Q1: The service economy, services systems, IT, and productivity

o The role of services in economic growth and why we study them.

- The service sector plays a dominant and growing role in economic growth and employment in most parts of the world;
- But the service sector is less productive than the manufacturing sector;
- Therefore, the improved productivity and competitive performance of firms and nations rely on improving the productivity of the service sector and services innovation;
- IT is a key enabler of increased productivity through innovation and optimisation.

o Service productivity

- The productivity of services is lower than the productivity of manufacturing;
- It is easier to know how to make products more efficient than how to make services more efficient (use IT-centric service system);
- Productivity is a measure of economic efficiency at various levels, increased productivity is the ability to produce more with the same or less input and leads to economic growth.

o The role of IT in optimisation, innovation, and transformation in services.

- **Optimisation:** by changing the ratio of input to output as far as possible;
  - Process improvement, e.g. IT governance;
  - Computational processes can replace people;
  - IBM industrialization of services: paring services jobs down to **standardized**, **repeatable** tasks; spreading the work around to world to where it can be done most **efficiently** and most **inexpensively**; and steadily automating simpler tasks with **software**.
- **Innovation**
  - **Analytics = data + algorithms**
  - **Smart services**
    Eg. Auto insurance companies now are experimenting with networked sensors installed in cars that allow them to price insurance based on actual driving behaviors , e.g. distance, speed, where the car is driven, rather than blunter, demographic characteristics, e.g. Age, where a customer lives;
  - **Wearables**
    The internet of things (Cisco estimates this will increase US corporate profits by 21 percent in the next eight years);
  - **Virtual reality (Myer and ebay 2016);**
  - **Green management;**
  - **The connected car ecosystem** (automakers, insurance companies, telcos, chip makers, anthropologists) the car as a digital platform;
  - **Enterprise resource planning (ERP)** provides an information base for mathematically based advanced planning across an enterprise.

- **Transformation**
  - Activities outsourced from manufacturing are relabeled as services;
  - Services become a larger part of the economy with the evolution of consumer and business purchases;
  - The transformation in role of women in the work force and, with that, the conversion of unpaid domestic work (washing floors, watching babies, and delivering groceries) into commercial services bought and sold in the market which is a form of household outsourcing;

- The digital or algorithmic transformation. Service activities themselves are changed when they can be converted into formalizable, codifiable, computable processes with clearly defined rules for their execution;

o What is the service economy?

- The service economy in developing countries is mostly concentrated in financial services, hospitality, retail, health, human services, information technology and education. Products today have a higher service component than in previous decades. In the management literature this is referred to a product-service system. Virtually every product today has a service component to it.

Q2: Specialisation and service-oriented models of business

o Traditional organisations and specialised organisations

- **Traditional** organisations consisted of three kinds of business: customer relationship, product innovation, infrastructure management, because that achieved the lowest transaction costs
- **Specialized** organisations: business model assembled from these internal and external specialists.

o Enablers of specialisation

- **Internal specialization:**
  - **Stage 1: Business unit optimized**
    Early stage business designs do not permit optimization at the activity level and create complexity across the firm.
  - **Stage 2: Process optimized**
    Firms often remain organized as business unit silos to develop a specific product targeted for a customer segment.
  - **Stage 3: Enterprise optimized**
    The virtual centralization of key and expensive cross-company processes allows firms to gain economies of scale.
- **External specialization:**
  - **Phase I: Internally integrated Hardwired connectivity**
    An internally integrated design offered security to firms that owned and operated adjacent areas of the value chain
  - **Phase 2: Strategically integrated Proprietary connectivity**
    Firms began to strategically partner in key functions along the industry value chain
  - **Phase 3: Industry networked**
    The industry networked design is built around many connections to external partners that specialize in key areas

o The role of IT in specialisation and the "as-a-service" model

- **The role of IT in specialization:**
  - Advances in networks, standards, commoditisation of processes and other barriers to interaction, are lowering the transaction costs of unbundling and partnering in the market. This will produce agile, dynamic, specialised providers. e.g. Procter & Gamble, outsource activity as a service, innovated by switching to a service-oriented business model;
- **The "as-a-service" model**
  - Virtualization and data consolidation;
  - Cloud computing and the light switch;

- Wrapping complexity in simplicity, e.g. Amazon Elastic Compute Cloud (EC2), SaaS, utility computing (salesforce.com), IaaS, PaaS;
- Service oriented enterprise and IT architecture;

o The nature and role of digital platforms

- Online structures that enable a wide range of human activities, change the way we work, socialise, create value and compete for profits, e.g. amazon, a list of search engines, social networks, food manufacturers and producers of "physical, digital and interactive media of all types;
- e.g. Auto insurance companies, experimenting with networked sensors installed in cars that allow them to price insurance based on actual driving behaviors