

Service System Dynamics and Design

January 18, 2007

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Service System Dynamics and Design (SSE 2300/MEEM 4990)

College of Engineering

Michigan Technological University

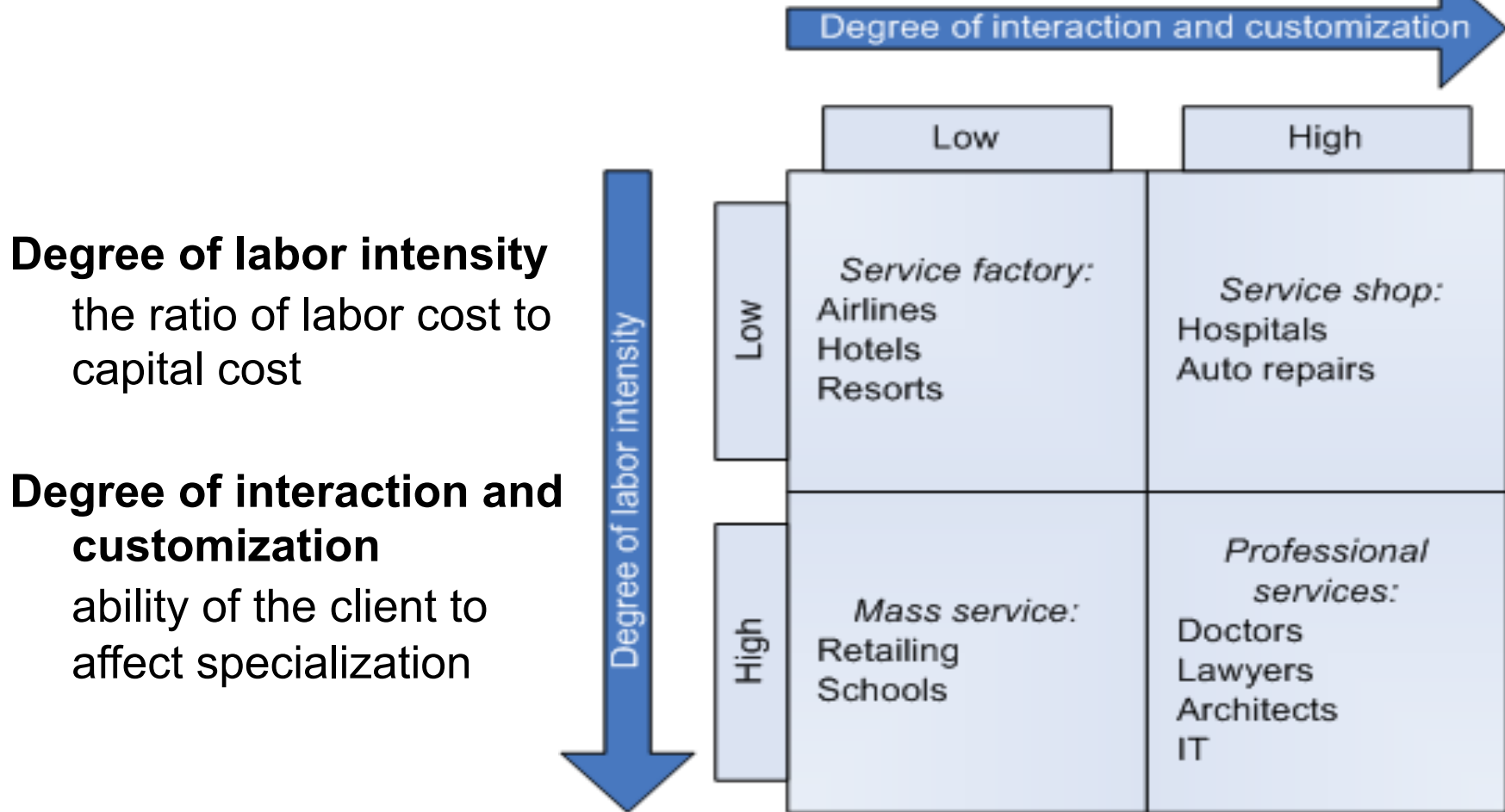
The Service Package

- **Supporting Facility:** The physical resources that must be in place before a service can be sold. Examples: golf course, ski lift, hospital, airplane.
- **Facilitating Goods:** Material consumed by buyer or items provided by the consumer. Examples: food items, legal documents, golf clubs, medical history.
- **Information:** Data processed into information that permits service to be customized. Examples: patient medical records, flight seats, customer preferences, customer location to dispatch taxi.

The Service Package (cont.)

- **Explicit Services:** Benefits readily observable by the senses. The essential or intrinsic features. Examples: quality of meal, attitude of waiter, on-time departure.
- **Implicit Services:** Psychological benefits or extrinsic features that consumer may sense only vaguely. Examples: privacy of loan office, security of a well-lit parking lot.

Service Process Matrix



Degree of labor intensity
the ratio of labor cost to capital cost

Degree of interaction and customization
ability of the client to affect specialization

(Adapted from Lovelock (1983) and Fitzsimmons & Fitzsimmons (2003))

Service Dominant View

- **Three principal notions**
 - ❖ **Co-creation of value – provider and consumer both participate**
 - ❖ **Relationships – connection between provider and consumer critical**
 - ❖ **Service provisioning – delivery is critical**

What is Co-Production?

- Viewing services as pay for performance – value is co-produced by client and provider (IBM, 2006)
- Customers' participation in service co-production processes has increased with rapid development of self-service technologies. Customers' involvement in completion of service production and delivery processes (Xue and Harker, 2003).
- Emerging 'co-production' sector – both inside and outside public services – service users are regarded as assets, involved in support and delivery of services (Informed Change Findings, 2006).

What is Co-Creation?

- **Co-Creation seems to be replacing the term Co-Production**
- **Definition the same??**
- **Although services are produced, so are goods and so there was some perceptual issues associated with term "Co-Production"**
- **The customer/client plays an active role in creation of the service. This is true for most services.**
- **What do creation and production mean in the context of tangible goods?**

Provider-Client Relationship

- **Provider**
 - ❖ An entity (person, business, or institution) that undertakes activities to meet a need
 - ❖ An entity that serves
- **Client**
 - ❖ An entity (person, business, or institution) that engages the service of another
 - ❖ An entity being served
- **General relationship characteristics – The client**
 - ❖ Participates in the service process (also known as the service engagement)
 - ❖ Co-produces the value
 - ❖ The quality of service delivered depends on customers' preferences, requirements, and expectations

Current Services Thinking

- **Service is a provider-client interaction that creates and delivers value while sharing risks**
- **Services have value that can be rented**
- **Services are the application of specialized competences (skills and knowledge)**
- **Services are autonomous, platform-independent, functions**

Service Process Efficiency and Effectiveness

- Customer as co-producer
- Front and back office perspectives
- Service profit chain focus on internal and external customers
- Quality (perceptions vs. expectations)
- Focus on both efficiency and effectiveness
- Use I.T. as productivity enabler for both internal and external customers

Classifying Services

- **Generally, not "black and white" – rather they fall along a continuum...**
- **But, extremes serve us well in an educational process**
- **Ways of classifying**
 - ❖ **Nature of the Service Act**
 - ❖ **Relationship with Customers**
 - ❖ **Customization and Judgment**
 - ❖ **Nature of Demand and Supply**
 - ❖ **Method of Service Delivery**

Strategic Service Classification (Nature of the Service Act)

Direct Recipient of the Service

People

Things

**Nature
of the
Service
Act**

**Tangible
Actions**

**Intangible
Actions**

<p>Services Directed at People's Bodies:</p> <p>Healthcare Passenger transportation Beauty salons Exercise clinics Restaurants</p>	<p>Services Directed at Goods and other Physical Possessions:</p> <p>Freight transportation Repair and maintenance Laundry and dry cleaning Veterinary care</p>
<p>Services Directed at People's Minds:</p> <p>Education Broadcasting Information Services Theaters Museums</p>	<p>Services Directed at Intangible Assets:</p> <p>Banking Legal services Accounting Securities Insurance</p>

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Strategic Service Classification (Relationship with Customers)

Type of Relationship between Service Organization and its Customers

“Membership” Relationship

No Formal Relationship

Nature of the Service Delivery

Continuous Delivery of Service

Discrete Transactions

Insurance Telephone subscription Electric Utility Banking	Radio station Police protection Lighthouse Public highway
Long-distance phone calls Theater series tickets Transit pass Wholesale buying club Airline frequent flyer	Toll highway Pay phone Movie theater Public transportation Restaurant

Strategic Service Classification (Customization and Judgment)

Extent to which Service Characteristics are Customized

		High	Low
Extent to which Customer Contact Personnel Exercise Judgment in Meeting Individual Customer Needs	High	Surgery Taxi service Gourmet restaurant	Education (large classes) Preventive health programs Family restaurants
	Low	Telephone service Hotel services Retail banking Cafeteria	Public transportation Movie theater Spectator sports Institutional food service

Strategic Service Classification (Nature of Demand and Supply)

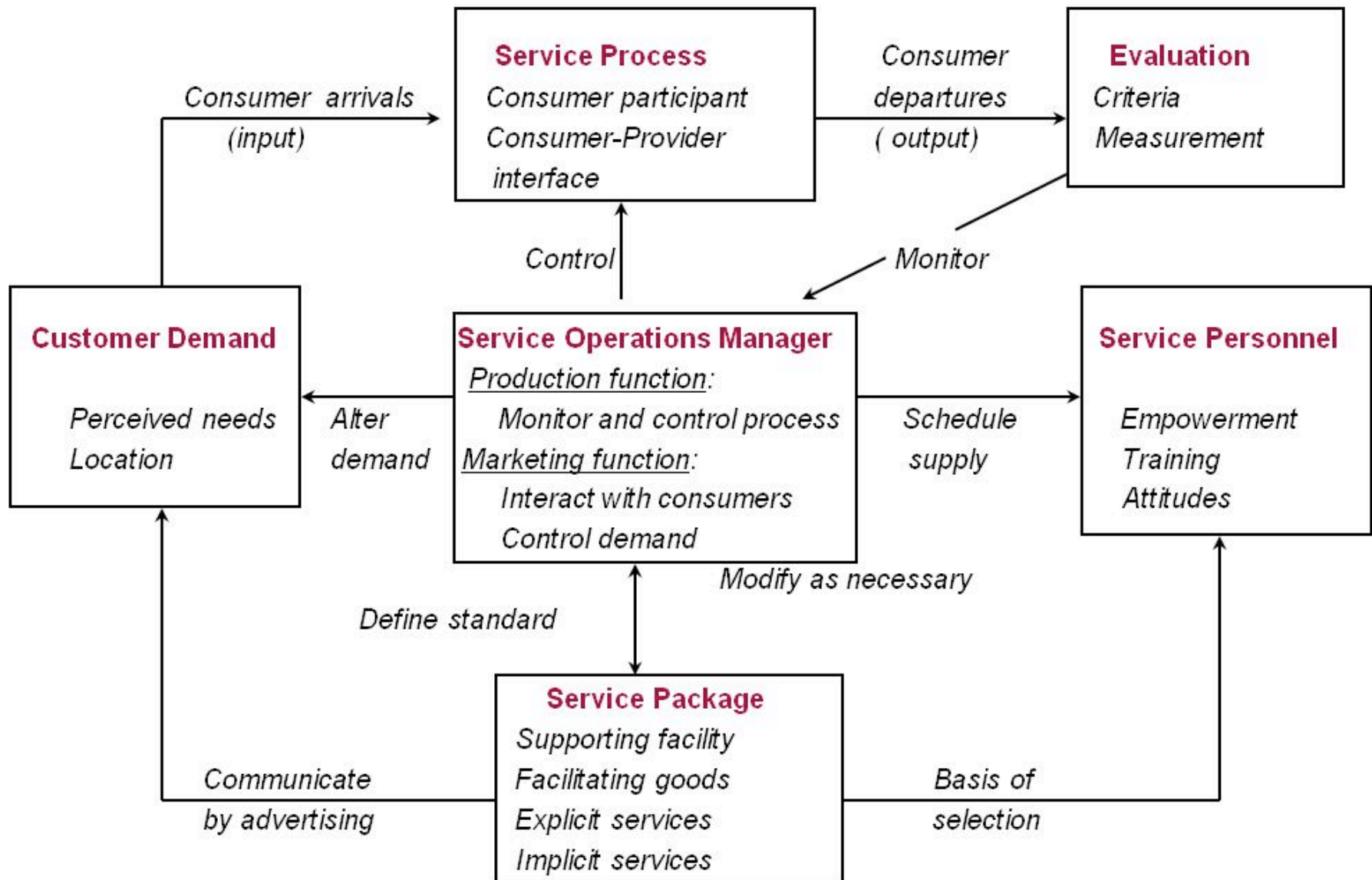
Extent of Demand Fluctuations over Time

		Wide	Narrow
<i>Extent to which Supply is Constrained</i>	Peak demand can usually be met without delay	Electricity Telephone Hospital maternity unit Police emergencies	Insurance Legal services Banking Laundry and dry cleaning
	Peak demand regularly exceeds capacity	Tax preparation Passenger transportation Hotels and motels	Fast food restaurant Movie theater Gas station

Strategic Service Classification (Method of Service Delivery)

		<i>Availability of Service Outlets</i>	
		Single Site	Multiple Site
<i>Nature of Interaction Between Customer and Service Organization</i>	Customer Travels to Service Firm	Theater Barbershop	Bus service Fast food chain
	Service Provider Travels to Customer	Pest control service Taxi	Mail delivery AAA emergency repairs
	Transaction is at Arm's Length	Credit card company Local TV station	National TV network Telephone company

Open Systems View of Service Operations



Traditional and Emerging Services Comparison

Issue	Service Enterprises	
	Traditional	Emerging
Co-Production Medium	Physical	Electronic
Labor Requirement	High	Low
Inventory Requirement	High	Low
Self-Service Requirement	Low	High
Transaction Speed Requirement	Low	High
Computational Requirement	Medium	High
Data Sources	Multiple Homogeneous	Multiple Non-Homogeneous
Driver	Data-Driven	Information-Driven
Data Availability/ Accuracy	Poor	Rich
Information Availability/Accuracy	Poor	Poor
Size	Economies of Scale	Economies of Knowledge
Service Flexibility	Standard	Adaptive
Focus	Mass Production	Mass Customization
Decision Time-Frame	Predetermined	Real-Time

Tien, J.M. and D. Berg, (2003) "A Case for Service Systems Engineering," Journal of Systems Science and Systems Engineering, 12(1), pp. 13-38.

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Topics for Discussion

- **What service characteristics are most appropriate for Internet applications?**
- **When does collecting information through service membership become an invasion of privacy?**
- **List some mgmt. problems associated with allowing employees to use judgment in serving customers.**
- **What factors are important to consider when attempting to enhance a service firm's image?**
- **What contributions to the management and operation of a professional service firm can an engineering graduate provide?**