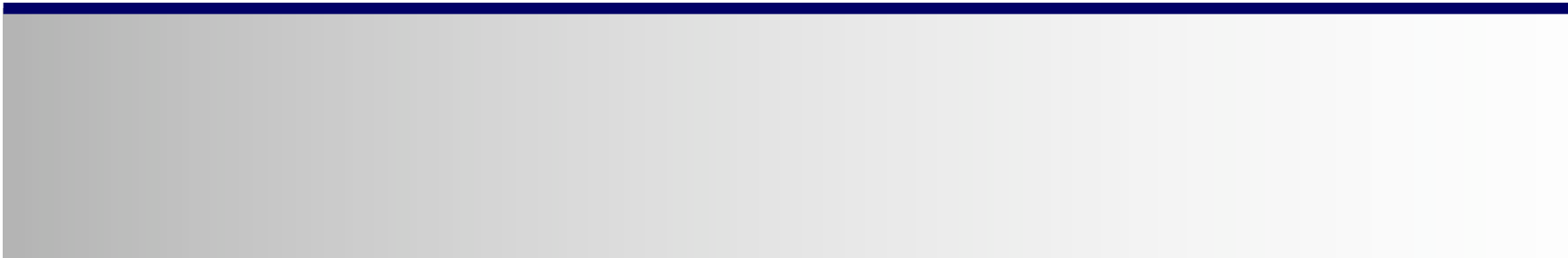


CdL Data Science 2020-21
Service Science
F9101Q022

**SSME = Service Sciences,
Management and Engineering**

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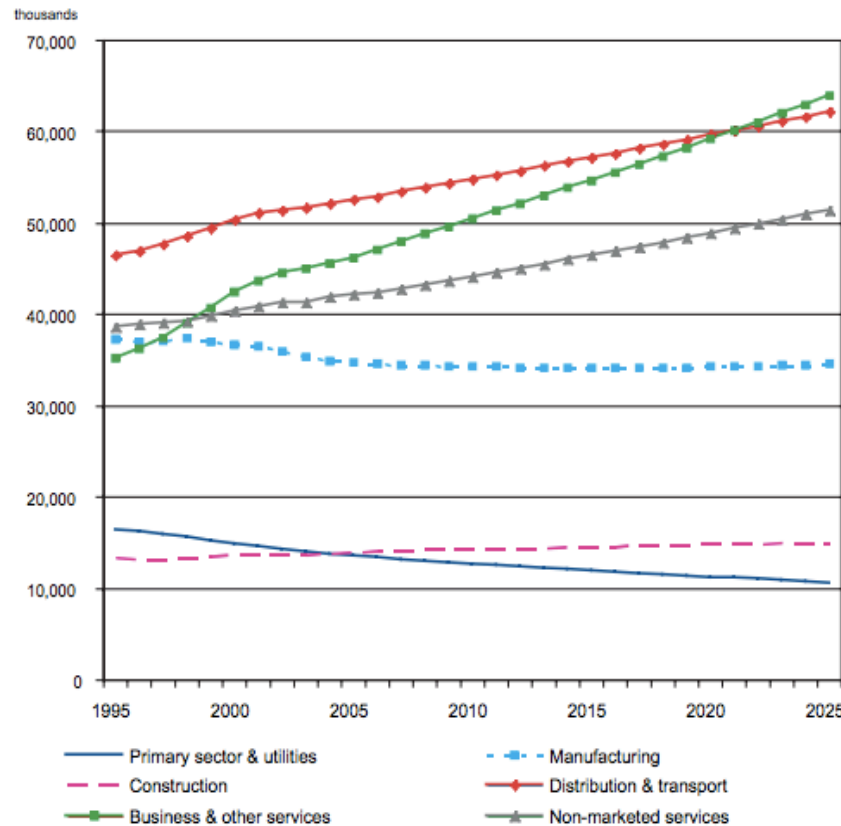
What are services?

- Context to the study of services
- History and early definitions of services
- Differences between products and services
 - Understand and define the services dominant economic shift
 - Discover the fundamental principles underlying services
 - Determine the elements necessary for systematic services innovation

Context

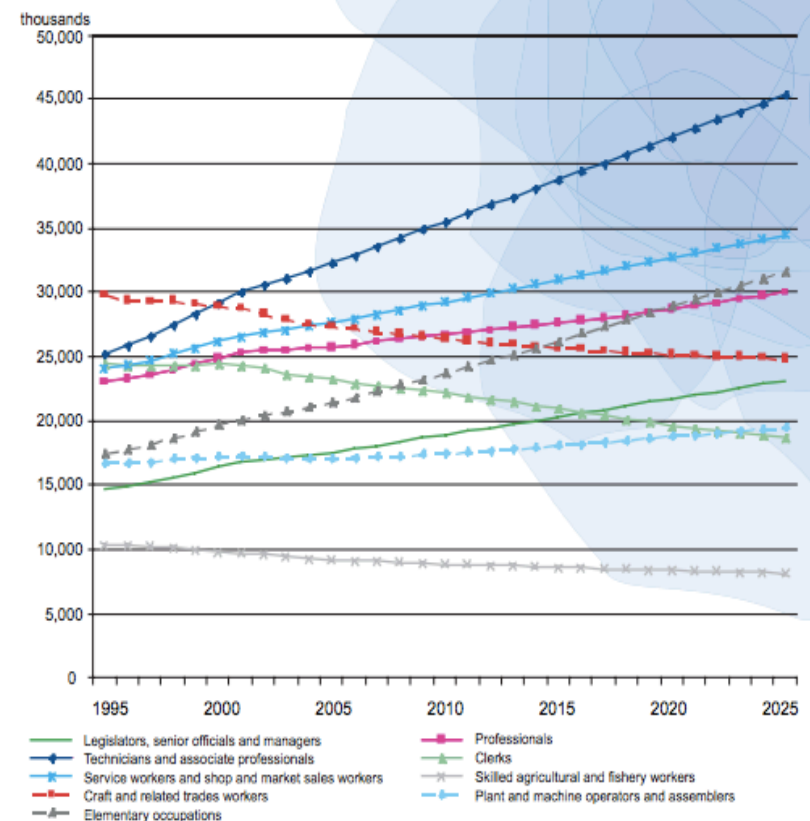
- Services becoming the new hub of most modern economies
- Services dominating current economic activities

Figure 4 - Past and Likely Future trends by Sector (EU 25)



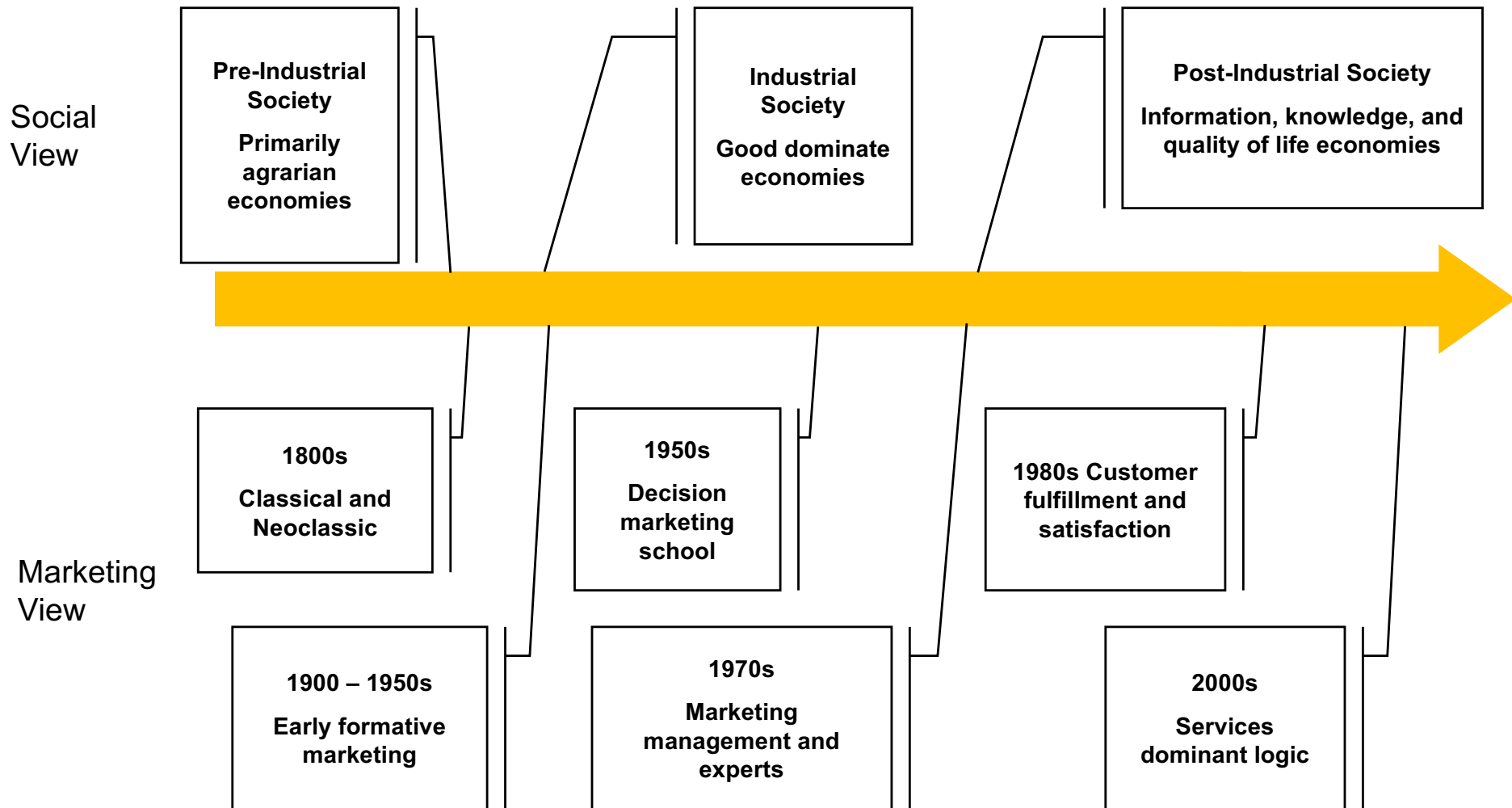
Source: Preliminary estimates from the Cedefop project based on the CE E3ME Model.

Figure 5 - Past and likely future trends by occupation (EU 25)



Source: Preliminary estimates from the Cedefop project based on the CE E3ME Model.

Economic Evolution of Services



What is a Service?

- In economics and marketing, a service is the **non-material** equivalent of a good
- It is claimed to be a **process** that creates benefits by facilitating either a change in customers, a change in their physical possessions, or a change in their intangible assets
- By supplying some level of skill, ingenuity, and experience, providers of a service participate in an economy **without the restrictions of carrying stock (inventory)** or the need to concern themselves with bulky raw materials. On the other hand, their investment in expertise does require **marketing and upgrading** in the face of competition which has equally few physical restrictions

Some other Definitions

- ...work output that **perishes** in the very instant of its production (Smith, 1991)
- A good is a tangible physical object or product that can be created and transferred; it has existence over time and thus can be created and used later. A service is **intangible** and perishable. It is an occurrence or process that is created and used simultaneously or nearly simultaneously (Sasser, 1978)
- A service is an activity or series of activities of more or less intangible nature that normally, but not necessarily, take place in interactions between customer and service employees and/or physical resources or goods and/or systems of the service provider, which are provided as solutions to **customer problems** (Gronroos, 1990)
- Services are deeds, processes, and performances (Zeithaml & Bitner, 1996)

Service Dominant View

Services dominant view (Vargo & Lusch 2004) revolves around three primary notions

– **Co-creation of value**

- Customer as co-producer of the value extracted from the service system
- Customer as input to the service process

– **Relationships**

- Relationship with the customer is of paramount importance and is a source of innovation and differentiation
- Long-term relationships facilitate the ability to tailor the service offerings to the customers' needs

– **Service provisioning**

- Provision service capacity to meet fluctuations in demands while retaining (quality of service) QoS
- QoS is mainly from the perspective of the customer

Provider-Client Relationship

- **Provider**

- An entity (person, business, or institution) that makes preparations 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



Some other basic Concepts

- Resources, physical and non-physical (actor and object)
- Service systems
- Access rights
- Interactions
- Governance mechanisms
- Service systems networks
- Ecology of service systems
- Stakeholders
- Measurements (quality, productivity, compliance, sustainability)
- Results

Lovelock's Classification

- Services classification systems have long existed in service management literature, some take a specific feature of the service as a classification key, for example:
 - Nature of service
 - Recipient
 - Producer of the goods object of the service
- Those who tried to define a single classification system was **Lovelock** (Marketing of services, 1983)
- Through a set of matrices Lovelock classifies the services representing different dimensions closely linked to each other

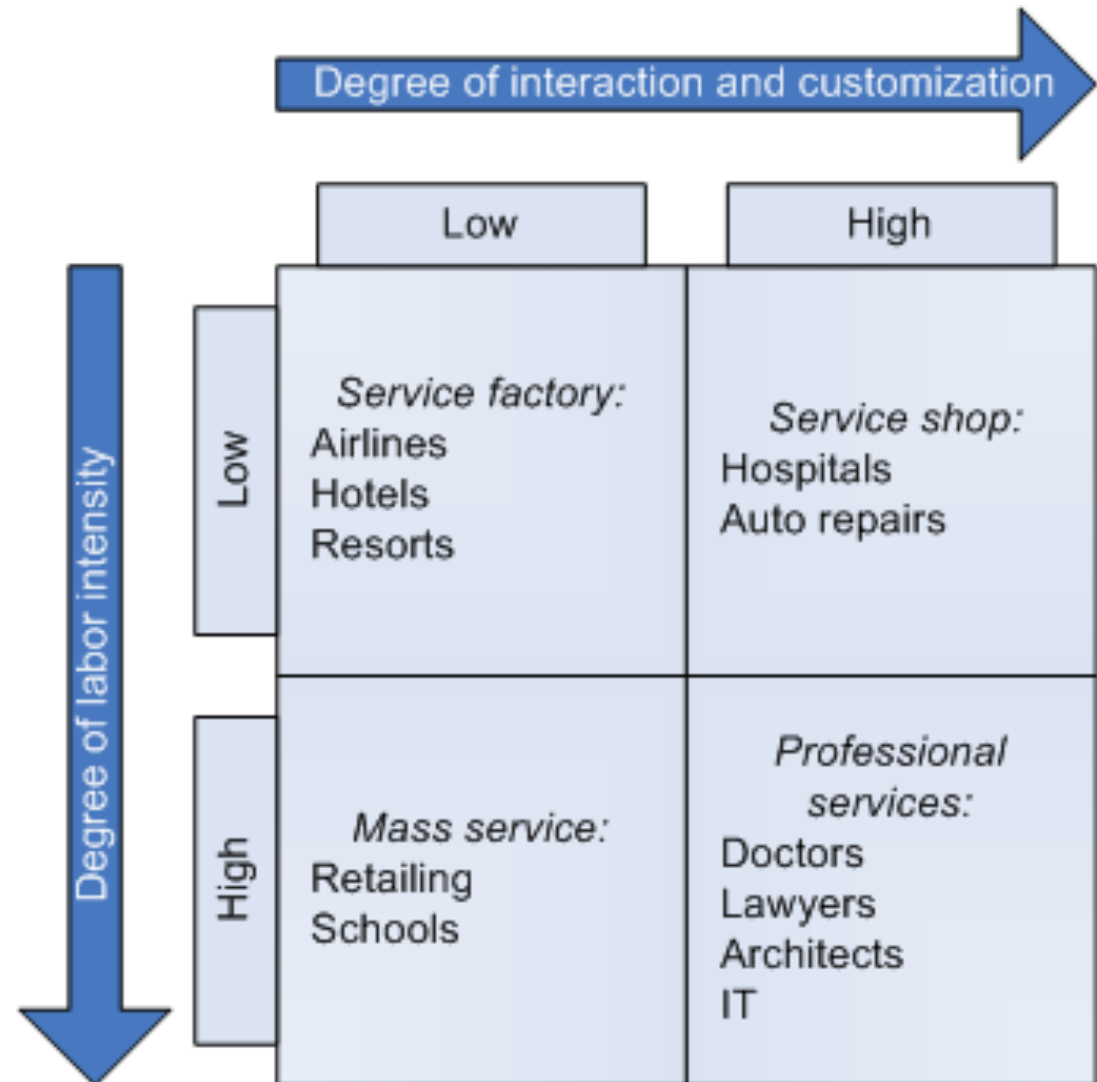
Service Process Matrix

Degree of labor intensity

the ratio of labor cost to capital cost

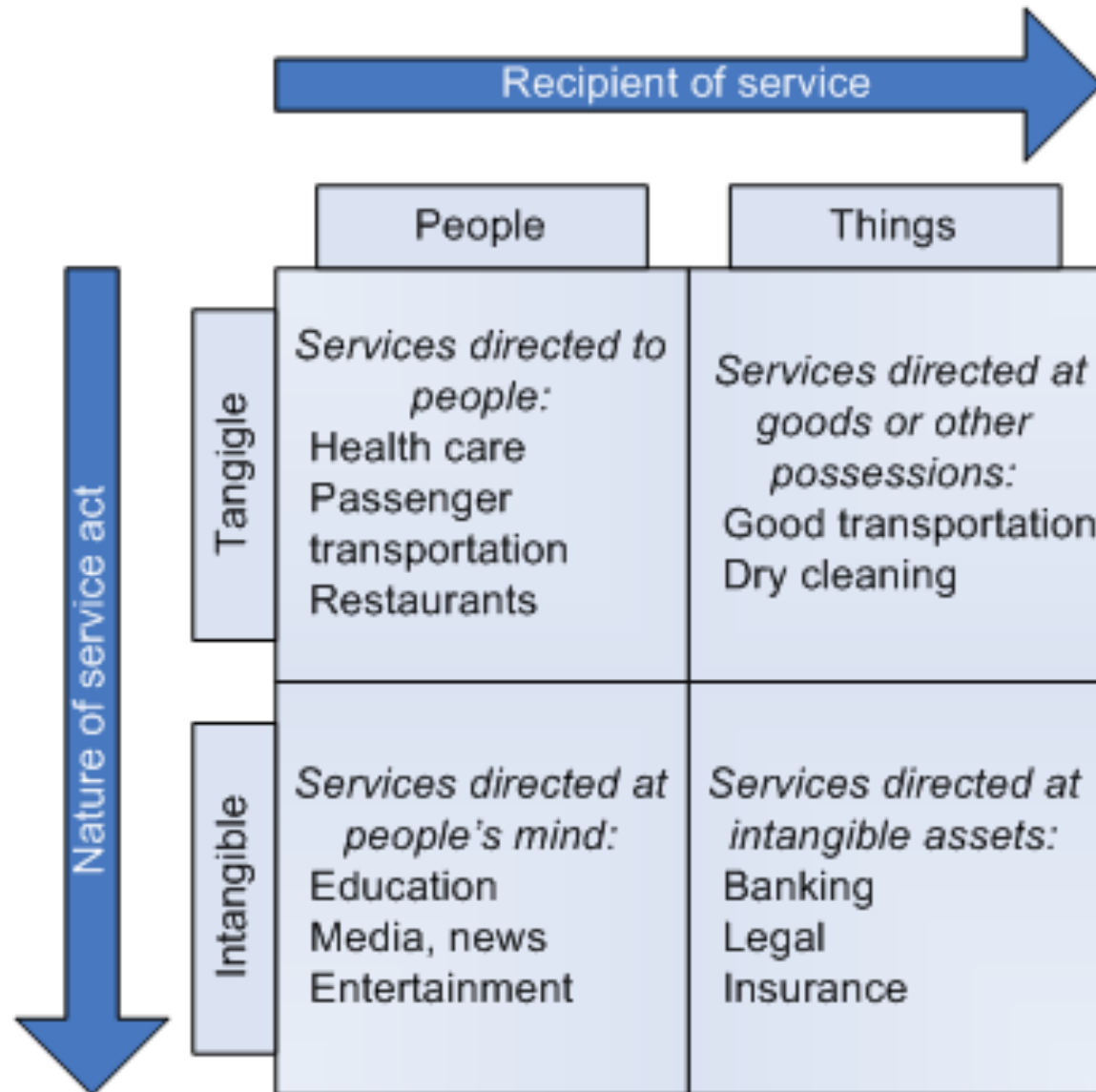
Degree of interaction and customization

ability of the client to affect specialization

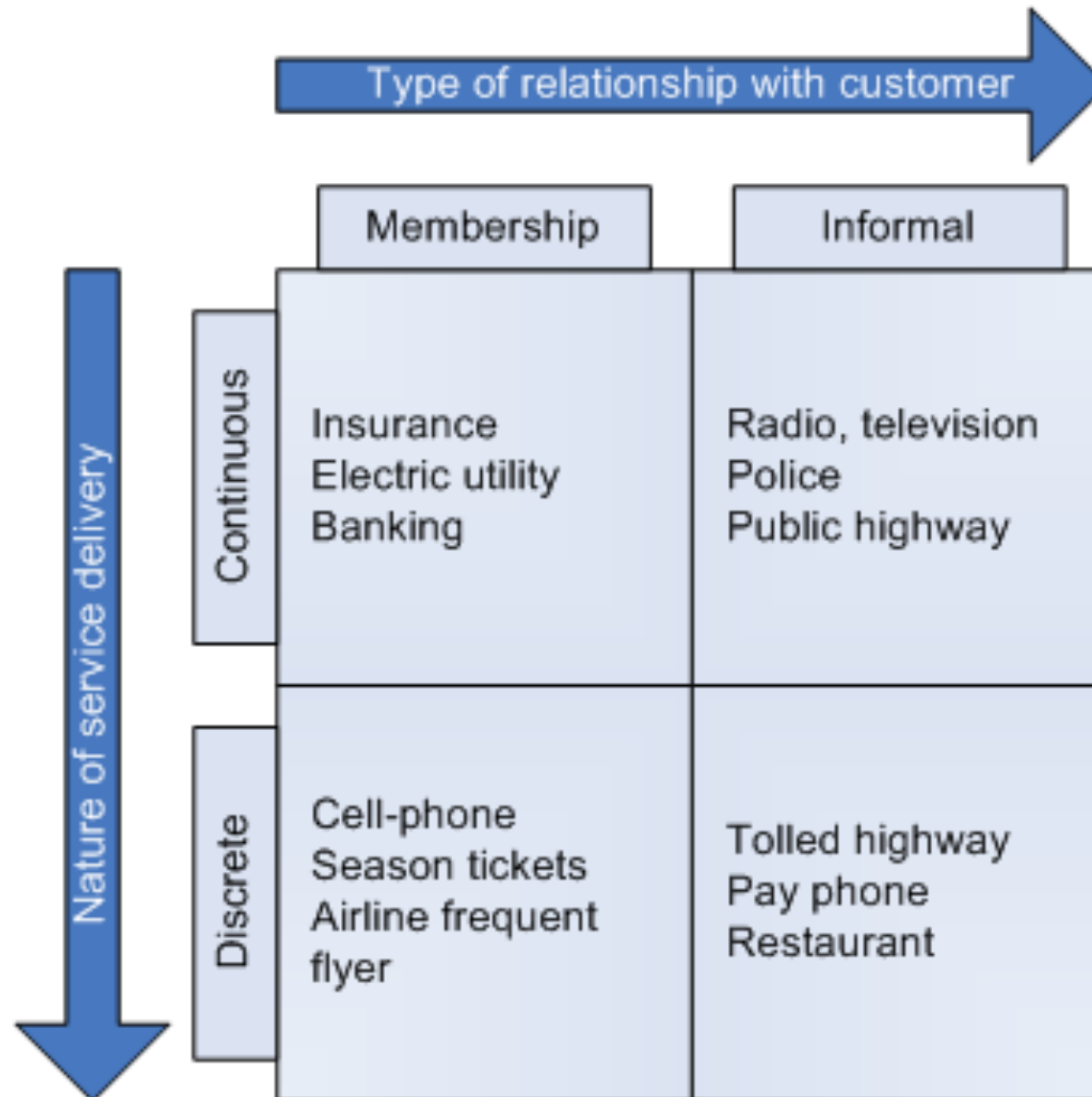


(Adapted from Lovelock (1983) and Fitzsimmons & Fitzsimmons (2003))

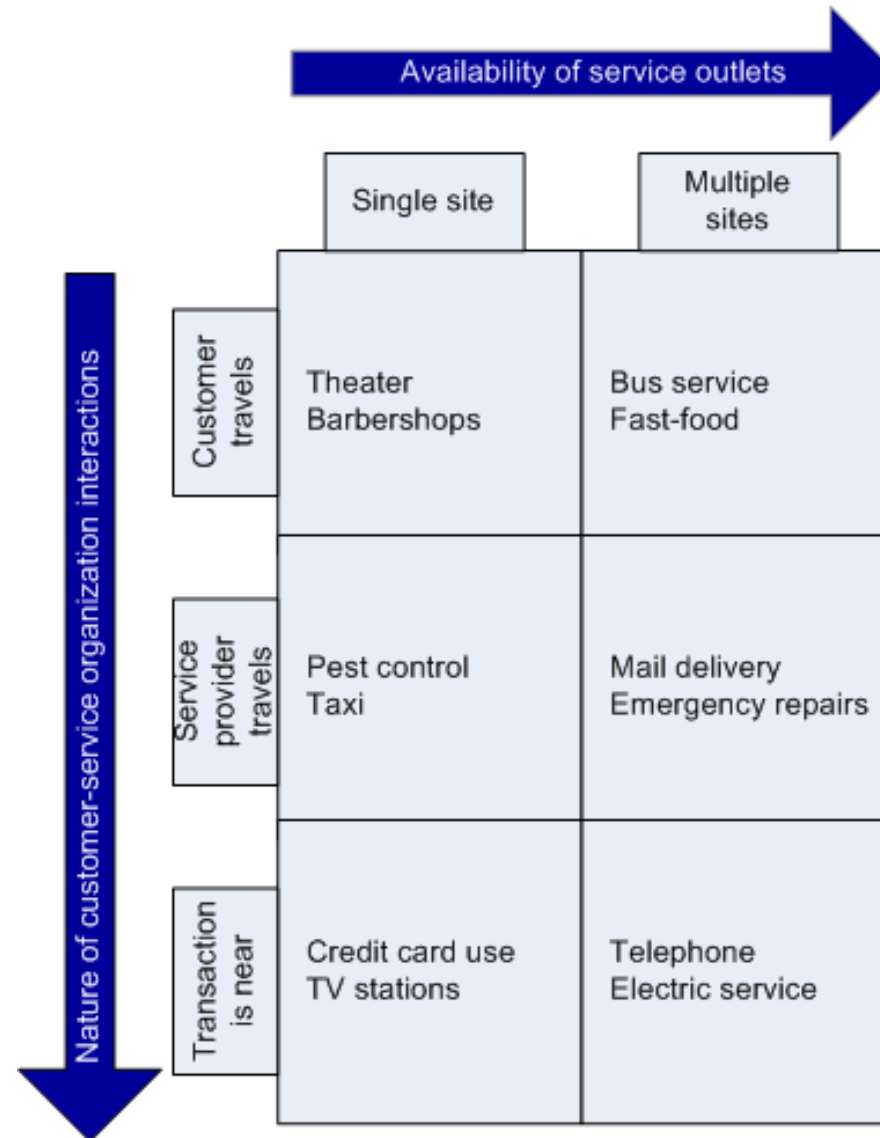
Nature of Services Act Matrix



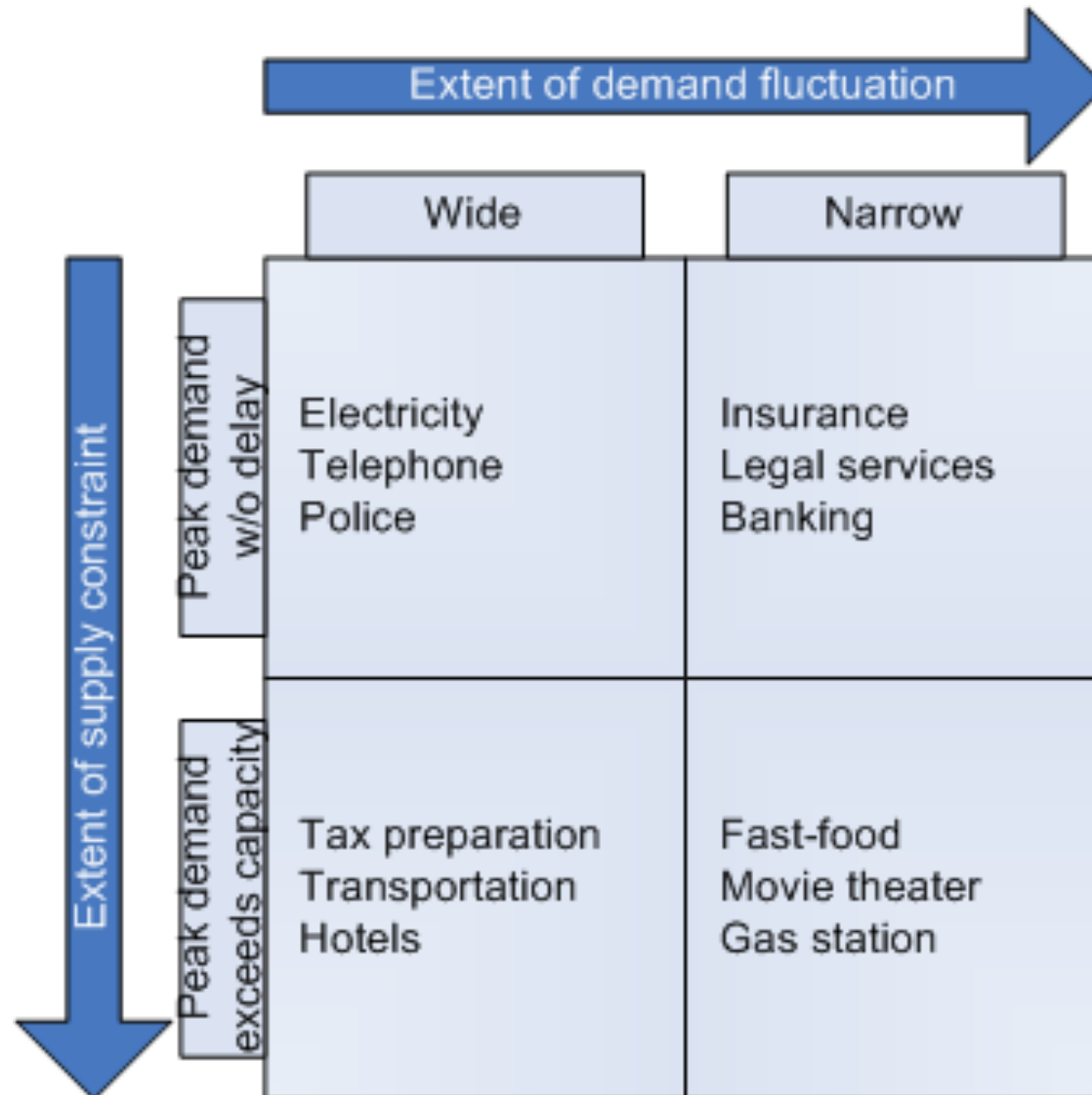
Client Relationship Matrix



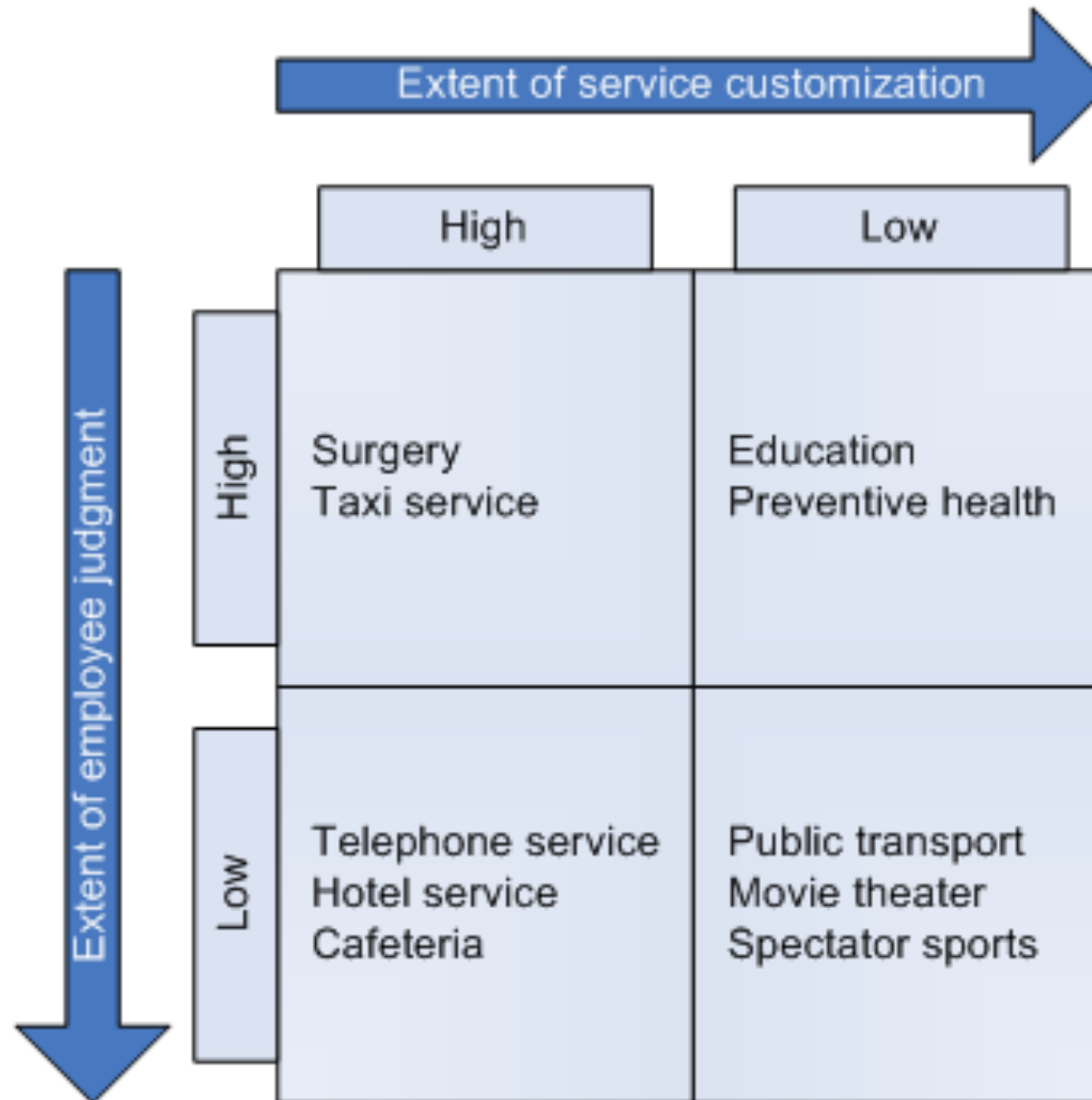
Availability of Services Matrix



Service Demand Variation Matrix



Service Delivery Matrix

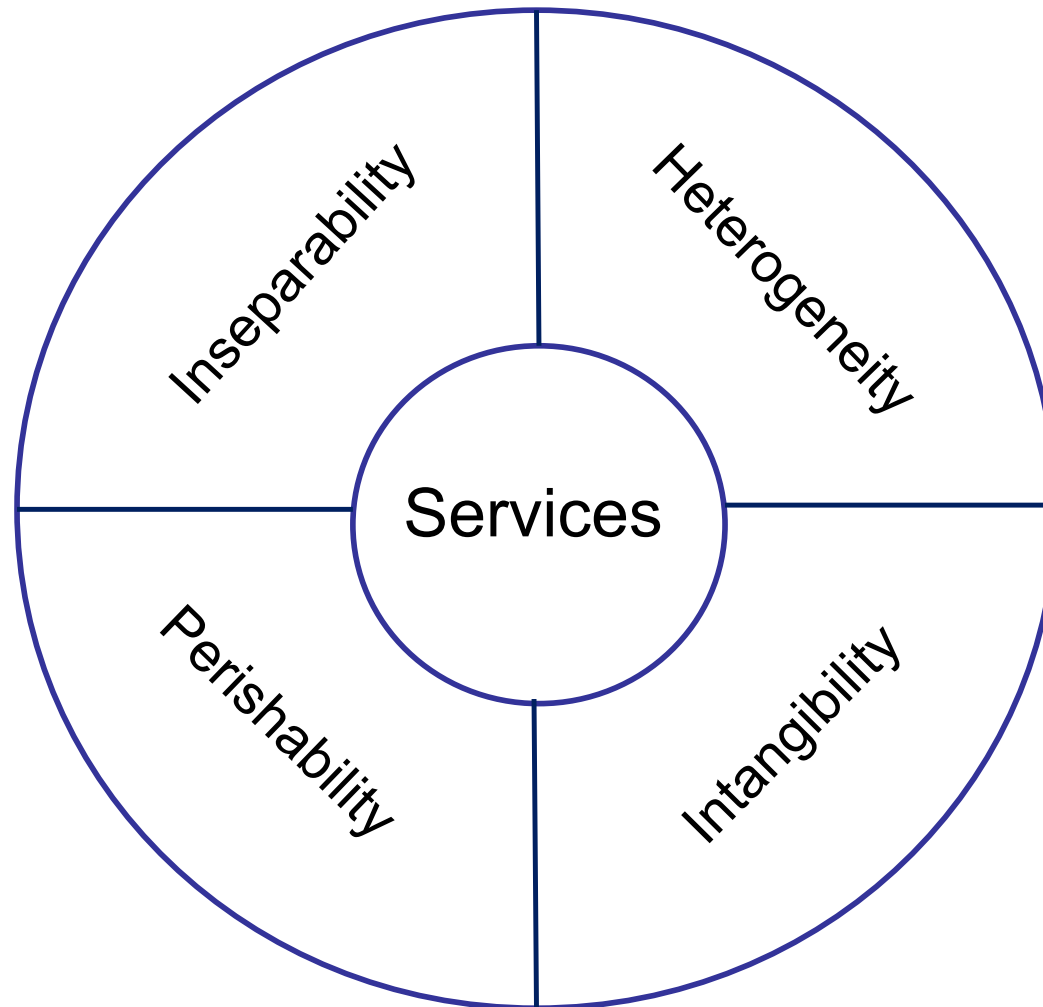


Service Classification Matrix

		Degree of Customer Contact			
		None to Low Moderate		High	
Degree of Customization and Tangible (goods) Component	High	With Tangibles	Amazon; Land's End; L.L. Bean	Auto Repair; Nice Restaurants	Cardiac Surgeons; Orthopedic Surgeons; Catering
		Without Tangibles (or complimentary)	Expedia; Turbo Tax; Online Banking;	Support Call Centers Personal Banking Insurance Agents	Doctors; Tax Accountants; Hair Stylists; Lawyers; Architects; Financial Advisors
	Low	With Tangibles	ATM; Online; Retailers without "transparent customization"	Super Markets; Wal-Mart; Fast Food; Restaurants	Specialty Shops
		Without Tangibles (or complimentary)	Morningstar; University of Phoenix Online; MBA; Automatic Car Wash	Theme Parks; Airlines; Hotels; Movie Theaters	Education; Massage Shops

IHIP Characteristics of Services

What are the characteristics that distinguish services from goods and vice versa?



Distinguishing Services from Goods

Inseparability

- Services are created and consumed at the same time
- Services cannot be inventoried
- Demand fluctuations cannot be solved by inventory processes
- Quality control cannot be achieved before consumption

Consideration: Does the ability to tailor and customize goods to the customers' demands and preferences mean that these goods also have an inseparability characteristic?

Heterogeneity

- From the client's perspective, there is typically a wide variation in service offerings
- Personalization of services increases their heterogeneous nature
- Perceived quality-of-service varies from one client to the next

Consideration: Can a homogeneous perception of quality due to customer preference idiosyncrasies (or due to customization) also benefit the goods manufacturer?

Distinguishing Services from Goods (2)

Intangibility

- Services are ideas and concepts that are part of a process
- The client typically relies on the service providers' reputation and the trust they have with them to help predict quality-of-service and make service choices
- Regulations and governance are means to assuring some acceptable level of quality-of-service

Consideration: Do most services processes involve some goods?

Perishability













- Any service capacity that goes unused is perished
- Services cannot be stored so that when not used to maximum capacity the service provider is losing opportunities
- Service capability estimation and planning are key aspects for service management

Consideration: Do clients who participate in some service process acquire knowledge which represents part of the stored service's value? What might the impact be?

Current services thinking

- A service is a provider-to-client interaction that creates and captures value while sharing risks
- Services are value that can be rented
- Services are the application of specialized competences (skills and knowledge)
- Services are autonomous, platform independent, business functions

Example: Complex B2B services

 <p>Internet of Things Services</p> <p>→ Explore IoT services</p>	 <p>Business Process Automation Services</p> <p>→ Explore BPA services</p>	 <p>Artificial Intelligence Services</p> <p>→ Explore AI services</p>	 <p>Big Data services</p> <p>→ Explore big data services</p>
 <p>Finance Transformation Services</p> <p>→ Explore finance services</p>	 <p>Advanced Analytics Services</p> <p>→ Explore advanced analytics</p>	 <p>Talent and Transformation Services</p> <p>→ Explore talent services</p>	 <p>I Garage</p> <p>→ Explore I Garage</p>
 <p>Procurement Services</p>	 <p>Risk and Fraud Management services</p>	 <p>Blockchain Services</p>	 <p>Cognitive Customer Care</p>

Exercise

- Try to compare digital and traditional services with the IHIP model
- See what
 - Is the same
 - Is new
 - ... and perhaps understand digital service better

The Results

Characteristic	Applicable	Explanation
Intangibility	yes	
Heterogeneity	yes	
Inseparability	yes	
Perishability	no	

The Results (2)

Characteristic	Applicable	Explanation
Intangibility	Yes	Even more than physical services that often include a strong servicescape component
Heterogeneity	No	Due to digital delivery, they are standardized; quality can be kept
Inseparability	No	Digital services are on-demand; moreover, the service quality can be verified before delivery
Perishability	No	Resources are on-demand and scalable, the service is always stored in local memory or cloud

Conclusions

- Because IHIP is a poor fit, a better model for digital services is proposed
- The IHIS model:
 - **Intangibility**; intangible and consume a minimal number of physical resources
 - **High technology**; require little or no human intervention (thus similar to self-service)
 - **Invariance**; identical & consistent by measurable quality
 - **Scalability**; much more scalable due to digital distribution (no need to consider time, place, or labor)