<u>Answers for Essay Question 3</u>

Disruptive technologies include the advent of e-commerce retailing which has led to consumers buying cheaper products online rather than going to a physical location.

(a) Explain how survival of firms is affected by disruptive technologies. [10]
(b) Discuss whether increasing competition faced by large retail firms is desirable for the society. [15]

Part a) Explain how survival of firms is affected by disruptive technologies. [10]

Introduction

- A firm's survival is dependent on whether they are able to cover its variable costs in the short run and long run. If they are unable to do so, they will not survive and will need to shut down and exit the industry.
- Define short run – time period with at least one fixed factor and long run – time period with all factors that are variable.
- Disruptive technology could allow more competition on firms and firms can also tap on the technology to differentiate itself and gain larger market share.
- In this essay, we will look at the impact of more competition as consumers turn to online platforms stated in the preamble.

Development 1 – Analysis of disruptive technology on firm's profit

- Disruptive technology reduces demand of goods and services from physical retail outlets because prices of goods and services from online store are relatively cheaper. Demand will also be more price elastic because there are more substitutes that are available.

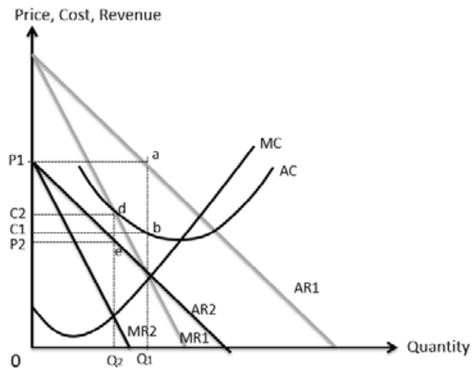


Figure 1: Impact of disruptive technology on firm

  - Initially, the firm maximizes profits at MC=MR1 at output Q1. When outpiut is less than 0Q1, the revenue gained is greater than the cost for an additional unit of good, profits increases with higher output. The converse holds true. Producing one more or one less unit will lead to a fall in total profit.
  - Disruptive technology → ↓demand → ↓AR → may result in subnormal profits (AR<AC) where profits have fallen from supernormal profits of P1abC1 to P2edC2.

[Note] However, disruptive technology may prove opportunity for firms to tap on large markets through e-commerce and hence demand may increase.

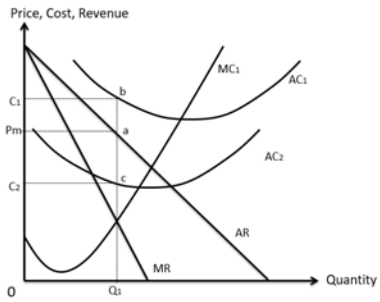
- As explained earlier, firms will consider their variable costs to decide if they are able to survive.

Development 2 – Survival of Firm in SR

- A firm will survive in the short run if its average revenue is able to cover its average variable costs.
- In the short run, a firm incurs both fixed and variable costs.
  - Fixed costs are incurred regardless of the level of output produced by a firm. Even if a firm produces no output i.e. shuts down it will still incur fixed costs.
  - Variable costs are incurred based on the level of production.
  - Provide examples of fixed and variable costs.
- The assumption is that the firm's AR have fallen to an extent that it is making subnormal profits. The firm is also assumed to be a profit motivated firm which intends to minimise its loss.
- A firm cannot survive and will shut down if AR<AVC
  - If AR<AVC, choosing to shut down would mean that the firm only makes a loss equal to its fixed costs. However, if a firm chooses to continue production, the firm would not only incur fixed costs, but it would also incur part of the variable costs. The loss incurred by the firm would be the fixed costs and part of the variable costs as the revenue can only cover part of the variable costs.
  - Thus, a firm's loss is minimised by choosing to shut-down when AR<AVC
- A firm will survive as long as AR>AVC
  - If AR>AVC, choosing to continue production would mean that the loss would be equal to only part of the fixed costs as the revenue is able to cover not only the variable costs but also part of the fixed costs. This would a smaller loss compared to shutting down which would incur a loss equal to the fixed costs.
- However, if AR=AVC, a firm may be indifferent to shutting down in the SR. Choosing to shut down or continue production would incur the same loss.

Development 2 – Exit of Firm in LR

- In the long run, the firm may decide to close down and exit the industry if they make losses.
- In the long run, there are no fixed costs as all factors are variable.
- A firm will exit the industry if AR<AC → subnormal profits



◦ If AR≥AC, a firm is either making normal profit or supernormal profit. A firm is earning to at least cover its total costs and will continue to remain the industry. ◦ If AR<AC, the firm will make subnormal profits (reference the diagram). Profit motivated firms will choose to exit the industry.
Conclusion • With disruptive technology, firms may suffer from subnormal profits due to falling demand. In the short run, the firm will survive as long as AR>AVC. In the long run, the firm will need to ensure that AR>AC to survive.

MARK SCHEME

L1	Some knowledge of impact of disruptive technology on firms and how survival of firms are affected but it is largely assertive.	1 – 4m
L2	Analytical explanation of impact of disruptive technologies on firms and how survival of firms will be affected in the short run OR long run with some descriptive points.	5 – 7m
L3	Analytical explanation of impact of disruptive technology on firms and how survival of firms is affected in the short run AND long run by linking to the shutdown conditions.	8 – 10m

(b) Discuss whether increasing competition faced by large retailers is desirable for the society. [15]

<u>Introduction</u>

Define retailers: **Retailers** refer to business units or shops which sell goods or services directly to consumers. Examples of retailers in Singapore include shops operating in large shopping malls or in housing (HDB) estates.

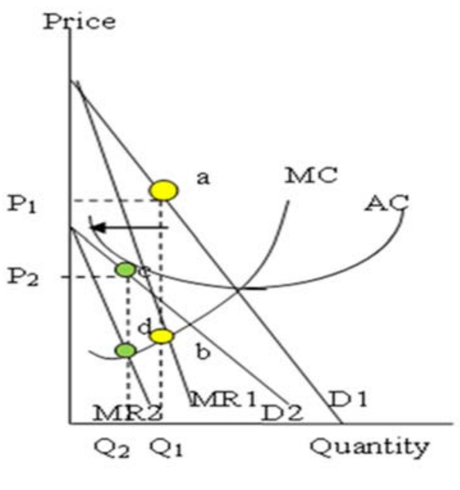
With disruptive technology, it allows markets to operate in an environment near perfect information, e.g. Facilitates greater price transparency, quicker access to information for firms and consumers to make comparisons on price and non-price aspects of a products. Furthermore, it also enables firms to be more contestable by reducing the barriers to entry. Hence, this intensify competition between firms in an industry.

The essay analyses whether increasing competition is desirable for the society by analyzing the impact on consumers (lower prices, greater choices, consumer's surplus), producers (profits) & government (efficiency & equity).

<u>Extra information:</u> *In Singapore, there are a large number of small and medium enterprises such as hair salons, apparel shops, food and beverages and consumer electronics shops which fit into monopolistic competitive structure. However, there are <u>large retailers</u> in some of the industries which exhibit the characteristics of oligopolies such as supermarkets such as NTUC, Diary Farm (Cold Storage and Giant), Sheng Siong, petrol stations such as Shell, Esso, SPC and Caltex, fast fashion retailers that multiple chains countrywide and worldwide such as H&M, Zara and Topshop. These firms are faced with high barriers to entry resulting to a few large firms with large market share in the industry and are mutually interdependent where they can choose to compete and collude.*

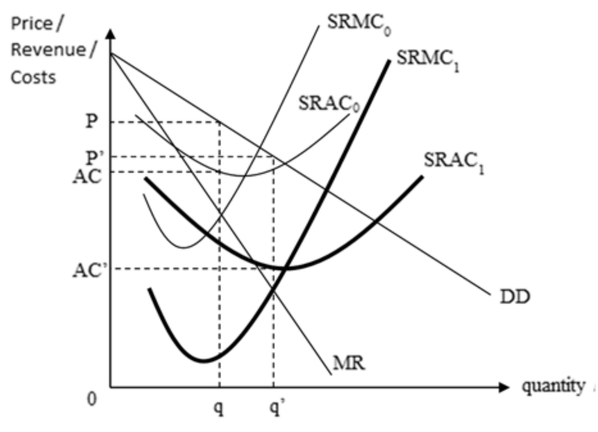
Yes, increasing competition faced by large retailers may be desirable for the society because	No, increasing competition faced by large retailers may not be desirable for the society because

1. Reduce market power



With greater competition, more firms enter the market → lower firm's market share and thus ability to restrict output & charge higher prices → The demand curve facing the oligopolist falls and becomes relatively more price elastic (due to the presence of greater

1. Loss of EOS leading to higher unit cost incurred and thus higher prices for consumers.



A large retailer is able to enjoy internal EOS from larger scale production but a smaller firm does not. This is because the larger retailer is able to practice specialization of labour (e.g. customer service, cashier duties etc) hence enjoying technical EOS. Also they are able to

close substitutes in the market) → as such prices fall from P1 to P2 → improvement in consumers' welfare Moreover, with more firms entering the market, there will be a greater range of products that will be offered to consumers → improvement in consumers' welfare **2. Firms would be less allocative inefficient** Firms are allocative efficient when they are producing the right amount of the right type of good, where P = MC With greater competition in the supermarket→ The demand curve facing the oligopolist falls and becomes relatively more price elastic as shown in diagram above →reduces degree of market power → lesser ability to restrict output and raise prices above MC→ underproduction will be lower→ less allocative inefficient → improvement in society's welfare EV: Can consider an oligopolistic firm that is currently operating in a contestable market. The threat of potential competition would result in these firms behaving in a competitive manner and thus would be less allocative inefficient to begin with. **3. Proliferation of innovative products and services** With more competition due to ↓BTE → firms would have greater incentive engage in product development (self-checkout kiosks and mobile pay) → increase in firm's dd & TR → consumers get to enjoy better quality products → improvement in consumers' welfare EV: However, firms may be restricted to invest in R&D due to the lesser ability to retain supernormal profits in the LR due to lower demand from increased competition. Thus, while they may be willing to do so, they may lack the ability.	purchase goods in bulks and enjoy bulk discounts, therefore enjoying marketing economies of scale. Producers will face higher unit cost of production from SRMC1 to SRMC0 and hence lower profits. Furthermore, producers may transfer the higher cost to consumer through higher prices from P' to P → consumers' welfare compromised. **2. Lack of product development and innovation due to lower profits retained in the LR** With increased competition, it will make it easier for new firms to enter the market when existing supermarkets are earning supernormal profits in the SR → weakened ability to earn supernormal profits in LR → Less funds available for R&D activities → there will be less product development and lower quality products for consumers → Lack of dynamic efficiency → consumers' welfare is compromised, firms also get to enjoy lower profits level too EV: However, the lower profits retained in the LR would reduce income inequality as lesser profits will be distributed amongst the shareholders. **3. Increased unemployment should large retailers shutdown → structural unemployment** With increased competition, firms will face lower demand and hence lower total revenue. If total revenue is less than total costs, firms will make loses and shut down. When this happens, demand of labour falls and this causes unemployment. These unemployed workers are unable to take on jobs in the expanding industry due to skills mismatch, this result in structural unemployment. The scale of unemployment is great because of the size of the industry. EV: However, this depends on how fast the workers can pick up new skills in the expanding industry. The extent of unemployment will be less significant if the extent of skills mismatch is small.

Conclusion (answer the question): Whether increased competition would bring about greater benefits to the society?

With increased competition by retailers, it brings about benefits of increasing allocative efficiency, greater equity and variety to the consumers however producers will face the costs of higher costs because minimum efficient scale may not be attained and lower profits.

Different stakeholders will experience the benefits and costs differently. It depends on the nature of the industry. If firms face substantial high fixed costs, the minimum efficient scale is large, it may be more ideal for firms to have lower competition to harness the benefit of being large. With increased competition, average costs increase and this will cause higher prices to be charged, if P>MC then it is not desirable to have increased in competition. An example will be petrol retailers in Singapore where substantial EOS need to be reaped at higher output.

However, the degree of competition may not be excessive as this will result to wastage of resources. Relative to a smaller firm, a monopoly would spend less on advertising since it is already established in the market. Smaller firms, such as those under a monopolistic competitive industry tend to spend more on persuasive advertising in order to make their demand curve more inelastic to augment their limited monopoly power.

To ensure that market power is not abuse for firms that have lower competition, there is a need for government to intervene it ensure that there is fair competition and also to minimise the disruption of technology to the economy.

MARK SCHEME

L1	Some knowledge of the impact of increased competition on society.	1 – 4m
L2	Descriptive explanation of reasons for and against the increased competition in supermarkets OR Analytical one-sided answer explaining reasons for or against increased competition for supermarkets	5 – 7m
L3	Analytical explanation of reasons for and against increased competition in supermarkets with consideration on the impact of different agents (consumers, firms and government) in the society.	8 – 10m
E1	Unsubstantiated judgement on whether more competition should be encouraged for supermarkets.	1m
E2	Substantiated judgement on whether more competition should be encouraged for supermarkets based on 1 criterion.	2 – 3m
E3	Substantiated judgement on whether more competition should be encouraged for supermarkets based on 2 criterion which includes consideration of the Singapore context with relevant contrasting examples.	4 – 5m