18. Design Patterns for Service Experiences

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Plan for Today's Lecture

"Value Creation" Patterns
Heskett: "The Service Profit Chain"
Frei: "Breaking the Tradeoff Between Efficiency and Service"
General Mechanisms for Dealing with Variable Demand
Queuing Models and Patterns
Design Patterns

Because services are often less tangible or more abstract than products, service descriptions are more amenable to conceptual manipulation.

As "service" moves beyond traditional person-to-person services to self-service, web services, computer-to-computer service we are induced to take a more abstract perspective to emphasize what they have in common.

This suggests that design patterns or models for services could be exploited systematically to invent new or improved services.

Design Patterns for Service Experiences

Many design patterns for service experiences are abstract qualitative depictions of the "value chains" that create positive outcomes for customers or other stakeholders.

They provide frameworks for design choices that encourage or constrain the experiences, so they can serve as templates for a set of related service offerings that vary in the number or intensity of encounters or co-production.

Traditional service design mechanisms like scheduling and demand management can be used as patterns in this way.

Queuing theory is an exception in that it is formal and deterministic in specifying how "back stage" parameters control the "front stage" experience.
Service Intensity: Levels / Numbers of Touch Points

The intensity or number of touch points required of a service customer varies between services and between different offerings of the same type of service. Some services are standardized and never customized to specific customers. Others can be adapted if the customer requests and participates in the adaptation by providing information or preferences.

Brand Touchpoint Wheel
The most successful service organizations recognize that their profitability is largely determined by how their employees interact with their customers. These firms make lots of "intangible investments" in recruiting, training, and compensation of their employees. They measure many aspects of employee and customer behavior and satisfaction. Goal is to calibrate the value of products and services delivered so that the firm can increase customer satisfaction and loyalty and assess the impact on profitability and growth.
Principles Governing the Service-Profit Chain

Customer Loyalty Drives Profitability and Growth
Customer Satisfaction Drives Customer Loyalty
Value Drives Customer Satisfaction
Employee Productivity Drives Value
Employee Loyalty Drives Productivity
Employee Satisfaction Drives Loyalty
Internal Quality Drives Employee Satisfaction

The Service-Profit Chain
Customer Loyalty Drives Profitability and Growth

Loyal customers are the most valuable -- most loyal 20% provide all the profit and cover the costs incurred in dealing with less loyal customers.

Loyalty is measured by the duration and the depth of the relationship.

Customer Satisfaction Drives Customer Loyalty

Only the most satisfied customers are truly loyal (on 1-5 satisfaction scale, 5s are substantially more loyal than 4s).

Companies strive to create apostles and to avoid creating terrorists.
Value Drives Customer Satisfaction

But value is often tricky to measure, because there are both absolute or objective measures of value and subjective ones based on customer expectations.

Studies show that people will sometimes rate a service experience more highly if they had to wait.
Employee Productivity Drives Value

Example in paper is Southwest Airlines, where positions are designed so that employees can do several jobs if necessary. The faster turnaround time for planes increases their utilization. Southwest was the most profitable airline at the time this paper was written and remains highly profitable today.

Employee Loyalty Drives Productivity

The cost of employee turnover is usually measured in terms of the costs of recruiting, hiring, and training replacements. But in most service jobs, the real cost of turnover is the loss of productivity, which in turn results in lower customer satisfaction.
Employee Satisfaction Drives Loyalty

This may be the most obvious principle... that if you like your job you probably want to keep it for a long time.

Too often firms don't bother to measure whether their employees are satisfied, especially when they don't perceive that employees have many options to leave.

Internal Quality Drives Employee Satisfaction

Internal quality is a measurement of the attitudes that employees have toward their jobs, colleagues, and the firm as a whole.

A key contributor to internal quality is whether employees feel empowered to meet customer needs.
Frei: "Breaking the Tradeoff"

A service system embodies some particular value chain structure.

But the idealized view of how experience is created is tempered by variability in customers:

- Arrival
- Request
- Capability
- Effort
- Subjective Preference

Accommodating Customer Variability

![Diagram showing the relationship between Quality of Service Experience and Cost to Serve. The diagram divides the space into four quadrants: High Cost to Serve with High Quality Experience, High Cost to Serve with Low Quality Experience, Low Cost to Serve with Low Quality Experience, and Low Cost to Serve with High Quality Experience. The areas are labeled: Low-Cost Accommodation, Uncompromised Reduction, Classic Reduction, and Classic Accommodation.]
General Mechanisms for Dealing with Variable Demand

Value chain models are open ended and industry-specific ones can have many different causal or explanatory constructs or "points for creating value"

There are some more general and robust mechanisms that are important to know because they use a smaller number of factors to explain how the service system works:

- Capacity Management and Scheduling
- Influencing and Managing Demand
- Managing Demand in Queues

Demand Vs Capacity - 4 Scenarios

1. Underutilization
   - Cost of idle capacity

2. Optimum capacity utilization
   - Good service quality

3. Queues or reservation systems
   - Lower service quality

4. Insufficient capacity
   - Lost business and revenues
Capacity

Capacity in service operations is generally divided into FIXED (long-term) and VARIABLE (short-term) components.

Capacity is also categorized in terms of facilities, equipment, and labor.

Fixed Capacity

Fixed capacity is determined by physical resources like facilities, airplanes, beds, computers, classrooms...

These usually represent significant strategy choices and investments and take time to acquire and deploy.

The fixed capacity investments largely determine the MAXIMUM CAPACITY of the service (hotel rooms, seats on airplane flights, checkout stations, call center telephone lines).

The OPTIMAL CAPACITY, the number of customers that can be served at a desired level of service, is always less than the MAXIMUM CAPACITY.
Strategy Considerations for Fixed Capacity Investments

- Fixed capacity investments are often significant and irreversible.
- Fixed capacity is often added in large discrete units (airplanes, buildings,...) so it is impossible to match capacity with demand exactly.
- When to invest is a critical decision.
- Is it useful to distinguish fixed capacity for "back stage" operations from that for "front stage" operations?

Variable Capacity for Fixed Investments?

- Scheduling of equipment (airplanes, trains, buses) and deliveries (sequence, routing) is a critical issue in service design.
- If facilities and equipment can easily be reallocated, rescheduled, or reconfigured for different tasks or functions they can be viewed as variable capacity.
- Sharing of facilities or equipment increases the overall capacity of the service providers doing the sharing.
- Facilities, equipment, computing capacity can be rented/leased or obtained "on demand" from a service provider.
Labor Capacity

Labor is obviously the most variable resource of a service firm.

Labor capacity is managed in many ways depending on the time horizon:

- Education, immigration policy, and other long-term factors shape labor capacity in the economy.
- Hiring and internal training affect the long-term labor capacity of a firm.
- Scheduling of service workers is the primary mechanism for adjusting variable capacity to address short-term variations in demand.
- Queuing and routing of customers are mechanisms for managing capacity in real time.

Scheduling

Short-term demand variability can be addressed via cross-training of workers.

And by the use of part-time or temp workers.

Seasonable variation in demand for services that use low-skill / low-paid workers can also be met by hiring more of them.
Influencing or Shifting Demand [1]

The most fundamental approach in managing demand is to shift it from periods when it exceeds service capacity (and quality is impaired) to periods of underutilized capacity (when quality can be much better).

PRICE DISCOUNTS for services provided at off-peak times or surcharges for peak times can significantly shift demand.

Demand can also be shifted by offering a comparatively less attractive service package at peak times.

BUNDLING -- offering a combination of several services at a reduced rate -- is another technique for increasing demand at off-peak times.

Influencing or Shifting Demand [2]

PROMOTION AND ADVERTISING can help by branding the idea that services at off-peak times are convenient and desirable (7/11 stores, 24-hour fitness, etc.).

RESERVATIONS enable a service provider to schedule or shift demand, and coupled with YIELD MANAGEMENT pricing mechanisms can either increase revenue or increase effective capacity.
Influencing or Shifting Demand [3]

SMOOTHING of demand is accomplished by moving any discretionary or schedulable services away from periods of high variable demand and toward periods of low variable demand

- Emergency calls and preventive action have different origins. Emergency calls are often highly uncertain and random, whereas preventive action can be planned
- But some "emergencies" are highly predictable

Demand can also be smoothed by RESOURCE POOLING, as in the case of a typing pool or a centralized call center that handles calls for numerous time zones or companies

LOYALTY PROGRAMS smooth demand by offering customers free or upgraded services that would otherwise go unused to increase their likelihood of buying services at other times

Yield Management

For firms that provide services with high fixed costs and low variable costs (airlines, cruise ships, hotels, rental cars, amusement parks...) profitability is directly tied to their overall sales

So the firm wants to maximize its capacity utilization, even if it requires selling (or pre-selling) some of that capacity at reduced prices, as long as those prices exceed its variable costs

The essence of yield management is CUSTOMER SEGMENTATION

Yield management is simple in principle but requires substantial computing in practice
Yield Management: Modeling the Customer

Yield Management: Maximizing Profits
Managing Demand in Queues

If demand and supply are still out of balance and there is no option to reserve in advance, customers have to wait in line, at the risk that some may leave and switch.

The advantage of queues for the service provider is that they keep personnel busy and facilities and equipment fully utilized.

As the rate of arrivals nears the service rate, the average length of the queue will quickly increase.

An imbalance of supply and demand has different impact on the front and back stages of a service system.

Managing the Front Stage Queue: Configuration

The QUEUE CONFIGURATION refers to the number of queues, their locations and their layout (if spatial)

The customer might have a choice of queue, and this choice may be irrevocable... but sometimes it isn't and people engage in *jockeying*.
Managing the Front Stage Queue: Discipline

The QUEUE DISCIPLINE is the policy for selecting the next customer from the queue.

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Queue discipline
<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Static (FCFS rule)</td>
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<tr>
<td>Selection based on status of queue</td>
</tr>
<tr>
<td>---------------------------------</td>
</tr>
<tr>
<td>Dynamic</td>
</tr>
<tr>
<td>Selection based on individual customer attributes</td>
</tr>
<tr>
<td>---------------------------------</td>
</tr>
<tr>
<td>Number of customers waiting</td>
</tr>
<tr>
<td>---------------------------------</td>
</tr>
<tr>
<td>Round robin</td>
</tr>
<tr>
<td>Priority</td>
</tr>
<tr>
<td>Preemptive</td>
</tr>
<tr>
<td>Processing time of customers (SPT rule)</td>
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</tbody>
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The Call/Contact Center

The call/contact center is a classic example of a service system, where formal models and data collection dominate (queuing theory).

It is essential to model it as a service system because the quality of the "customer service" experience is not just determined when you talk to a person, but also whether you get through at all, wait times, and so on.

Customers express preferences and opinions about a service by their waiting, abandonment, interactions and subsequent interactions.

Most of the measures are also unbiased and quantitative, which are hard to come by in services.
Call Center Service System

The service provider -- the company running the call center

The agents/call takers

The schedulers / account managers

Company that has outsourced its customer service

The Call Center State Model
The Call Center System Conceptual Model - Queuing Theory

Simple Model: Palm/Erlang-A

- \( \lambda \) - Arrival rate (Poisson)
- \( \mu \) - Service rate (Exponential)
- \( \theta \) - Impatience rate (Exponential)
- \( n \) - Number of Service-Agents

Erlang-A Parameters (Math. Assumptions):

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Formula</th>
</tr>
</thead>
<tbody>
<tr>
<td>( \lambda )</td>
<td>Arrival rate (Poisson)</td>
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<td>Service rate (Exponential)</td>
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</tr>
<tr>
<td>( n )</td>
<td>Number of Service-Agents</td>
</tr>
</tbody>
</table>

Call Center Call Log - Raw Data

<table>
<thead>
<tr>
<th>ID</th>
<th>Start Time</th>
<th>Agent</th>
<th>Service Time</th>
<th>End Time</th>
<th>Agent</th>
<th>Service Time</th>
<th>End Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>01:10:00</td>
<td>John</td>
<td>01:20:00</td>
<td>01:30:00</td>
<td>Alice</td>
<td>01:40:00</td>
<td>01:50:00</td>
</tr>
<tr>
<td>2</td>
<td>02:00:00</td>
<td>Bob</td>
<td>02:10:00</td>
<td>02:20:00</td>
<td>Mike</td>
<td>02:30:00</td>
<td>02:40:00</td>
</tr>
<tr>
<td>3</td>
<td>03:00:00</td>
<td>Jane</td>
<td>03:10:00</td>
<td>03:20:00</td>
<td>Sarah</td>
<td>03:30:00</td>
<td>03:40:00</td>
</tr>
<tr>
<td>4</td>
<td>04:00:00</td>
<td>Tom</td>
<td>04:10:00</td>
<td>04:20:00</td>
<td>Dave</td>
<td>04:30:00</td>
<td>04:40:00</td>
</tr>
</tbody>
</table>

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Call Center Daily Summary


Call Center Data Regularity

Arrival Rates on Tuesdays in a September – U.S. Bank
Call Center -- Never Look at Average Service Time

Readings for "Component and Composite Services" on 3 November

L. Cherbakov, G. Galambos, R. Harishankar, S. Kalyana, and G. Rackham
"Impact of service orientation at the business level"

Ulrich Homann, Michael Rill, and Andreas Wimmer, “Flexible Value Structures in Banking”

Robert Schneider, “SOA and composite applications"