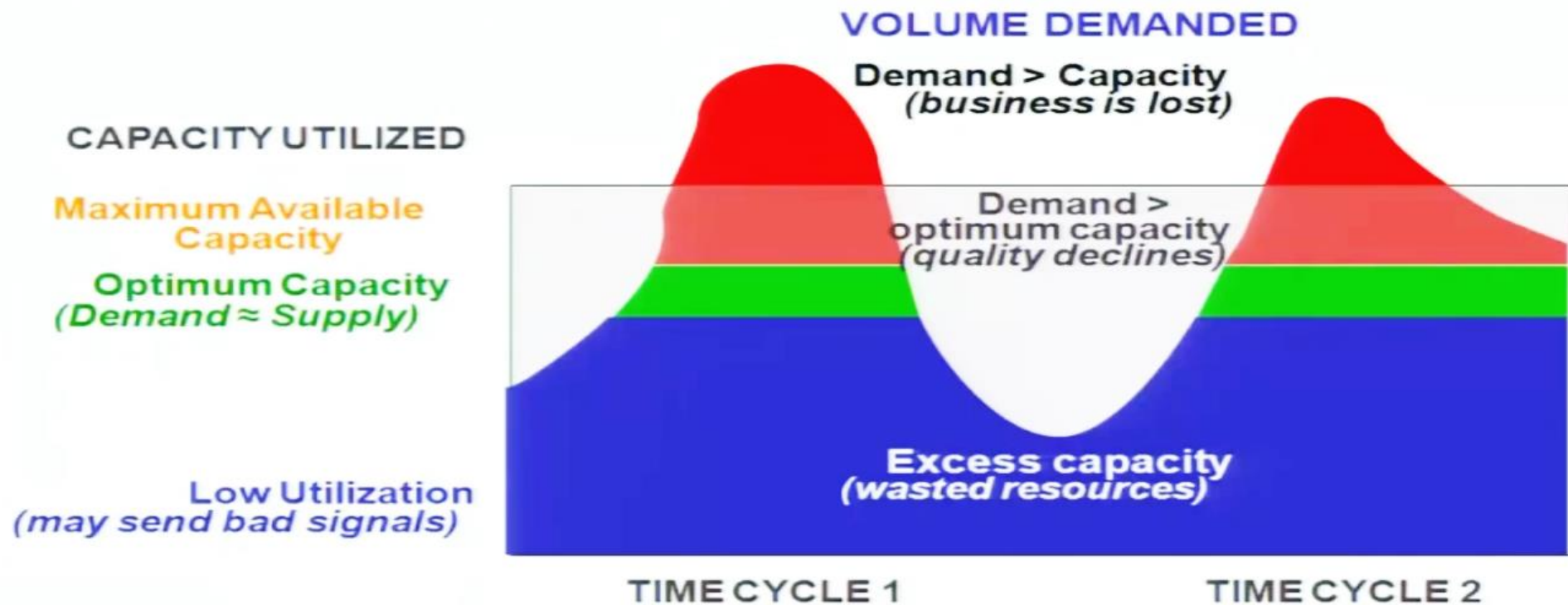


# **Week 3 Video 13**

# **The Challenge of Variable Demand Constrained Capacity**

# VARIATIONS IN DEMAND RELATIVE TO CAPACITY



# DEFINING PRODUCTIVE CAPACITY?

- Productive capacity can take several forms in services
  - Time
  - People
  - Space
- Success in capacity-constrained business = use of productive capacity as *efficiently* and *optimally* as possible.



## **ADDRESSING PROBLEM OF FLUCTUATING DEMAND**

Two basic approaches of which most firms use a mix of:

➤ **Adjust level of capacity to meet demand**

- Need to understand productive capacity and how it varies on an incremental basis

➤ **Manage level of demand**

- Use marketing strategies to smooth out peaks, fill in valleys
- Inventorying demand until capacity becomes available

# FLEXIBLE CAPACITY



# MANAGING CAPACITY

- Enables more people to be served at same level of capacity
- Stretch and shrink:
  - Offer inferior extra capacity at peaks (e.g., bus/train standees)
  - Use facilities for longer/shorter periods
  - Reduce amount of time spent in process by minimizing slack time
- Adjusting capacity to match demand
  - Rest during low demand
  - Cross-train employees
  - Use part-time employees
  - Customers perform self-service
  - Ask customers to share
  - Create flexible capacity
  - Rent/share facilities and equipment

# MANAGING DEMAND

## ➤ Take no action

- Let demand find its own levels

## ➤ Interventionist approach

- Reduce demand in peak periods
- Increase demand when there is excess capacity

## ➤ Inventorying demand until capacity becomes available

- Formal wait and queuing system
- Reservation system



## **MARKETING MIX ELEMENTS TO SHAPE DEMAND PATTERNS**

- **Use price and other nonmonetary costs to manage demand**
- **Change product elements**
- **Modify place and time of delivery**
  - No change
  - Vary times when service is available
  - Offer service to customers at a new location
- **Promotion and Education**

# TRANSFORMATION



*Prof. Jayanta Chatterjee : Dept. Industrial and Management Engineering : IIT Kanpur*

# HOTEL ROOM DEMAND CURVES BY SEGMENT AND SEASON



# **Week 3 Video 14**

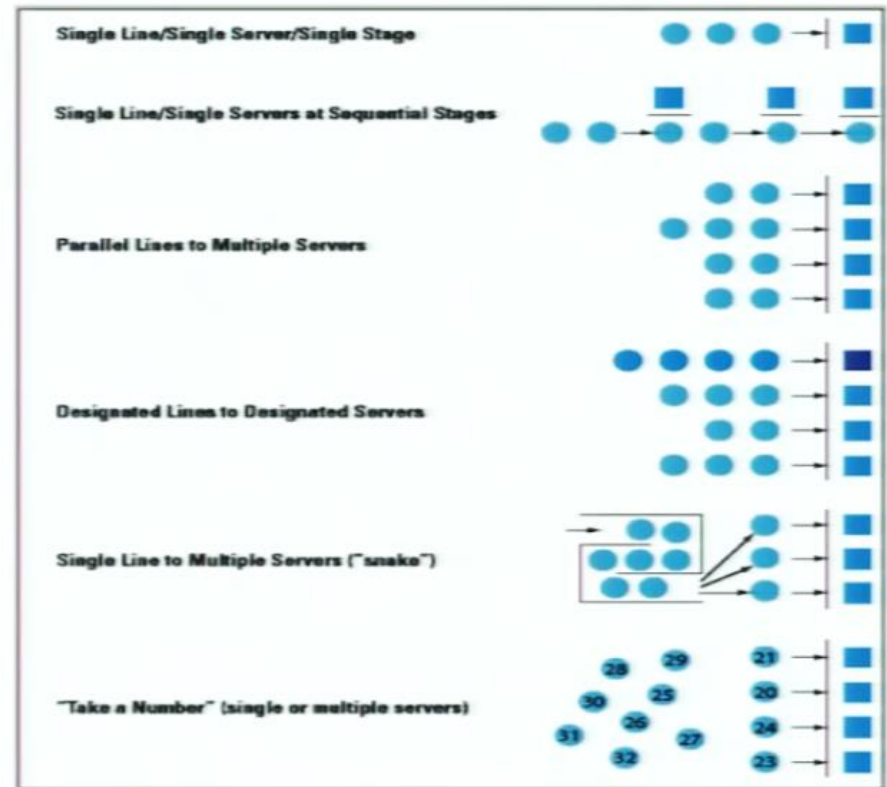


# WAITING LINES



# MANAGING WAITING LINES

- Rethink design of queuing system
- Install a reservations system
- Tailoring the queuing system to different market segments
- Manage customer behavior and perceptions of wait
- Redesign processes to shorten transaction time



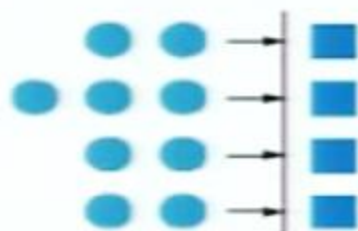
Single Line/Single Server/Single Stage



Single Line/Single Servers at Sequential Stages



Parallel Lines to Multiple Servers



Designated Lines to Designated Servers



Single Line to Multiple Servers ("snake")



"Take a Number" (single or multiple servers)



## WHY DO WAITING LINES OCCUR?

- Because number of arrivals at a facility exceeds capacity of system to process them at a specific point in the process
- Queues are basically a symptom of unresolved capacity management problems
- Not all queues take form of a physical waiting line in a single location
  - Queues may be physical but geographically dispersed ( Beeper)
  - Some are virtual (TTD wristband)



# TEN PROPOSITIONS ON PSYCHOLOGY OF WAITING LINES

Feels longer than	
Unoccupied time	Occupied time ( TV at boarding gate )
Solo waits	Group waits ( Mirror )
Physically uncomfortable waits	Comfortable waits
Pre- and post-process waits	In-process waits ( Holding Rooms at TTD )
Unexplained waits	Explained waits ( Pilot's announcement )
Anxious waits	Calm waits ( Alternate Flights )
Monotonous waits	Valued waits ( Spa at Airport )

*Sources: Maister; Davis & Heineke; Jones & Peppiatt*

## **BENEFITS OF RESERVATIONS**

- Saves customers from having to wait in line
- Helps to control and manage the demand (e.g., leave time for emergency jobs)
- Pre-sells the service and can be used to prepare and educate the customer for the service encounter
- Data captured helps organizations to understand their demand patterns and to plan their operations and staffing levels

## **CHARACTERISTICS OF WELL-DESIGNED RESERVATIONS SYSTEM**

- Fast and user-friendly for customers and staff
- Responsive to customer queries and needs
- Offers options for self service (e.g., through an online reservations system)
- Accommodates preferences (e.g., room with a view)
- Deflects demand from unavailable first choices to alternative times and locations

# INFORMATION NEEDED FOR DEMAND AND CAPACITY MANAGEMENT STRATEGIES

Historical data on demand level and composition, marketing variables

Demand forecasts by segment under specified conditions

Segment-by-segment data

Fixed and variable cost data, profitability of incremental sales

Meaningful location-by-location demand variations

Customer attitudes towards queuing

Customer opinions of quality at different levels of capacity utilization



# SUMMARY

- At any moment in time, a fixed-capacity service may face
  - Excess demand
  - Demand exceeding optimum capacity
  - Demand and supply well-balanced at the level of optimum capacity
  - Excess capacity
  
- To balance demand and capacity, a firm can:
  - Manage capacity
  - Take no action and let demand find its own levels
  - Reduce demand in peak periods
  - Increase demand when there is excess capacity
  - Inventory demand using wait & queuing, and reservation systems
  
- Capacity can be managed through:
  - Stretching or shrinking capacity levels
  - Adjusting capacity to match demand
  - Creating flexible capacity

# SUMMARY

- **Demand can be managed through**
  - Analysis of patterns
  - To be reshaped by marketing strategies
  
- **Waiting is a universal phenomenon. Waits can be reduced by**
  - Rethinking and redesigning the queuing system
  - Managing customers' behavior and their perceptions of the wait
  - Installing an effective reservation system focused on yield

# **Week 3 Video 15**

### Suggested Marketing Strategies for Problems Stemming from Unique Service Features

Unique Service Features	Marketing Strategies to Solve Problems	References Citing Strategies
Intangibility	1. Stress tangible cues.	Berry (1980), Booms and Bitner (1982), George and Berry (1981), Shostack (1977a)
	2. Use personal sources more than nonpersonal sources.	Donnelly (1980), Johnson (1969)
	3. Simulate or stimulate word-of-mouth communications.	Davis, Guiltinan, and Jones (1979), George and Berry (1981)
	4. Create strong organizational image.	Judd (1968), Knisely (1979a), Thomas (1978), Uhl and Upah (1980)
	5. Use cost accounting to help set prices.	Beard and Hoyle (1976), Dearden (1978)
	6. Engage in post-purchase communications.	Bessom and Jackson (1975), Fisk (1981), Zeithaml (1981)
Inseparability	1. Emphasize selection and training of public contact personnel.	Berry (1981), Davidson (1978), George (1977), Gronroos (1978)
	2. Manage consumers.	Lovelock (1981)
	3. Use multisite locations.	Carman and Langeard (1980), Langeard et al. (1981), Upah (1980)
Heterogeneity	1. Industrialize service. <sup>a</sup>	Levitt (1972, 1976)
	2. Customize service.	Bell (1981), Berry (1980), Johnson (1981), Regan (1963), Sasser and Arbeit (1978)
Perishability	1. Use strategies to cope with fluctuating demand.	Lovelock (1981)
	2. Make simultaneous adjustments in demand and capacity to achieve a closer match between the two.	Sasser (1976)

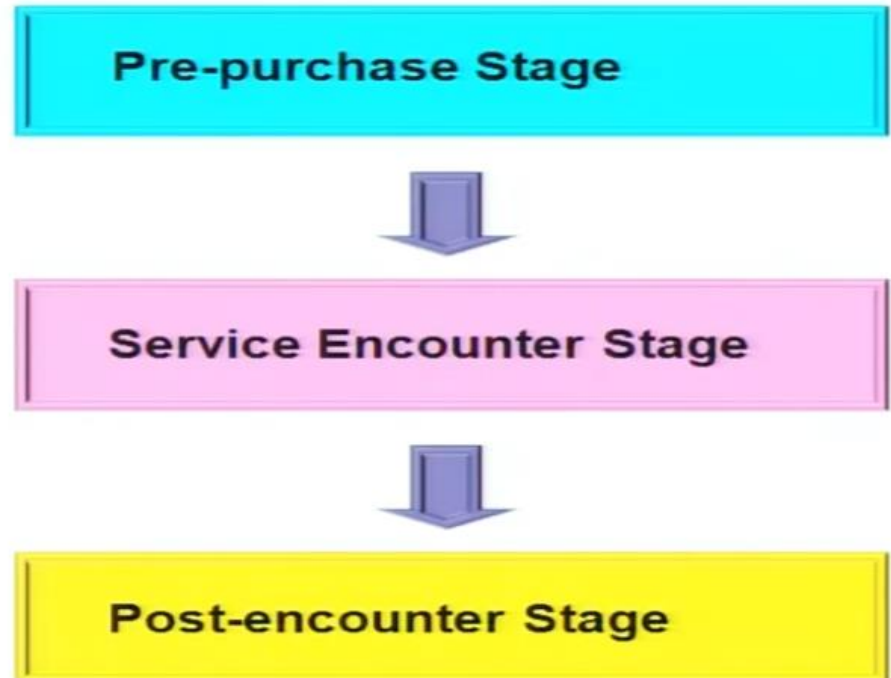
## **Suggested Marketing Strategies for Problems Stemming**

<b>Unique Service Features</b>	<b>Marketing Strategies to Solve Problems</b>
<b>Intangibility</b>	1. Stress tangible cues.
	2. Use personal sources more than nonpersonal sources.
	3. Simulate or stimulate word-of-mouth communications.
	4. Create strong organizational image.
	5. Use cost accounting to help set prices.
	6. Engage in post-purchase communications.
<b>Inseparability</b>	1. Emphasize selection and training of public contact personnel.
	2. Manage consumers.
	3. Use multisite locations.
<b>Heterogeneity</b>	1. Industrialize service.*
	2. Customize service.
<b>Perishability</b>	1. Use strategies to cope with fluctuating demand.
	2. Make simultaneous adjustments in demand and capacity to achieve a closer match between the two.

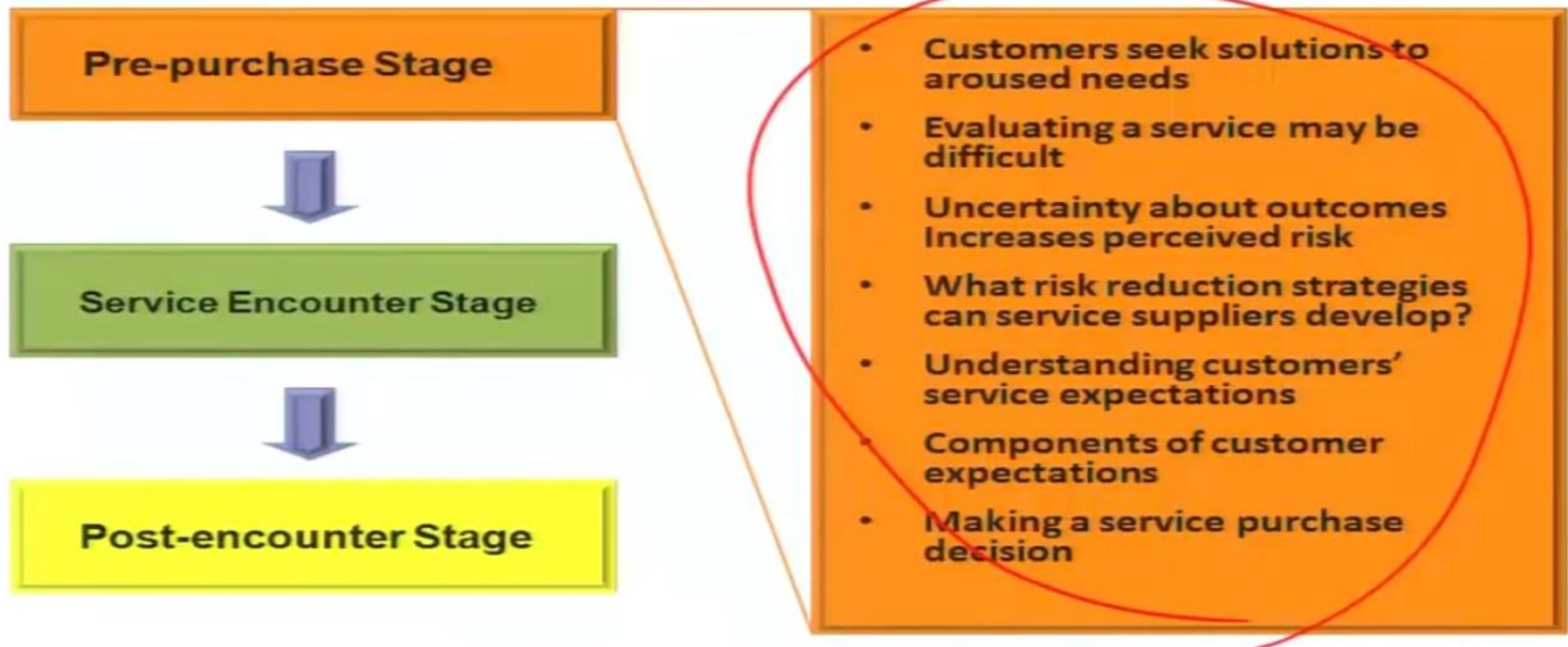


# CONSUMPTION BEHAVIOUR

## Customer Decision Making: The Three-Stage Model of Service Consumption



# PRE-PURCHASE STAGE - OVERVIEW



# NEED AROUSAL

- Decision to buy or use a service is triggered by *need arousal*
- Triggers of need:
  - Unconscious minds (e.g., personal identity and aspirations)
  - Physical conditions (e.g., hunger )
  - External sources (e.g., a service firm's marketing activities)
- Consumers are then motivated to find a solution for their need

*Courtesy of Masterfile Corporation*



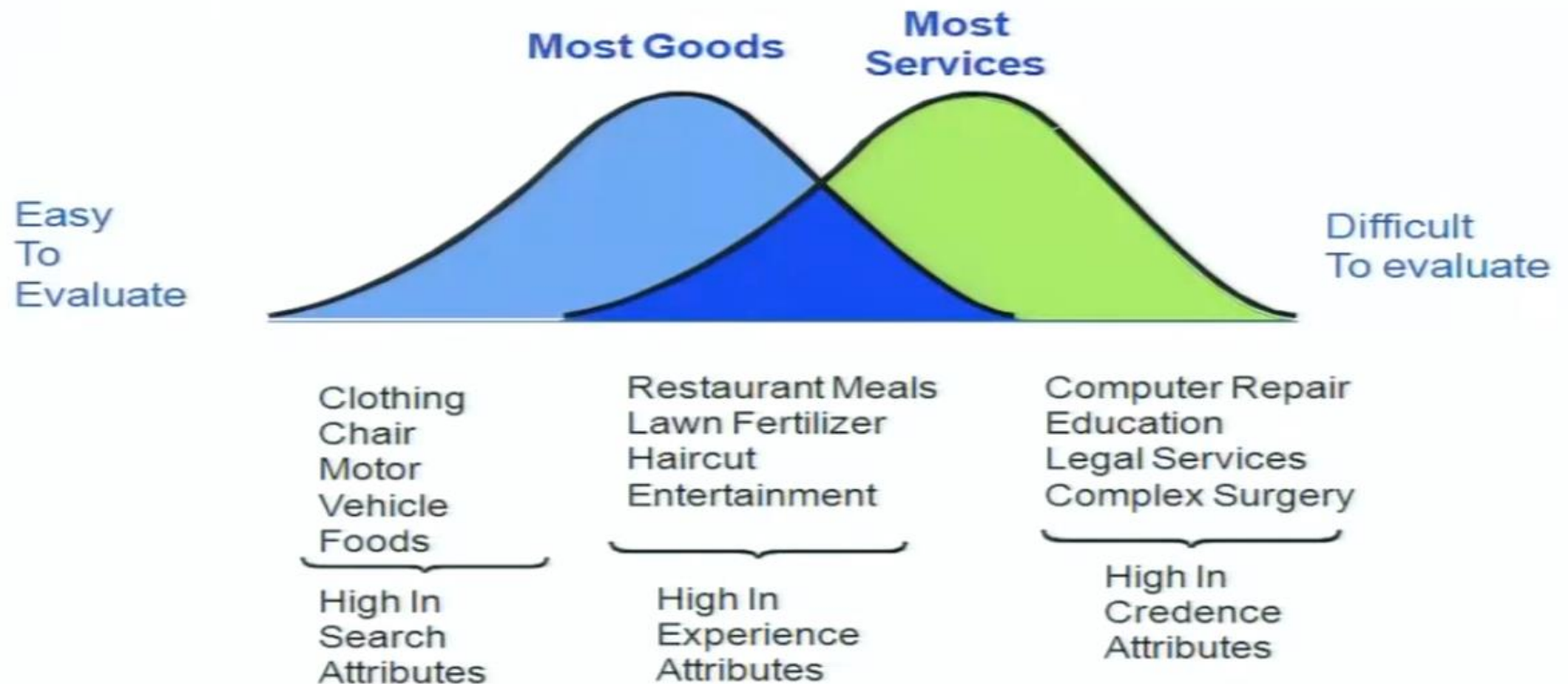
# INFORMATION SEARCH

- Need arousal leads to attempts to find a solution
- Evoked set – a set of products and brands that a consumer considers during the decision-making process – that is derived from past experiences or external sources
- Alternatives then need to be evaluated before a final decision is made

## EVALUATING ALTERNATIVES – SERVICE ATTRIBUTES

- Search attributes help customers evaluate a product before purchase
  - E.g., type of food, location, type of restaurant and price
- Experience attributes cannot be evaluated before purchase
  - The consumer will not know how much s/he will enjoy the food, the service, and the atmosphere until the actual experience
- Credence attributes are those that customers find impossible to evaluate confidently even after purchase and consumption
  - E.g., hygiene conditions of the kitchen and the healthiness of the cooking ingredients

# HOW PRODUCT ATTRIBUTES AFFECT EASE OF EVALUATION



Source: Adapted from Valarie A. Zeithaml, "How Consumer Evaluation Processes Differ Between Goods & Services," in J.H. Donnelly and W. R. George, Marketing of Services (Chicago: American Marketing Association, 1981)

## HOW MIGHT CONSUMERS HANDLE PERCEIVED RISK?

- Seek information from respected personal sources
- Compare service offerings and search for independent reviews and ratings via the Internet
- Relying on a firm with good reputation
- Looking for guarantees and warranties
- Visiting service facilities or going for trials before purchase and examining tangible cues or other physical evidence
- Asking knowledgeable employees about competing services



# STRATEGIC RESPONSES TO MANAGING CUSTOMER PERCEPTIONS OF RISK

Free trial (for  
services with high  
experience  
attributes)

Advertise (helps to  
visualize)

Display credentials

Use evidence  
management (e.g.,  
furnishing,  
equipment etc.)

Offer guarantees

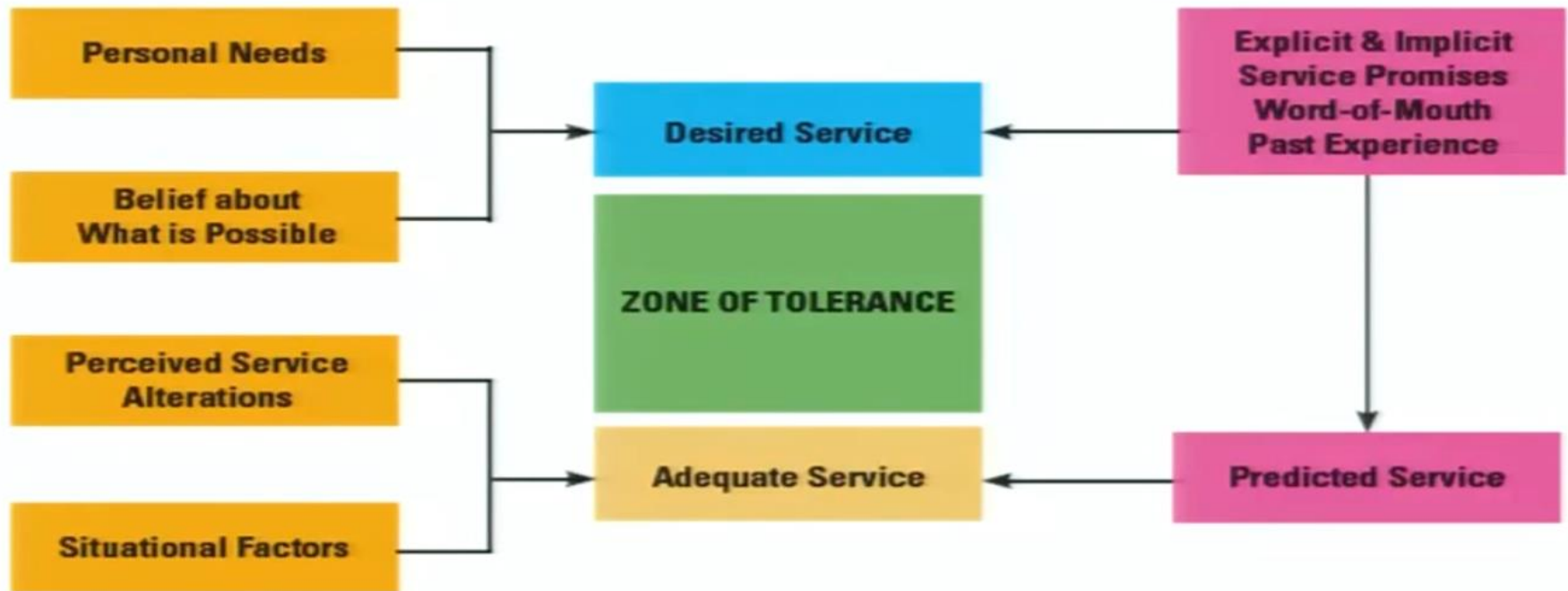
Encourage visit to  
service facilities

Give customers  
online access  
about order status

## UNDERSTANDING CUSTOMERS' SERVICE EXPECTATIONS

- Customers evaluate service quality by *comparing* what they expect against what they perceive
  - Situational and personal factors also considered
- Expectations of good service vary from one business to another, and differently positioned service providers in same industry
- Expectations change over time

# FACTORS INFLUENCING CUSTOMER EXPECTATIONS OF SERVICE



Source: Adapted from Valarie A. Zeithaml, Leonard A. Berry, and A. Parasuraman, "The Nature and Determinants of Customer Expectations of Service," *Journal of the Academy of Marketing Science* 21, no. 1 (1993): 1-12

## **Week 3 Video 16**

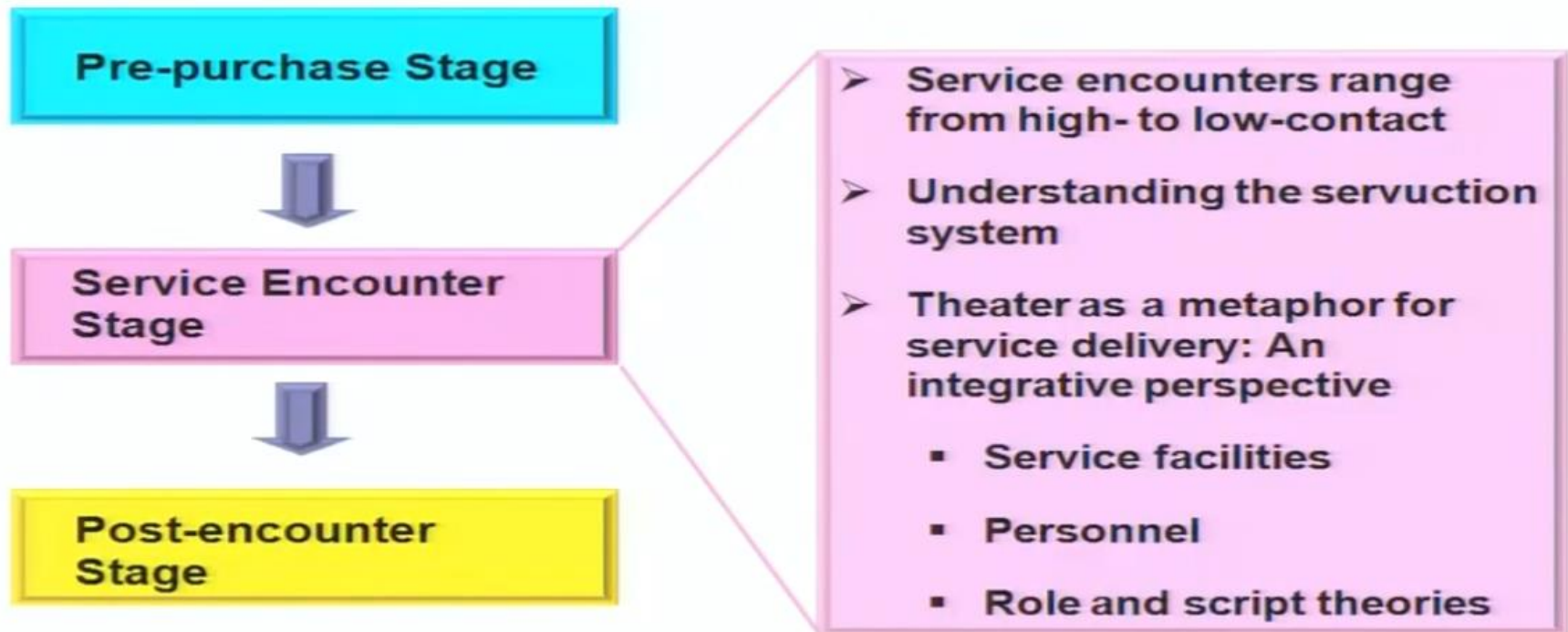


# In-Service Stage

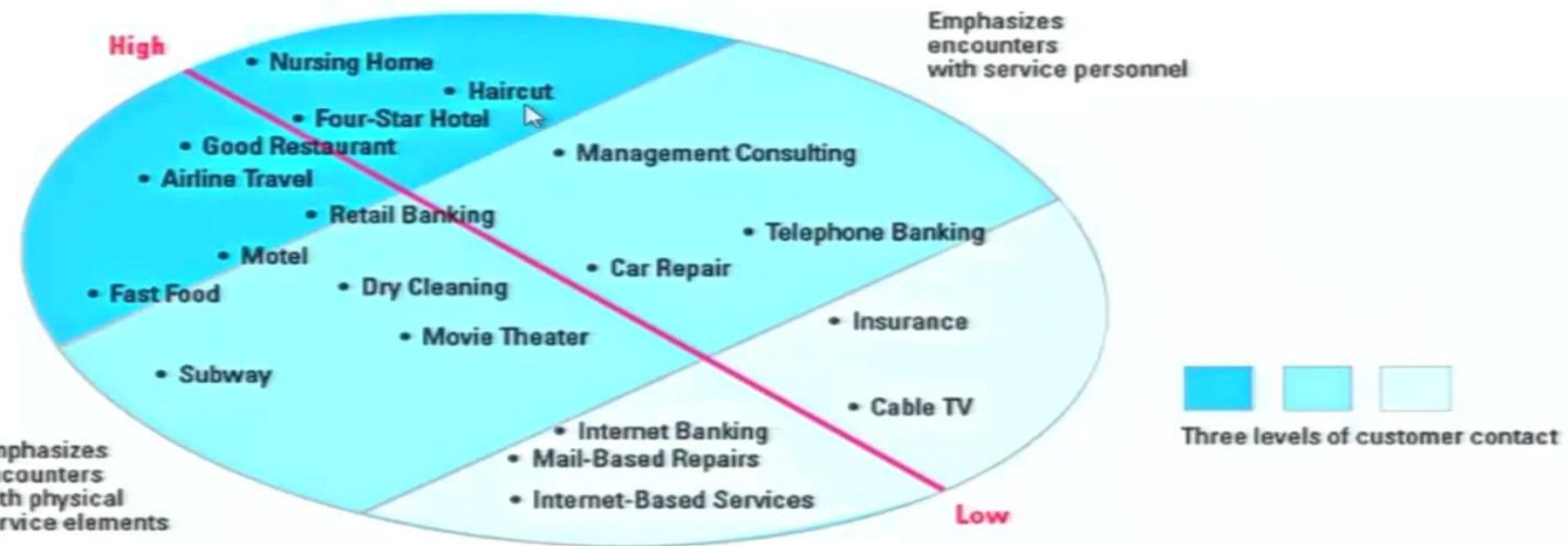
# PURCHASE DECISION

- **Purchase Decision: Possible alternatives are compared and evaluated, whereby the best option is selected**
  - Simple if perceived risks are low and alternatives are clear
  - Complex when trade-offs increase
- **Trade-offs are often involved**
- **After making a decision, the consumer moves into the service encounter stage**

# SERVICE ENCOUNTER STAGE - OVERVIEW



# SERVICE ENCOUNTERS RANGE FROM HIGH-CONTACT TO LOW-CONTACT

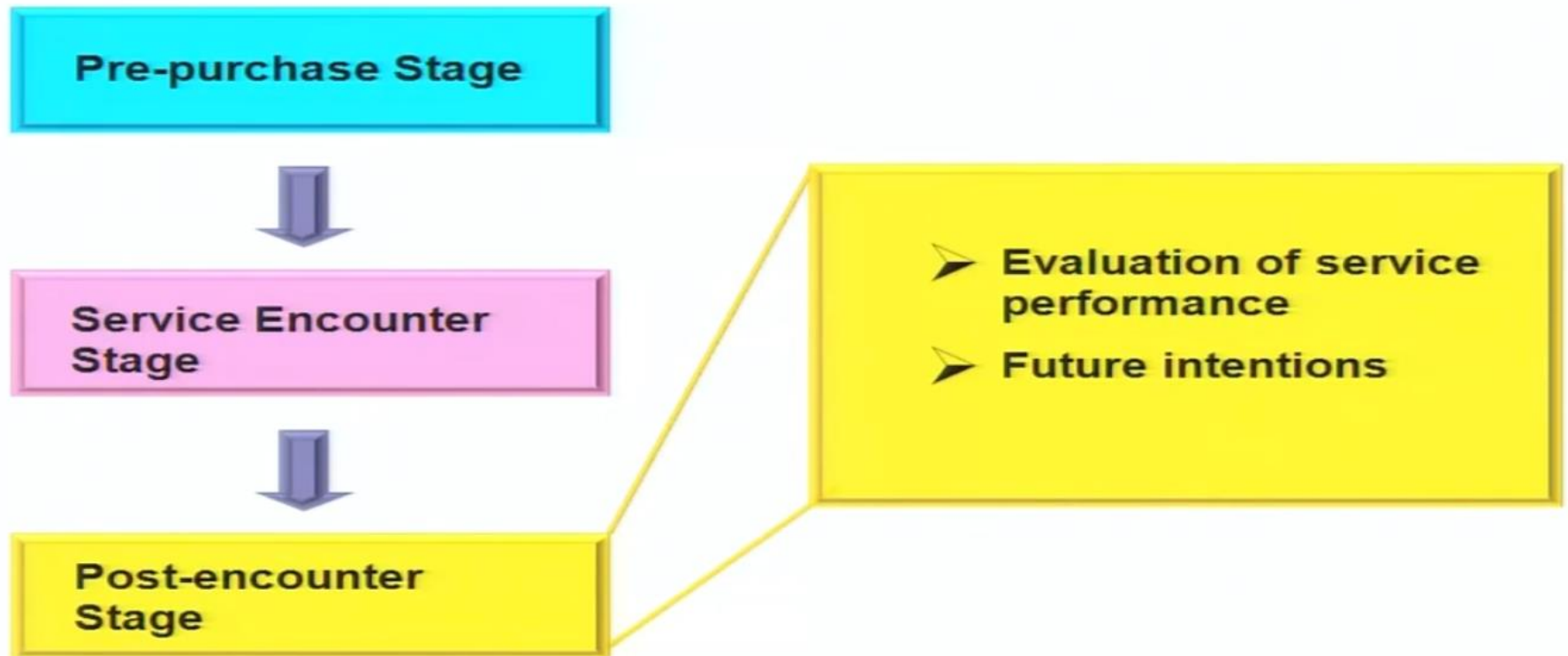


## **SERVICE ENCOUNTER STAGE**

- **Service encounter** – a period of time during which a customer interacts directly with the service provider
  - Might be brief or extend over a period of time (e.g., a phone call or visit to the hospital)
  
- **Models and frameworks:**
  - a) “Moments of Truth” – importance of managing touchpoints
  - b) High/low contact model – extent and nature of contact points
  - c) Servuction model – variations of interactions
  - d) Theater metaphor – “staging” service performances



# POST-PURCHASE STAGE - OVERVIEW



## CUSTOMER SATISFACTION WITH SERVICE EXPERIENCE

- Satisfaction: *attitude-like judgment* following a service purchase or series of service interactions
  - Whereby customers have expectations prior to consumption, observe service performance, compare it to expectations
  
- Satisfaction judgments are based on this comparison
  - Positive disconfirmation (better)
  - Confirmation (same)
  - Negative disconfirmation (worse)

## **CUSTOMER DELIGHT: GOING BEYOND SATISFACTION**

- Research shows that delight is a function of three components
  - Unexpectedly high levels of performance
  - Arousal (e.g., surprise, excitement)
  - Positive affect (e.g., pleasure, joy, or happiness)
  
- Strategic links exist between customer satisfaction and corporate performance
  - By creating more value for customers (increased satisfaction), the firm creates more value for the owners

# SUMMARY

## Pre-purchase Stage



## Service Encounter Stage



## Post-encounter Stage

- **Key Steps**
  1. Need arousal
  2. Information search
  3. Evaluation of alternative solutions
  4. Purchase decision
- Customers face perceived risks which marketers should reduce with some strategic responses
- Zone of tolerance: Adequate to desired. Dissatisfaction if service level falls below adequate level.
- Moments of Truth: importance of effectively managing touchpoints
- Servuction model – variations of interactions
- High/low contact service model – understanding the extent and nature of contact points
- Theater metaphor – “staging” service performances
- In evaluating service performance, customers can have expectations positively disconfirmed, confirmed, or negatively disconfirmed
- Unexpectedly high levels of performance, arousal, and positive affect are likely to lead to delight

# **Week 3 Video 17**



## PROCESS REDESIGN: APPROACHES ALREADY DISCUSSED

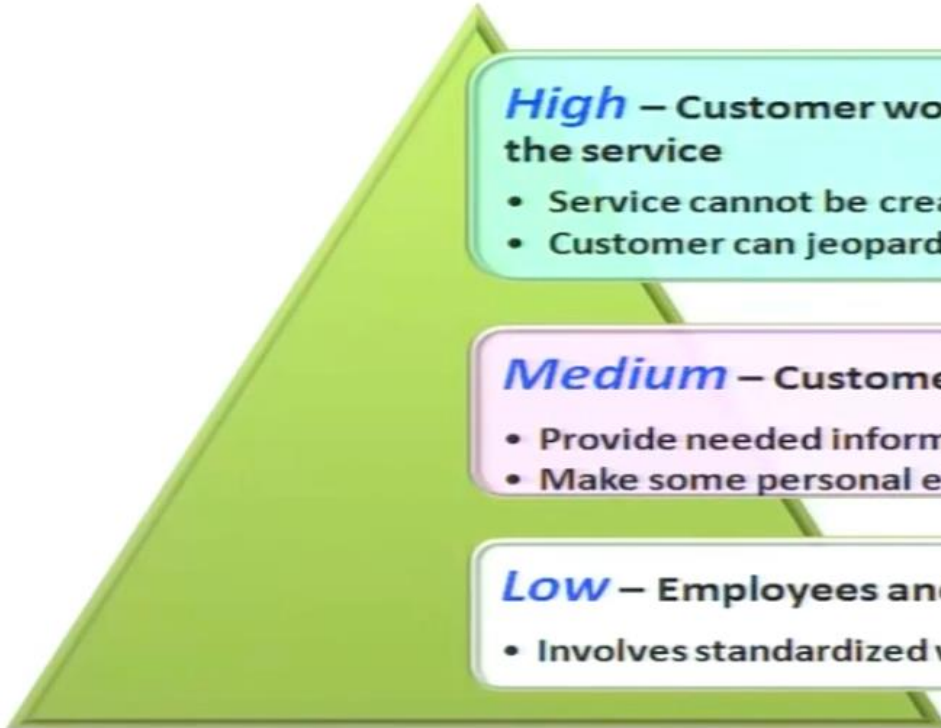
### Eliminating non-value-adding steps

- Streamline front-end and back-end processes of services
- Improve productivity and customer satisfaction

### Shifting to self-service

- Increase in productivity and service quality
- Lower costs and perhaps prices
- Enhance technology reputation
- Differentiates company

# LEVELS OF CUSTOMER PARTICIPATION



**High** – Customer works actively with provider to co-produce the service

- Service cannot be created without customer's active participation
- Customer can jeopardize quality of service outcome

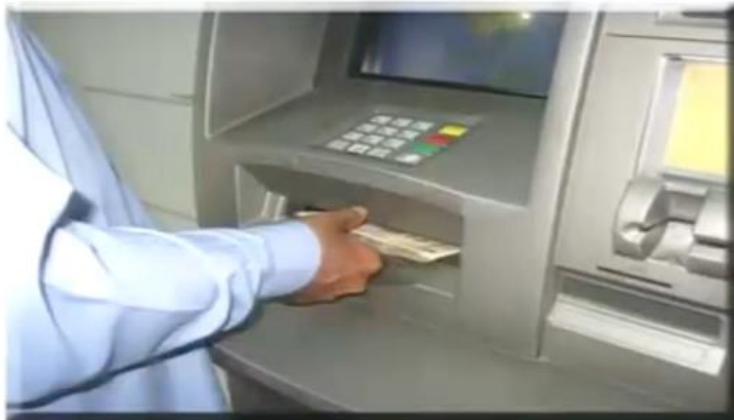
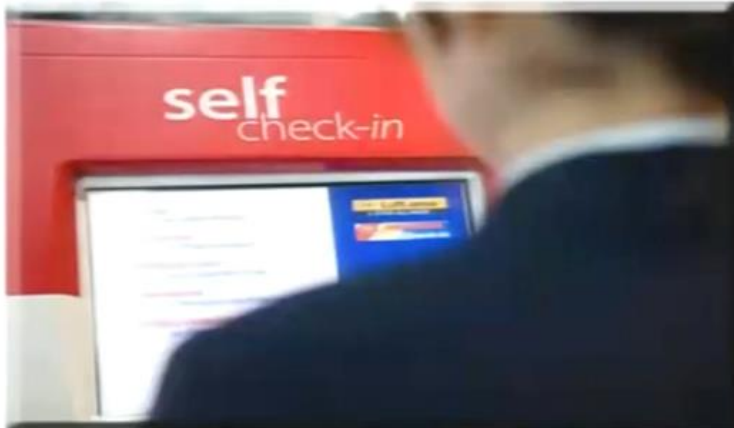
**Medium** – Customer inputs required to assist provider

- Provide needed information and instructions
- Make some personal effort; share physical possessions

**Low** – Employees and systems do all the work

- Involves standardized work

# S S T



## **CUSTOMERS AS PARTIAL EMPLOYEES**

- **Customers can influence productivity and quality of service processes and outputs**
- **Customers not only bring expectations and needs but also need to have relevant service production competencies**
- **For the relationship to last, both parties need to cooperate with each other**



## SELF-SERVICE TECHNOLOGIES (SSTS)

- SSTS are *the ultimate form* of customer involvement where customers undertake specific activities using facilities or systems provided by service supplier
  - Customer's time and effort replace those of employees
- Information-based services lend selves particularly well to SSTS
  - Used in both supplementary services and delivery of core product



## **SELF-SERVICE TECHNOLOGIES (SSTS)**

**Many companies and government organizations seek to divert customers from employee contact to Internet-based self-service**

### **Advantages:**

- Time and Cost savings
- Flexibility
- Convenience of location
- Greater control over service delivery
- High perceived level of customization

### **Disadvantages:**

- Anxiety and stress experienced by customers who are uncomfortable with using them
- Some see service encounters as social experiences and prefer to deal with people

## **PUTTING SSTS TO TEST BY ASKING A FEW SIMPLE QUESTIONS**

- **Does the SST work reliably?**
  - Firms must ensure that SSTs are dependable and user-friendly
- **Is the SST better than interpersonal alternatives?**
  - Customers will stick to conventional methods if SST doesn't create benefits for them
- **If it fails, what systems are in place to recover?**
  - Always provide systems, structures, and technologies that will enable prompt service recovery when things fail

# THE TRADITIONAL VIEW OF VALUE CREATION

## Traditional value creation process



Value =  $F_n$  (efficiency in firm's activity chain)

## The dominant logic of value creation

1. Value creation is associated with products and services
2. The firm unilaterally defines and creates value through its product and service offerings
3. Consumers represent passive demand for the firm's offerings
4. Firms have more information than consumers

(from Prahalad, C.K. & Ramaswamy, V. (2004a).)

# **Week 3 Video 18**



# THE BASIC TRANSFORMATION IN VALUE CREATION

As the space of interactions becomes the new source of value creation, "experience environments" (anywhere in the business system) emerge as the new locus of competitive advantage



The value chain is now increasingly just a 'cost' chain

The interaction space is the new source of value creation

Informed, connected, empowered and active individuals (customers) want to take control of their experiences

Experience environments  
(customer interactions with products, processes and people)





## CO-CREATION IS IMPORTANT BECAUSE IT IS:

- All about relationships: we stress the importance of focusing on the quality of the interactions between people rather than on technologies per se
- A learning process: we need to intertwine knowledge and processes in an overall co-creation framework, rather than just enabling co-creativity, if we want to achieve wider organizational impact.
- From 'Co-creation: New pathways to value, An overview', by Nick Coates, Research Director, Promise, 2009.

## MOVING CUSTOMERS...

### From

- Passive buyers
- Listening
- Consumers as buyers
- Researching need.
- Reliance on experts.

### To

- Active agents
- Dialogue
- Consumers as partners
- Understanding
- experiences
- Consumer knowledge

## DART

- ***Dialogue*** encourages not just knowledge sharing, but shared understanding between companies and customers. It also give individuals more opportunity to interject their views of outcomes of value into the value creation process.
- ***Access*** to knowledge, tools and expertise helps individuals construct their own experience outcomes.

## DART

- *Risk Management* assumes that if consumers become co-creators of value with companies, they will demand more information about potential risks of goods and services, but they may also have to bear more responsibility for dealing with those risks.
- *Transparency* of information in interaction processes is necessary for individuals to participate effectively in co-creation, and engender trust between institutions and individuals.

## CO-CREATION EXAMPLES

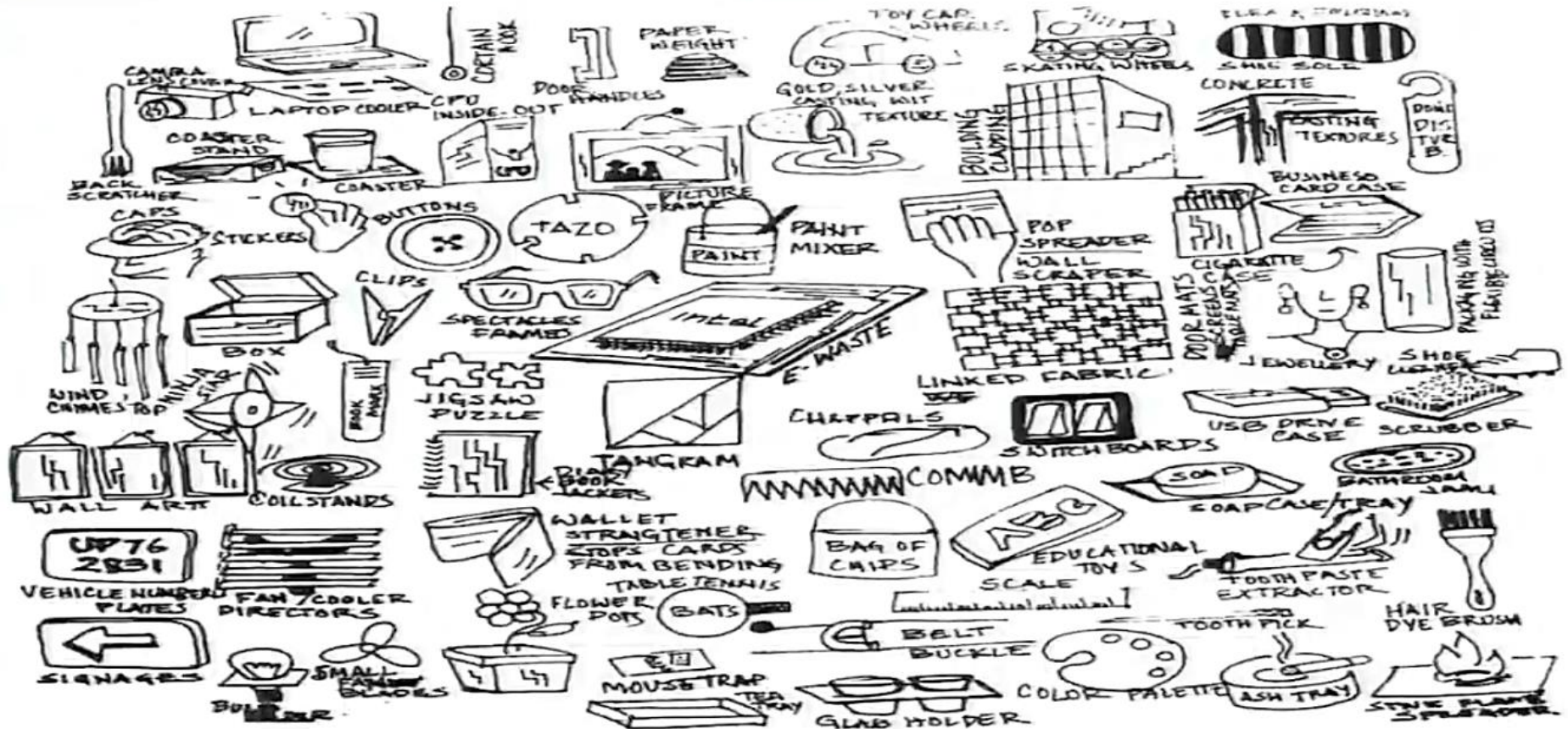
- Ice-cream and Yogurt flavors
  - T-Shirts
  - Toys and Decoration
  - Crystal Jewelry
  - Sports Shoes
  - Detergents
- 
- YouTube, Wikipedia, Linux , Facebook



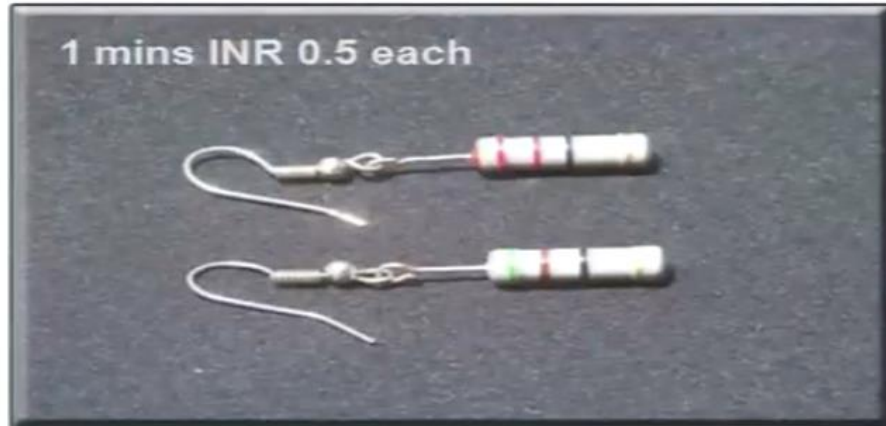
# CO-CREATION CROWDSOURCING



## MAP MULTIPLE BRAINSTORMING



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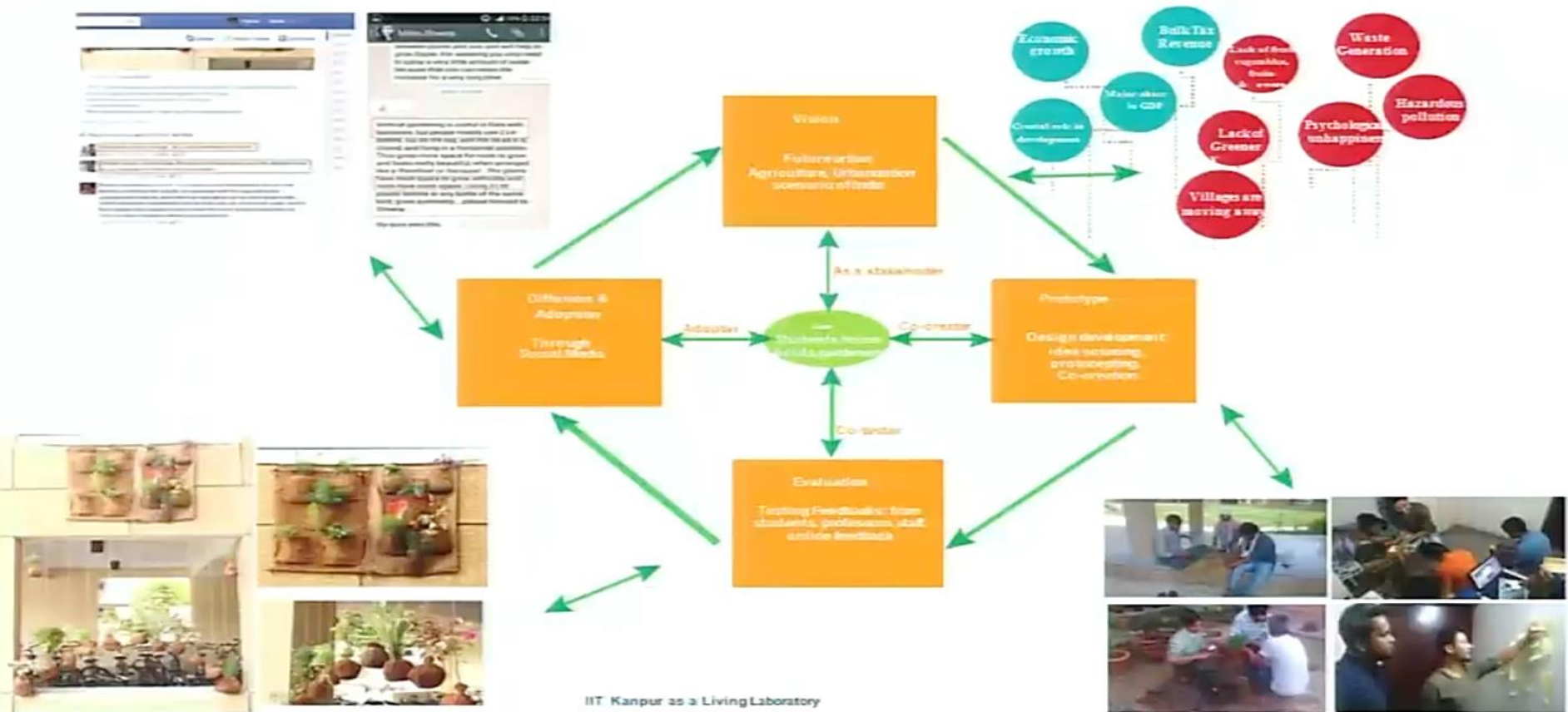




# RESEARCH CONTEXT AND OBJECTIVES



# CURRENT STATUS





**END OF RESOURCE**