國立清華大學命題紙

97 學年度工業工程與工程管理學系（所）碩士在職專班組碩士班入學考試

科目工業工程與管理實務科目代碼 0302 共 5 頁第 1 頁 *請在【答案卷卡】內作答

註：不得使用計算器；滿分 100 分。

1. 請先描述你認為的「有競爭力的製造業」的樣子，再簡要說明工業工程師可如何使這些項目做得更好。(25%)

2. 日式管理手法在台灣製造業流行已久，但似乎成效不大，試說明日式管理手法在國內不易見效的原因。(25%)

【注意：第三、第四題在後面】

3. 簡答題（25%）

The serenity of a Caribbean sunrise contrasted sharply with Doug's thoughts as he pondered the challenges of the coming week. Doug and his new bride Charlene were at the end of a weeklong Caribbean honeymoon and would be leaving for the airport in a couple of hours. As director of logistics at Olympus Inc., a leading manufacturer of consumer-packaged goods, Doug's opportunity to sell his vision of supply chain management (SCM) was set for first thing Wednesday morning when he would meet with Joe Andrus, CEO of Olympus, and the company's executive steering council. Doug knew that he had only 2 days to put out any fires that had flared up during his absence and finalize his presentation. Doug was chagrined that the meeting had, at the last minute, been rescheduled for just a couple days after his honeymoon. Yet the realist in Doug acknowledged that sometimes you don't get a second chance to make a difference in a company's performance, culture, and future.

Doug had first become intrigued with the supply chain concept a year earlier, when he and Charlene were copresenters on the topic of alliance management at the national meeting of the Council for Supply Chain Management Professionals. Charlene, a partner at TDG Consulting, had pointed out that, in theory, companies in a well-run supply chain should work together as flawlessly as a well-choreographed Broadway musical. Certain that Olympus's logistics operations could benefit from better "choreography," Doug immediately began researching SCM, looking for evidence of its applicability to Olympus. Charlene pointed him to the results of a supply chain initiative management approach known as ***Collaborative Planning, Forecasting, and Replenishment (CPFR)***. Through CPFR implementation, Wegmans, an East-coast grocer, and Nabisco had increased sales of Nabisco's product line by over 50 percent while reducing inventory by one-third. The fact that a rival achieved such outstanding results through supply chain coordination riveted Doug's attention.

Doug began to tout SCM's competitive benefits. At first, nobody listened. A few colleagues suggested he stay focused on the day-to-day challenges of reengineering Olympus's distribution network. But Doug had persisted, seeking to learn as much as he could about SCM so that he could make the business case for pursuing a supply chain strategy. Anecdotes were plentiful, but hard data were hard to find. Doug knew that this would make it difficult to overcome skeptics' objections. Doug himself was not totally sure where to begin, but he was certain that adopting SCM would require significant, even painful, organizational change at Olympus. Doug had therefore assembled a set of SCM success stories from world-class companies. His three favorites—Wal-Mart, Dell, and Honda—came from diverse industries.

- Wal-Mart was Olympus's largest and most demanding customer. Wal-Mart and Kmart were founded in the same year. Yet in 2001, when Kmart filed for bankruptcy, Wal-Mart became the nation's largest grocer with $56 billion in grocery sales. By 2003, Wal-Mart topped the *Fortune* 500 with $248 billion in sales. Wal-Mart's secret of "everyday low prices" on a huge variety of products was made possible by an inventory replenishment system that combines information technology and unique logistics processes.
- Dell was the world's largest and most profitable personal computer manufacturer. Amazingly, Dell had launched a brutal price war at the beginning of the 2000–2001 economic downturn. Leveraging

its direct-to-customer sales channel and relying on contract manufacturers to keep its costs down, Dell generated profits while competitors lost money in their PC operations. Dell's dominance had forced Hewlett-Packard and Compaq to merge in an effort to build a winning PC business.

- Though not the biggest car manufacturer, Honda had established itself as a dominant brand. Honda is year-in-year-out one of the most profitable automakers and is consistently rated as one of the highest-quality car companies. Honda's ingredients for success include engine design and a hugely successful approach to supplier management—suppliers account for approximately 85 percent of Honda's cost.

Doug was a little envious of these companies. He admired Wal-Mart's integrated processes and logistics prowess. At the same time, he wished that Olympus had Dell's marketing and supply efficiencies so that Olympus could profitably win a price war in the midst of a recession. And Doug longed for Honda's proactive supply relationships. If Doug was going to help Olympus establish a reputation as a leading supply chain company, he would have to make the presentation of his life on Wednesday. At a minimum, he needed to

1. Provide a definition of SCM that captures its breadth but is still practical. He needed to tie the diverse aspects of SCM together so that Joe Andrus could get his hands around them.
2. Present a vision of what SCM could do for Olympus. Wal-Mart, Dell, and Honda had harnessed the power of SCM to create powerfully successful business models. Doug hoped he could help the same happen at Olympus.
3. Obtain support for a senior-level task force that could collect the data needed to develop an executable supply chain vision. Doug needed to mobilize Olympus's management team and workforce.

Charlene interrupted Doug's thinking as she entered the room, asking, "Why the serious look? You're not thinking about work already?" Doug could only say, "You know me." Glancing at his watch, Doug suggested, "If we hurry, we can take one last walk along the beach before we head to the airport."

(3a) What is supply chain management? If you were Doug, how would you go about defining SCM?

(3b) How would you suggest Doug organize his presentation to capture senior management's imagination?

(3c) Looking ahead, what do you think Doug's biggest challenge is?

4. 簡答題（25%）

Here's a little secret that Starbucks doesn't want you to know: They will serve you a better, stronger cappuccino if you want one, and they will charge you less for it. Ask for it in any Starbucks and the barista will comply without batting an eye. The puzzle is to work out why.

The drink in question is the elusive "short cappuccino"—at 8 ounces, a third smaller than the smallest size on the official menu, the "tall," and dwarfed by what Starbucks calls the "customer-preferred" size, the "Venti," which weighs in at 20 ounces and more than 200 calories before you add the sugar.

The short cappuccino has the same amount of espresso as the 12-ounce tall, meaning a bolder coffee taste, and also a better one. The World Barista Championship rules, for example, define a traditional cappuccino as a "five- to six-ounce beverage." This is also the size of cappuccino served by many continental cafés. Within reason, the shorter the cappuccino, the better.

The problem with large cappuccinos is that it's impossible to make the fine-bubbled milk froth ("microfoam," in the lingo) in large quantities, no matter how skilled the barista. A 20-ounce cappuccino is an oxymoron. Having sampled the short cappuccino in a number of Starbucks across the world, I can confirm that it is a better drink than the buckets of warm milk—topped with a veneer of froth—that the coffee chain advertises on its menus.

This secret cappuccino is cheaper, too—at my local Starbucks, $2.35 instead of $2.65. But why does this cheaper, better drink—along with its sisters, the short latte and the short coffee—languish unadvertised? The official line from Starbucks is that there is no room on the menu board, although this doesn't explain why the short cappuccino is also unmentioned on the comprehensive Starbucks Web site, nor why the baristas will serve you in a whisper rather than the usual practice of singing your order to the heavens.

Economics has the answer: This is the Starbucks way of sidestepping a painful dilemma over how high to set prices. Price too low and the margins disappear; too high and the customers do. Any business that is able to charge one price to price-sensitive customers and a higher price to the rest will avoid some of that awkward trade-off.

It's not hard to identify the price-blind customers in Starbucks. They're the ones buying enough latte to bathe Cleopatra. The major costs of staff time, space in the queue, and packaging are similar for any size of drink. So, larger drinks carry a substantially higher markup, according to Brian McManus, an assistant professor at the Olin School of Business who has studied the coffee market.

The difficulty is that if some of your products are cheap, you may lose money from customers who would willingly have paid more. So, businesses try to discourage their more lavish customers from trading down by making their cheap products look or sound unattractive, or, in the case of Starbucks, making the cheap product invisible. The British supermarket Tesco has a "value" line of products with infamously ugly packaging, not because good designers are unavailable but because the supermarket wants to scare away customers who would willingly spend more. "The bottom end of any market tends to get distorted," says McManus. "The more market power firms have, the less attractive they make the cheaper products."

That observation is important. A firm in a perfectly competitive market would suffer if it sabotaged its cheapest products because rivals would jump at the opportunity to steal alienated customers.

Starbucks, with its coffee supremacy, can afford this kind of price discrimination, thanks to loyal, or just plain lazy, customers.

The practice is hundreds of years old. The French economist Emile Dupuit wrote about the early days of the railways, when third-class carriages were built without roofs, even though roofs were cheap: "What the company is trying to do is prevent the passengers who can pay the second-class fare from traveling third class; it hits the poor, not because it wants to hurt them, but to frighten the rich."

The modern equivalent is the airport departure lounge. Airports could create nicer spaces, but that would frustrate the ability of airlines to charge substantial premiums for club-class departure lounges.

Starbucks' gambit is much simpler and more audacious: Offer the cheaper product but make sure that it is available only to those customers who face the uncertainty and embarrassment of having to request it specifically. Fortunately, the tactic is easily circumvented: If you'd like a better coffee for less, just ask.

(4a) Why do companies like Starbucks try to differentiate between different customers?

(4b) How can firms take advantage of the fact that different customers are willing to pay different amounts for the same product?