**Successful firms are able to identify the growing trends of new shopper segments and use new technologies to provide an engaging and seamless shopping experience, in both online and offline spaces.**

***Nielsen Insights,* 29th April 2015**

1. **Explain how technological advancement may improve profits of firms. [10]**
2. **In light of technological advancement, discuss whether more markets are likely to be oligopolistic. [15]**

**Introduction**

* Technological advancement by firms is often meant to improve competitiveness and increase profits. This can be done through investing in new capital or by carrying out further product development to enhance functionality of the good.
  + Technological advancement in firms and how it can be carried out:
    - Can be small, simple, non-disruptive and low cost (e.g. going online and engaging in social-media marketing)
    - Firms with sufficient funds may carry out R&D to develop prototypes of new products and subsequently launch them as product innovations.
  + Profits = Total Revenue – Total Cost. For profits to improve, increase in TR should be greater than increase in TC.

*Note: Students need to link technological advancement that firms have implemented to changes in revenues and/or costs.*

**Body**

1. What technological advancement brings to the market: product differentiation, better quality goods and improvement in customer satisfaction.
   * Consumers may be attracted to the new functions, new look of the good 🡪 **increase in demand for good →**increase in total revenue, hence profit.
   * Firms’ product can be more competitive, thus making their **demand lower in price elasticity** →the ability to price higher for higher total revenue.
   * Firms need not engage in price-wars which can be debilitating in the long-run.
2. Firms moving into the online space may find greater demand for their products.

* When DD for a firm’s product increases, the firm’s revenue increase, leading to higher profits (assume that costs are low or increase in costs due to technological investments are managed).
* With extensive reach, there is possibility of **EOS** 🡪 Lower cost, expect higher sales in a short period.
* Attractive websites also tend to capture the attention of consumers, leading to greater traffic and demand.

1. New firms with disruptive innovations through technology (for example, new online services through social media) could change the business models of delivering their products or services:
   * Short-run profits supernormal profits may be earned if successful
   * If the technology can be replicated by others, then in the long-run, firms will earn normal profits.
2. Higher technology may install barriers into some markets, and improve profits in the long-run:

* Large firms which have the capability to conduct R&D on product development would be able to innovate and introduce significantly better products and products with advanced features.
* 🡪 PED: DD becomes more price inelastic 🡪 firm may increase price to increase total revenue. Profits increase if the increase in total revenue is greater than the increase in technological costs.
* Large firms, with better resources, might dominate the market and set up patents applied to these new technologies
* Barriers to entry will protect supernormal profits of firms, enabling them to continue earning them in the long-run.

1. Technological improvements or R&D activities could improve the efficiency and productivity of factors of production.

* **Average costs of production fall**
* Profits per unit will increase even if price remains the same.

**Conclusion**

Technological advancement would be able to increase profits of firms through the various ways above, working through both enhancements to demand conditions and the lowering of costs.

1. **In light of technological advancement, discuss whether more markets are likely to be oligopolistic. [15]**

**Approach**

* Analyse the nature of technological advancement, and whether it can or has been applied in monopolistically competitive or oligopolistic markets.
* Considering whether technological advancement will have wide impact on markets to the extent that many will consolidate into oligopolistic nature, putting in the argument that there will be markets that remain monopolistically competitive due nature of goods and costs of production (small scale, highly differentiated).
* *Note that firms in perfect competition should be excluded in this analysis as technology, although allowing access to common information in some contexts, generally makes competition imperfect through modification and upgrade of designs of products.*

**Introduction**

When firms engage in further technological development, their objective could be to increase their profits and possibly the market share/dominance as well. Whether or not the market is more likely to be an oligopolistic one, we would need to know the type of good or service provided, and also to ascertain the nature of technological advancement and the ability of other firms to respond competitively.

**Body**

1. **Features and behaviour of firms in an oligopolistic market:**
   * A few very large firms collectively control a good majority of the market share.
   * Strong barriers to entry, which may take the forms of high start-up costs, patents for the protection of innovations or operating license from the government.
   * With a few big firms dominating, these firms tend to be inter-dependent in their behaviour and methods of competition.
2. **Technological advancement that establishes barriers to entry and enhances the incumbent firms’ market shares, thus making markets oligopolistic**
   * As mentioned in part (a), technological advancement can take a few forms; for the market to be transformed from monopolistically competitive into oligopolistic, technological advancement should be of a complex nature and not simply by, for example having an online presence. Patents on new technologies can be a barrier to entry of this nature.
   * Firms that have acquired supernormal profits from their initial innovation can build up their capital to embark on R&D to transform itself or its goods.
   * With powerful innovation, firms can lower their price-elasticity of demand and protect their supernormal profits into the long run. Market share can be increased further through mergers and acquisition to strengthen their consumer base.
3. **Would technological advancement cause many markets to be oligopolistic?**
   * Technological advancement that opens up the market through disruptive innovations **tend to begin from oligopolistic conditions**.

* New firms entering the market may be able to transform the market by introducing a new business model that does not copy the incumbents. For example UBER and Grab, where they are transport service providers through introduction of new ways of booking taxis or private cars. However, the market to begin with is already an oligopolistic one and not monopolistically competitive. Effectively these new firms merely preserve the type of market structure.
  + **Monopolistically competitive firms starts off small, and would not have the resources and ability to undertake costly and transformative technological innovations**. It is more likely that they engage in petty product differentiation and adopt superficial technological changes. Eg. Production of processed food like cookies and frozen dumplings that require simple automation and robotics.
  + In monopolistic competition, the ease of entry will erode firms’ super normal profit, making it difficult for firms to sustain the revenue brought about by the small scale innovation.

1. **Overall Evaluation and Judgement**
   * The nature and extent of technological advancement tend to be dependent on market structure. It is the large firms in oligopolistic markets that will likely have the resources and scale to embark on transformative technology.
   * Firms in monopolistically competitive markets have very limited ability for big scale innovation, in fact the nature of their goods and services (service intensive, highly customised, retailing) itself limits the possibility of R&D.
   * It is very much the nature of production, such as low cost production, that determine the nature of market structure and not the sudden impact of technology.
   * It can be argued too that technological advancement has increased the level of competition (eg. through online platforms).

**Conclusion**

It is likely that firms in oligopolistic markets will take advantage of more complex technological advancements to secure their market share and prevent new firms from entering the market. While technology will indeed be a very critical approach for these firms to maintain their market dominance, the superficial nature of innovation which takes place in monopolistically competitive markets will unlikely transform them into oligopolistic ones. The nature of production in monopolistic competition creates the conditions for firms to remain small. It will be very difficult for the large firms to disrupt the market and eliminate the presence of many small competitors through mere innovations.