination of craftsman and central kitchen
-how to realize high value and reasonable price-
Combination of restaurant category
- How to minimize break even point? -

1\text{st} floor is better location for restaurant, Rent cost of 1\text{st} and top floor is high Rent cost of middle floor is low →Lease whole building for cost leveling Some restaurant category are required to operate building as restaurants

Investment cost for Japanese restaurant is high because of construction and decoration work →Combines self investment and landlord investment to minimize cost High revenue per square meter is required to call in landlord investment ∴ Lease cost is commission fee
Combination of Japanese style restaurants - how to get wide range of customer:

- Sushi
- Japanese restaurant
- Fine restaurant “Ryotei”
- Japanese noodle
- Casual restaurant
- Okinawa Cuisine
Figure: structure of POS System
■ Combination of restaurant category
- How to minimize company risk? -

In order to accommodate some characteristic of the company’s business, our portfolio consists of a mixture of businesses.

- Seasonal fluctuations are significant (summer 1 : winter 1.5) → highly volatile business
- Main ingredient is fish → cost ratio of raw materials is high, and it is difficult to secure a stable supply
- Complex facilities + prime locations → ratio of fixed cost is high

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<th>Okinawa Cuisine</th>
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Management strategy for add-value

Business Environment

Management Strategy

Combination for add value
Restaurant & Culture
Sushi & Japanese Cuisine
Craftsmanship & CK

Investment

Business Portfolio

Value for customer

Customer
Diversify

Competitor
Over Store

Company
Market Shrink

Landlord

Own-fund
Introduction of service engineering
How to realize efficiency?
The concept of service engineering

Productivity = \frac{Add Value}{Labor Input} → Our main focus for management strategy

Productivity = \frac{Add Value}{Labor Input} → Our main focus for service engineering

How to minimize labor input?

Characteristics of service
- Intangibly
- Simultaneity
- Heterogeneity
- Perishability

Required technology
- Visualization of service
  - Constant monitoring
- Human oriented design
- Support service field and staff

Service optimizing loop
- Observation
- Analysis
- Designing
- Application
The concept of Service Engineering

Center for Service Research introduce the concept of “service optimizing loop” to enhance productivity of service industry. CfSR develop new technologies to form the loop.
Measurement of service operation at restaurant
Using RFID device, sensors, and 3D-CG technologies
Concept of the system

- Pictures of the restaurant
- Create 3-D CG
  - Measurement of operation by sensor module
  - Visualization
  - Data
  - 3DCG
  - Replay

Create 3-D CG
3-Dimension CG

Pictures

Local Modeling

Global Modeling
Measurement of operation

- Portable sensor module is developed to measure track of staffs.
- The sensor usually transmit location information to the server.
  The server record data to replay transmission of the staff.

VTR is placed at kitchen and hall to measure operation of staffs.
Visualizing operation

- Automatic process
- Data
- Files
- Handwork process
- Output data

3D Model

Operation list

- VTR picture

Correct data
- operation
- location
- Basic action
- Voice data
- Kind of operation

Dictionary

Learning Phase

Registration

Estimating Phase

unknown data
- operation
- location
- Basic action
- Voice data
- Kind of operation

identify operation
Display of the system

- Indicate Operation data
- Indicate POS data
- Indicate VTR picture
- Indicate time line and operation
- Control And Handling
Results of the service operation improvement by QC circle

- The system introduce restaurant store
- QC circle try to increase performance using the system
- Results shows staff increase performance, they can grasp bottleneck of service operation by the system
Improving Labor Productivity and Labor Elasticity
Using simulation and introducing cell production system
The problem of conventional production system

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Productivity: $\frac{20}{36} \rightarrow 0.56$

unproductive
The Objective of introducing cell-production system

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Added Value

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Productivity

\[ \frac{20}{27} = 0.75 \] (0.56)
■ Structure of the system

Store
- Record order information (Demand)

Headquarters
- Data server
  - Order time
  - Order number DB
- Download
  - Layout DB
  - Operation DB

Simulator
- Download

Record cooking operation and kitchen layout (Supply)
# Database of cooking operation

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<td>55.539</td>
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</table>
Layout planning by using the system

Restaurant often plans kitchen layout based on experience of planning staff or matured chef

Even skillful chef or planner experience less than 1,000 restaurants planning
→ Can they realize optimal layout based on experience only?

They can evaluate layout planning and discuss optimal kitchen layout before construction or renovation
→ They can improve kitchen planning using both experience and system
Shift planning by using the system

Cooking position

Matters of operation
Introducing cell production system

When restaurant order is simple, a chef cooks various kind of dishes at a cell cooking position.

The production system work well because of multiproduct restaurant; they hire cross trained chef.
Point diagram between revenue and work hour

Fig: Line production

Fig: Cell Production
Statistical results

<table>
<thead>
<tr>
<th></th>
<th>Line Production</th>
<th>Cell Production</th>
</tr>
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<tbody>
<tr>
<td><strong>Revenue</strong></td>
<td>@</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1,707,000 Yen/Day</td>
<td>1,661,000 Yen/Day</td>
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<td>SD</td>
<td>347,000 Yen</td>
<td>304,000 yen</td>
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<tr>
<td><strong>Work Hours</strong></td>
<td>@</td>
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<tr>
<td></td>
<td>137.7h/Day</td>
<td>116.0h/Day</td>
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<tr>
<td>SD</td>
<td>16.2 Hour</td>
<td>12.2 Hour</td>
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<td><strong>Correlation</strong></td>
<td>0.44</td>
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</tbody>
</table>
Practical service optimization loop

Innovation of service
Strategy/Top Executive

Redesign service contents
Tactics/manager

Optimize demand and supply
Operation/staffs

Labor scheduling
Purchase Management

Service designing
Menu designing

Investment
Business model

External Data

Head quarter

Accounts

Bayesian
Network

Statistical
Analysis

Simulation

Qualitative
analysis

Practical service optimization loop
POS system
Staff debt recognition
Labor control
Buying control

Layout
Scheduling
Forecasting

Stores
Conclusions

◇Service innovation

Productivity = \frac{Add Value}{Labor Input} \quad \text{Management Strategy}
\text{Service Engineering}

◇Combination of value and efficiency

Restaurant (Donor) \quad \text{Co-create} \quad \text{Multiplication of service} \quad Customer (receptor)
Synthesis and cooperation of service study

Cooperated Service engineering

Innovation

Service Science

Application

Observation

Analysis

Designing

Service Management
Thank you for your attention