Innovation and Technology Management Study Questions

Use these questions to help you assess your learning from the readings in the Lectures and the Custom Textbook for 49016.

Innovation

- What is innovation? Why is it important?
  Turning ideas into money. Innovation is all about the practical application of new inventions into marketable products or services.

- What is the difference between innovation and invention? What do you consider the most important and why?
  Invention is creation or formulation of a new idea, service or product. Innovation is the practical application of an invention into a marketable product or service. Innovation turns ideas into money, invention turns money into ideas.

- What is the Management of Technology? How does it support innovation and new product development?

- Why is technology management important?

A definition by White and Bruton (2007:17) refers to technology management as the linking of “engineering, science, and management disciplines to plan, develop, and implement technological capabilities to shape and accomplish the strategic and operational objectives of an organisation”.

- What is the innovation funnel? How does it help us to understand the way ideas are managed in the innovation process?
Why is an understanding of Technology cycles and “S” curves important for effective Innovation Management?

It is important because organisations must plan for the future for a new wave of innovation. And to get on board with the new wave, if not, they are left behind. EG. Kodak was the market leader for film photography; they didn’t adopt digital technology before it was too late.

What is technology adoption and diffusion? Explain the different profiles of customers in the five ‘adopter’ categories.

Explain the “S-curve” for technological improvement and the “S-curve” for technological adoption. What are the differences and how do these two curves relate to each other? Provide an example of each.

Types of Innovation

- Explain what is meant by incremental and radical innovation.
  Radical innovation is normally the result of a major technological breakthrough or the application of a new technology. Unlike incremental innovation where each innovation typically draws heavily on what has preceded it, radical innovation is non-linear and discontinuous involving a step change from what has gone before. Hence radical innovation is about much more than improving an existing design. A radical innovation calls for a whole new design.
  Eg. Original iPhone was a radical innovation to the mobile phone world. On the other hand incremental innovation is iPhone, iPhone 5, iPhone 6 etc.

- What are the differences between product and process innovation? Provide some examples to illustrate the differences

  Product Innovation - Development of a totally new product or improved product or services. The product innovation is limited to the outcome of a process, which is a product. eg- Nintendo Wii

  Process Innovation - Finding a novel way of achieving an output which was traditionally done in a different way. In the process innovation, the final product is not touched, but the method of bringing out the product is improved. The improvement could be due to use of new techniques, equipment etc Examples are the design and installation of a new production line in a factory or a new information system in a bank. Eg. Fords production line to manufacture cars.

  What are “sustaining innovation” and “disruptive innovation”? Discuss these two concepts and explain the differences between them.

  What is meant by the term “Creative Destruction”. Explain using appropriate examples, the link between creative destruction and radical innovation.

  Why do innovations often come from outside the industry? They are often faster and cheaper to incorporate into a product or process. Different expertise and knowledge comes from outside the industry. EG. Carbon fibre company helps Maclaren team make a carbon fiber chassis for the F1 Car.

  According to the theory of punctuated equilibrium, why is the rate of innovation not constant?
Technology evolves not on a smooth continuous basis, but via a succession of fits and starts. Major technological breakthroughs are relatively rare.

Technological change is: “a bit-by-bit cumulative process until it is punctuated by a major advance”.

The discontinuities that punctuate periods of equilibrium are linked to major technological innovations.

**Strategy**

- **What is competitive advantage and how can it be achieved?**
  An advantage that a firm has over its competitors, allowing it to generate greater sales or margins and/or retain more customers than its competition. There can be many types of competitive advantages including the firm's cost structure, product offerings, distribution network and customer support. Stand out from the crowd.

  - **What is a competitive strategy?**
    A product strategy is rather like a roadmap in that it shows where the product or service is going over the long term. In so doing a product strategy sets out a vision for the product in terms of its long-term development and how this fits with the overall direction of the organization. This is likely to include the anticipated life cycle of the product, details of how the product will compete (i.e. its competitive strategy)

  - **When would a collaborative strategy be appropriate?** Provides examples of collaborative strategies.
    A significant portion of innovation arises not from any single individual or organization, but instead from the collaborative efforts of multiple individuals or organizations. Collaboration can often enable firms to achieve more, at a faster rate, and with less cost or risk than they can achieve alone. Apple iPhone cross collaborates with many different companies for the internal parts, this saves time and money, rather than creating every chip and sensor in an apple branding. Companies such as Qualcomm, Bosch and Texas Instruments supply chips and sensors for the iPhone 6.

  - **Discuss and compare “differentiation” and “low cost” strategies. Provide an example of each. Explain how each aims to develop competitive advantage, and outline some of the risks or pitfalls with each strategy.**

  - **What is a dominant design? How does the emergence of a dominant design affect the competitive environment?**
    A dominant design is a technology that becomes the “standard” in the marketplace. Examples are the VHS, iPod, Microsoft Excel, Blue Ray

  - **What are the different types of innovation strategy**

  - **Why do first movers often fail?**
    Large amount of risk that is taken on, and heading into the unknown new market and new customer base.

  - **What are the elements of the Porter 5- Forces model**