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Kim Park (A): Long-lived Nonmonetary Assets

While attending a U.S. graduate business school, Kim Park, a South Korean exchange student, developed a deep interest in the materials covered in her first-year MBA accounting course. This growing interest led her to seek help from her study group, which included Jane Wilson (an American certified public accountant with global accounting experience), in understanding how and why the accounting concepts and rules discussed in class might be applied in practice—particularly, as Kim said, "to transactions and events that didn't seem to fit the rules."

At the study group meeting where Kim first asked for help in furthering her understanding of accounting, Jane had explained to Kim:

> Not all of accounting complications can—or should—be covered in a first-year MBA course. As in the training for other professions, many matters are dealt with in advanced classes and others, while discussed routinely at some point in the program, are not settled in any beginning or advanced class. Nevertheless, some problems that are not specifically covered in assigned reading can be solved satisfactorily by relating them to the basic accounting principles you have already learned. Even if there are specific rules covering an accounting question you bring to the study group, reasoning from basic principles is the approach we want to adopt as we try to help you understand and resolve your accounting questions. If there are relevant specific rules, I'll direct you to them after we discuss the problem.

At subsequent study group meetings, using specific examples, Kim raised a number of accounting questions related to long-lived non-monetary assets with limited lives, such as buildings.

Prior Knowledge

Kim understood from the background readings for her accounting course that the Financial Accounting Standards Board (FASB) had defined assets as

> "Probable future economic benefits obtained or controlled by a particular entity as a result of past transactions or events."[1]

[1] Financial Accounting Standards Board, Statements of Financial Accounting Concepts No. 6, "Elements of Financial Statements."

Professor David Hawkins prepared this case. The character mentioned in the case is fictional. HBS cases are developed solely as the basis for class discussion. Cases are not intended to serve as endorsements, sources of primary data, or illustrations of effective or ineffective management.

Kim was also aware that the International Accounting Standards Board (IASB) believed that an asset should be recognized in the balance sheet

> "[W]hen it is probable that the future economic benefits will flow to the entity and the asset has a cost value that can be measured reliably."[2]

Furthermore, Kim understood from the same background readings that under U.S. Generally Accepted Accounting Principles (GAAP) and the International Financial Reporting Standards (IFRS) cost model, long-lived, nonmonetary assets were initially recorded at the sum of the expenditures necessary to acquire and prepare an asset for its intended use. Finally, in the case of long-lived nonmonetary tangible assets, with limited lives, Kim understood that their original cost should be systematically reduced over their useful life through a charge to earnings by a process called "depreciation." As far as Kim could gather, the GAAP requirement for this process was that it "reflect the pattern of consumption of the asset being depreciate."[3] Similarly, she noted, under IFRS, that a company's depreciation policy should "reflect the pattern in which an asset's future economic benefits are expected to be consumed."[4]

The following are the examples Kim brought to her study group along with her related questions.

True Star Electronics Company[5]

Before Kim went to business school, she had worked as a salesperson for the True Star Electronics Company. During her time with the company, it had used its own maintenance crew to build an additional wing on its existing factory. Kim wanted to know what would have been a reasonable accounting treatment for the following items related to the construction project:

a. Architect's fees.
b. The cost of snow removal during construction.
c. Cash discounts earned for prompt payment on materials purchased for construction.
d. The cost of building a combined construction office and tool shed that would be torn down once the factory wing had been completed.
e. Cash received from selling the demolished construction office and tool shed rubble as filler for a local road project.
f. Interest on money borrowed to finance construction.
g. Local real estate taxes during the construction process on the portion of land that was to be occupied by the new wing.
h. The cost of mistakes made during construction.
i. The overhead costs of the maintenance department that included supervision; depreciation on the maintenance department's buildings and equipment; heat, light, and power related to the maintenance department's activities; and the cost allocations to the maintenance department for such items as the cafeteria, medical office, and personnel department.
j. The cost of insurance during construction and the cost of any damages or losses arising from injuries or losses not covered by insurance.

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[2] International Accounting Standards Board, "Framework for the Preparation and Presentation of Financial Statements."

[3] "Accounting Changes and Error Corrections," FAS 154.

[4] "Property, Plant, and Equipment," IAS No. 16.

[5] This caselet (section) is based in part on "Joan Holtz (C)" by Professor Robert Anthony, HBS No. 198-145 (Boston: Harvard Business School Publishing, 1997).

k. The estimated cost of dismantling at the end of its useful life the new wing and restoring the site.
l. The depreciation charge related to the part of the existing factory adjacent to the new wing addition that had to be closed off and left idle during construction of the new wing.

Two Airlines[6]

Why do airlines have different depreciation policies? This is the question Kim Park raised at one of her study group meetings. Kim's friend, Jane Wilson, suggested that Kim could get a better understanding of the answer to her question if she first studied, in depth, the actual depreciation accounting policies of several airlines. In particular, Jane suggested that Kim examine the depreciation accounting policies of Singapore Airlines (Singapore's hub airline) and Delta Airlines, a major U.S. airline.[7] Furthermore, because the 9/11 terrorist attack on the World Trade Center had had a major disruptive impact on airlines, Jane suggested that Kim look at the depreciation policies of the two airlines in place before September 2001.

Following Jane's suggestion, Kim read the annual reports of the two airlines published during 2001. To Kim's surprise, Singapore Airlines used considerably shorter depreciation lives and higher residual values than Delta Air Lines. She also learned from reading brokerage house reports that some financial analysts characterized Singapore Airlines' depreciation accounting policy as "aggressive."[8] This characterization of Singapore Airlines' depreciation policy caused Kim to wonder if Singapore Airlines should consider changing its aircraft depreciation policy in late 2001.

Exhibit 1 presents selected financial data for the two airlines. **Exhibit 2** presents selected operating statistics for the two airlines.

Industry Practices

Depreciation was a major expense for the capital-intensive international airline industry.[9] While the straight-line depreciation method was the most common one used, other methods such as the cycle and progressive methods had also been used by a few airlines.[10]

As Kim had correctly observed, within the international airline industry there was considerable variation among companies in the estimates of useful lives and residual values, particularly by geographic area. (See **Table A**.)

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[6] This caselet was inspired by Professor William Bruns's classic case "Depreciation at Delta Airlines and Singapore Airline (A)," HBS 198-001.

[7] The depreciation accounting policies described in this case are the ones that were used by the two companies for financial reporting purposes. (Both companies had adopted different depreciation accounting policies for corporate income tax determination purposes.)

[8] See, for example, "Cathay Pacific," Credit Suisse First Boston (Hong Kong) Limited, September 5, 2001.

[9] From "Accounting policies, disclosure, and financial trends in the international airline industry," KPMG, August 1992. This section on industry practices is based on the KPMG study unless otherwise noted.

[10] The cycle method bases the depreciation charge on the number of landings and takeoffs (a cycle) an aircraft is expected to make over its expected economic life. The annual depreciation charge is the number of cycles during the year times the calculated per-cycle depreciation cost. The cost per cycle is the aircraft's cost divided by the total expected cycles over an economic life, after taking into account expected residual value. The progressive method charges a low percentage of an aircraft's depreciable cost in the first year. This is increased by a fixed percentage each year until full depreciation is accumulated at the end of the aircraft's projected economic life.

Table A Aircraft Annual Depreciation Charge (% of aircraft cost per year given estimated useful lives and residual values)

	Boeing 747 (all series)	Boeing 767 (all series)	Boeing 737 (all series)	Airbus 300	Airbus 310/320	DC 10
Highest airline	8.0%	6.0%	9.0%	5.9%	8.0%	7.5%
Asia average	6.8		8.2	6.5	7.0	6.7
Europe average	5.1	5.4	5.6	5.6	6.3	6.7
North American average	4.2	4.5	4.8	4.8	4.2	4.2
Lowest airline	3.5	3.5	4.8	4.8	4.2	4.2

Source: "Accounting policies, disclosure, and financial trends in the international airline industry," KPMG, August 1992.

Singapore Airlines[11]

Based in Singapore, Singapore Airlines Limited (SIA) was the world's sixth-largest scheduled passenger and third-largest scheduled cargo airline. It operated in 38 countries. SIA had two characteristics that distinguished it from most other airlines: customer service, which was legendary, and the average age of its fleet, which was approximately 5–6 years.[12] The Singapore government owned a 57% interest in Singapore Airlines. The company was listed on the Singapore Stock Exchange.

In the company's March 2001 annual report, chairman Michael Y. O. Fam noted in his chairman's statement:

> In October [2000], SIA scaled new heights . . . For the first time, it was ranked as the world's most admired airline in *Fortune* magazine's prestigious annual survey . . . .
>
> SIA's fleet renewal programme is one of its hallmarks and has contributed much to the success of the Airline over the past two decades, but even by SIA's standards, it was a remarkable year for aircraft orders. In the space of just six months, SIA had announced plans to buy up to 60 aircraft . . . .[13]

SIA had a fleet of 84 passenger aircraft and nine Boeing 747-400 cargo freighters (**Exhibit 3**). SIA depreciated its passenger aircraft over 10 years on a straight-line basis to a 20% residual value. SIA had adopted its current depreciation policy in 1990.[14]

Included in SIA's financial year 2001 Statement of Value Added and Distribution was a S$181 million surplus on disposal of aircraft, spares, and spare engines. This amount compared favorably with the same item in prior years.[15]

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[11] Unless otherwise noted, the materials in the Singapore Airlines' portion of this case are based on Singapore Airlines Limited's financial year 2001 annual report.

[12] The average fleet age, industry wide, was 13.3 years. (Aircraft Information Systems, Rugby, England.)

[13] The 60 aircraft included 25 500-seat A-380 aircraft. SIA would be the first airline to operate this massive aircraft.

[14] Before the 1990 financial year change, SIA had depreciated its aircraft fleet on a straight-line basis over 8 years to a 10% residual value.

Financial year 2002 (beginning April 1, 2001) was expected to be a disappointing one for SIA, primarily due to lower projected cargo and passenger yields. For example, one financial analyst who followed the company's stock projected (before any accounting policy changes) a 43%–44% decline in financial year 2002 earnings over financial year 2001 earnings.[16]

Chairman Fam concluded his financial year 2001 chairman's statement by saying, "The economic outlook in the months ahead is not encouraging."

Delta Air Lines, Inc.[17]

Delta Air Lines, Inc. (DAL) was a major U.S. air carrier that provided scheduled air transportation for passengers and freight throughout the United States and around the world.

For the year ended December 31, 2000, passenger revenues accounted for 94% of Delta's consolidated operating revenues. Cargo revenues and other sources accounted for 6% of the company's consolidated operating revenues for that period.

DAL's operating revenues by geographic region for 2000, 1999, and 1998 were as follows:

(in US$ millions)	2000	1999	1998
North America	14,004	12,259	11,555
Atlantic	1,988	1,930	2,125
Pacific	297	319	322
Latin America	452	375	310
Total	16,741	14,883	14,312

Source: Delta Air Lines 2000 annual report.

Fleet Profile and Depreciation Policy

As of December 31, 2000, DAL owned 455 aircraft and leased 328 aircraft. The fleet's average age was 9.6 years (**Exhibit 4**).

DAL depreciated most of its owned flight equipment on a straight-line basis over 20 years to 5% of residual values.[18, 19]

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[15] Surplus on disposal of aircraft, spares, and spare engines in prior years was (in millions) S$98.4 (1999–2000), S$211.3 (1998–1999), S$157.1 (1997–1998), and S$173.8 (1996–1997). A statement of value added and distribution reported on the calculation of value added or wealth created by SIA (revenues minus purchases of goods and services) and its application among SIA stakeholders in the group (employers, government, providers of capital and retention by SIA to finance replacement of assets and development of operations).

[16] "Singapore Airlines (SIA)," G.K. Goh Research Pty. Ltd., August 24, 2001.

[17] Unless otherwise noted, all of the materials related to Delta Air Lines in this section are based on Delta Air Lines, Inc.'s 2000 annual report.

[18] One U.S. airline, United Airlines, depreciated some flight equipment on a straight-line basis over a 30-year period. (United Airlines 2000 annual report.)

DAL's long-term plan was to reduce aircraft family types from seven to three. As a result of the planned fleet reconfiguration, DAL recorded pretax charges totaling US$469 million (US$286 million after tax) in 1999. DAL's 2000 annual report noted:

> We accelerated the planned retirement of our 16 MD-90 aircraft and eight owned MD-11 aircraft over the next six to eight years as part of our fleet simplification strategy. As a result of this decision, we reviewed these fleet types for impairment, determining that the estimated future cash flows generated by these aircraft are less than their carrying values. The estimated future cash flows were based on projections of passenger yield, fuel costs, labor costs and other relevant factors in the markets in which these aircraft operate. These aircraft were written down to their fair values, as estimated by management, using published sources and bids received from third parties. Due to this impairment analysis, we recorded a pretax asset writedown of $320 million in the quarter ended December 31, 1999.
>
> We changed our business practice regarding the disposal of surplus aircraft parts and entered into an agreement to sell all of our existing surplus aircraft parts inventory to a third party. Accordingly, we wrote down surplus aircraft parts and obsolete flight equipment and parts to their estimated fair values. We determined the estimated fair value of inventory using the negotiated purchase price. This resulted in a pretax charge of $107 million in the quarter ended September 30, 1999.

Outlook

In early 2001, DAL faced the prospect of a pilot strike and a downtown in revenues. One financial analyst commenting on this expectation noted, "This morning, Delta Air Lines announced that due to weak revenue environment exacerbated by ongoing labor tension, it expects to report a net loss of $85 million–$110 million for 1Q01. Consequently, we are lowering our 2001 and 2002 EPS estimates to $3.30 and $5.50 from $6.50 and $6.75.[20]

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[19] The principal features of DAL's 2001 depreciation policy were adopted in 1993. According to the company's 1993 annual report:

> Prior to April 1, 1993, substantially all of the Company's flight equipment was being depreciated on a straight-line basis to residual values (10% of cost) over a 15-year period from the dates placed in service. As a result of a review of its fleet plan, effective April 1, 1993, the Company increased the estimated useful lives of substantially all of its fleet equipment. Flight equipment that was not already fully depreciated is being depreciated on a straight-line basis to residual values (5% of cost) over a 20-year period from the dates placed in service.

The new 1993 depreciation policy replaced a depreciation policy that had been adopted in 1986.

> Prior to July 1, 1986, substantially all of the Company's flight equipment was being depreciated on a straight-line basis to residual values (10% of cost) over a 10-year period from dates placed in service. As a result of a comprehensive review of its fleet plan, effective July 1, 1986, the Company increased the estimated useful lives of substantially all of its flight equipment. Flight equipment that was not already fully depreciated is now being depreciated on a straight-line basis to residual values (10% of cost) over a 15-year period from dates placed in service. The effect of this change was a US$130 million decrease in depreciation . . . for the year ended June 30, 1987.

During the period 1990–94, Delta reported a cumulative pre-tax operating loss of US$2.3 billion. (Above information is from "Depreciation at Delta Air Lines and Singapore Airlines (A)," William Bruns, HBS No. 198-001.)

[20] "Delta Air Lines," *CIB World*, March 31, 2001.

Infosys Technologies Ltd.[21]

Infosys Technologies Ltd., a rapidly growing Indian professional support firm with approximately 91,000 professional and support employees and a global reach, provided information technology solutions to corporations. According to its corporate vision, Infosys strove to be "a globally respected corporation that provides best-of-breed software solutions delivered by best-in-class people."

Infosys invested heavily in employee recruitment, training, and retention.

Infosys recruited from the top 20% of engineering students at premiere Indian universities, colleges, and universities. The new hires, known as "freshers," completed three months of integrated on-the-job training before becoming billable to the company's clients. To provide world-class training for new recruits and retraining of existing employees, the company built Infosys University, a $120 million facility in Mysore India. On any given date over 4,000 freshers attended classes or courses taught by over 150 faculty members to develop their technical and "soft skills," such as team building. Many employees believed they could demand higher salaries in the labor market thanks to the training they received at Infosys.

As required by Indian accounting standards, most of Infosys's human capital expenditures were expensed as incurred. Only the fixed assets involved were capitalized and depreciated. This accounting treatment of investments in human capital did not sit well with the Infosys senior management. They believed that

> The dichotomy in accounting between human and non-human capital is fundamental. The latter is recognized as an asset and is, therefore, recorded in the books and reported in the financial statements, whereas the former is ignored by accountants. The definition of wealth as a source of income inevitably leads to the recognition of human capital as one of the several forms of wealth such as money, securities, and physical capital.

Consistent with this view of the importance of human capital, Infosys had for many years included as a supplementary disclosure in its annual report an estimate of the value of its human resources. As of March 31, 2008, the company's human resources were valued at US$22 billion. This amount was nearly 15 times the approximately US$1.5 billion total assets that Infosys reposted on its 2008 Indian GAAP balance sheet.[22]

In Kim's opinion, at least in the case of Infosys, the quality and value of its human capital was clearly a key strategic asset, and it ought to be recognized in the company's official balance sheet rather than being relegated to a supplemental disclosure statement. Kim wanted to know what basic accounting principles, if any, justified the non-recognition of human capital in financial statements.

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[21] This caselet is based in part on public materials gathered during the process of preparing "Infosys Technologies Ltd., Accounting for Human Capital" (A2) by Professors Jacob Cohen and David Hawkins.

[22] Infosys Technologies, Ltd. 2008 annual report. The human capital valuation in the present value of future earnings of software professionals and support employees using the following methodology: a) employee compensation includes all direct and indirect benefits earned both in India and abroad, b) the incremental earnings based on group/age have been considered, and c) the future earnings have been discounted at the cost of capital.

Different Accounting Models

Before bringing her Infosys example to the study group, Kim had researched the relevant accounting literature to identify the alternative approaches to human capital accounting that had been proposed by various experts.[23] She found that these proposals fell into two broad categories: cost-based models and economic value models.

The cost-based models included the historical cost, replacement cost, and opportunity cost models. The *historical cost model* capitalized the costs of the firm related to recruiting, hiring, training, placing, and developing employees. Once capitalized, the costs were amortized over the expected useful lives of the employees. The *replacement cost model* measured the dollar expenditure necessary to replace existing human assets. The *opportunity cost model* involved managers bidding for "any scarce employee." The market clearing price was the value that other departments were willing to pay to obtain the employee's services.

There were two economic models—the firm value and the individual earnings models. The *firm value economic model* measured the cost of human capital as the reduction in the firms' value that would occur if an employee left the firm. In economic terms, this method represents the discounted present value of the expected future firm earnings that would be attributable to employees. The *individual earnings model* valued a firm's human resources asset at the present value of an individual employee's expected earnings over their anticipated term of employment.

[23] See, for example, American Accounting Association, "Report of the Committee on Human Resource Accounting," *The Accounting Review*, 1973.

Exhibit 1 Selected Financial Data—Singapore Airlines Ltd., and Delta Air Lines, Inc.

	Singapore Airlines Ltd.[a]	Delta Air Lines, Inc.[b]
Revenues	(S$)	(US$)
Passenger Services	6,672	15,657
Cargo Services	2,079	583
Catering and Other Services	1,200	501
Total Revenues	9,951	16,741
Net income attributable to shareholders	1,549	815
Net cash flow from operations[c]	2,451	2,898
Total Assets	16,452	21,931
Current Liabilities	3,743	5,245
Long-term Liabilities[d]	1,733	10,251[e]
Shareholders' Equity	10,976	5,343

Source: Singapore Airlines Ltd. and Delta Air Lines, Inc. financial year 2000 annual reports.

[a]Financial year ending March 31, 2001.

[b]Financial year ending December 31, 2000.

[c]U.S. GAAP basis.

[d]Excludes certain credits.

[e]DAL's projected future operating lease payments were approximately US$1.2 billion per year.

Exhibit 2 Selected Operating Statistics—Singapore Airlines Ltd., Cathay Pacific Airways Ltd., and Delta Air Lines, Inc.

	Singapore Airlines Ltd.[a]	Delta Air Lines Inc.[b]
Available passenger miles (millions)	57,905	154,974
Passenger seat factor (%)	76.8	72.9
Revenue passenger miles (millions)	44,471	112,976
Passengers carried ('000)	15,002	119,930
Average passenger trip (miles)	2,964	942

Source: Prepared by casewriter using Singapore Airlines Ltd., and Delta Air Lines, Inc. financial year 2000 annual reports.

[a]Financial year ending March 31, 2001.

[b]Financial year ending December 31, 2000.

Exhibit 3 Singapore Airlines Ltd. Fleet Profile

	Fleet as at March 31, 2001		
Aircraft	**In Operation**	**On Firm Order**	**On Option**
B747-400	37	2	9
B747-400 Freighter	9	8	
B777	19	36	26
A310-300	13		
A340-300	15	2	
A340-500		5	5
A380-600		10	15
Total	93	63	55

Source: Singapore Airlines Ltd. financial year 2000 annual report.

Exhibit 4 Delta Airlines Inc. Aircraft Fleet at December 31, 2000

		Leased			
Aircraft Type	**Owned**	**Capital**	**Operating**	**Total**	**Average Age**
B-727-200	72		10	82	22.4
B-737-200	1	45	8	54	16.1
B-737-300		3	23	26	14.1
B-737-800	40			40	0.9
B-757-200	77		41	118	9.5
B-767-200	15			15	17.6
B-767-300	4		24	28	10.9
B-767-300ER	49		8	57	5.0
B-767-400	12			12	0.2
B-777-200	7			7	1.3
L-1011-1	6			6	19.7
L-1011-250	5			5	18.1
L-1011-500	4			4	19.9
MD-11	8		7	15	6.9
MD-88	63		57	120	10.5
MD-90	16			16	5.1
EMB-120	49		11	60	10.6
ATR-72	4		15	19	6.5
CRJ-100/200	23		124	147	2.8
TOTAL	455		328	831	9.6

Source: Delta Air Lines, Inc. 2000 annual report.