Case 9 AirAsia: The World's Lowest-cost Airline

By 2009, AirAsia had established itself as Asia's most successful low-cost airline. Between January 2002 and March 2009, AirAsia had expanded from two aircraft and 200,000 passenger journeys to 79 aircraft and 11.8 million passenger journeys. Its route network had grown beyond Malaysia to cover ten Southeast Asian countries. In addition to its hub in Kuala Lumpur (KL), Malaysia, it had replicated its system by establishing associated airlines in Thailand and Indonesia.

By 2007, UBS research showed that AirAsia was the world's lowest-cost airline with costs per available seat kilometer (ASK) significantly below those of Southwest, Jet Blue, Ryanair, or Virgin Blue (Figure 1). It was also one of the world's most profitable airlines. In 2008, when very few of the world's airlines made any profit at all, AirAsia earned a return on assets of 4%.¹ In 2009, it won the Skytrax Award as "The World's Best Low Cost Airline."

AirAsia had built its business on the low-cost carrier (LCC) model created by Southwest Airlines in the US and replicated throughout the world by a host of imitators. AirAsia had adapted the basic LCC model to the market, geographical, and institutional features of Southeast Asia while preserving the principal operational features of the strategy. However, in 2007, AirAsia embarked upon a major departure from the LCC model: expansion into long-haul flights by inaugurating routes to Australia and China and then, in 2009, to India and the UK. The conventional wisdom was that the efficiency of the LCC model was dependent upon short and medium-distance flights with a single type of aircraft and minimal customer amenities—intercontinental flights required contravening these basic conditions. Very few LCCs had ventured into long-haul; even fewer had made a success of it.

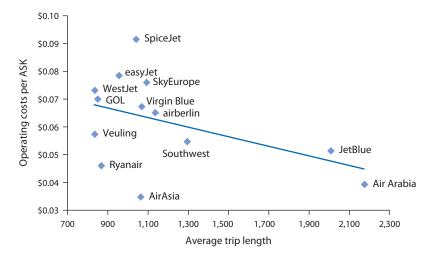
To evaluate AirAsia's potential to expand from being a regional carrier to an international airline would require a careful analysis of the basis of its existing cost advantage and an evaluation of the transferability of these cost advantages to the long-haul market.

The History of AirAsia

The growth of AirAsia is closely associated with the entrepreneurial effort of Tony Fernandes. Son of a Malaysian doctor, Fernandes was sent to boarding school in

Written by Robert M. Grant. The case draws upon a report written by Sara Buchholz, Nadia Fabio, Andrés Ileyassoff, Laurent Mang, and Daniele Visentin: *AirAsia: Tales from a Long-baul Low Cost Carrier*, Bocconi University (2009), and from an earlier case by Thomas Lawton and Jonathan Doh: *The Ascendance of AirAsia: Building a Successful Budget Airline in Asia* (Ivey School of Business, Case No. 9B08M054 2008). Used by permission of the authors. © 2012, Robert M. Grant.





Source: AirAsia Presentation, CLSA Forum, Hong Kong, September 2007.

Britain with a view to following his father's footsteps into the medical profession. Tony had other ideas and, after an accounting degree at the London School of Economics, he went into music publishing, first with Virgin, then Time Warner. He describes his decision to start an airline as follows:

I was watching the telly in a pub and I saw Stelios [Haji-Ioannou] on air talking about easyJet and running down the national carrier, British Airways. (Sound familiar? Hahaha.) I was intrigued as I didn't know what a low cost carrier was but I always wanted to start an airline that flew long haul with low fares.

So I went to Luton and spent a whole day there. I was amazed how people were flying to Barcelona and Paris for less than ten pounds. Everything was organized and everyone had a positive attitude. It was then at that point in Luton airport that I decided to start a low cost airline.²

He subsequently met with Conor McCarthy, former operations director of Ryanair. The two developed a plan to form a budget airline serving the Southeast Asia market.

Seeking the support of the Malaysian government, Fernandes was encouraged by Prime Minister Mahathir Mohammad to acquire a struggling government-owned airline, AirAsia. With their own capital and support from a group of investors, they acquired AirAsia for one Malaysian ringgit (RM)—and assumed debts of RM40 million (about \$11 million). In January 2002, AirAsia was relaunched with just three planes and a business model that McCarthy described as: "a Ryanair operational strategy, a Southwest people strategy, and an easyJet branding strategy."³

Fueled by rising prosperity in Malaysia and its large potential market for leisure and business travelers seeking inexpensive domestic transportation, AirAsia's domestic business expanded rapidly. In January 2004, AirAsia began its first international service from KL to Phuket in Thailand; in February 2004, it sought to tap the Singapore market by offering flights from Johor Bahru, just across the border from Singapore, and in 2005 it began flights to Indonesia. International expansion was financed by its initial public offering (IPO) in October 2004, which raised RM717 million. Airline deregulation across Southeast Asia greatly facilitated international expansion. To exploit the market for budget travel in Thailand and Indonesia, AirAsia adopted the novel strategy of establishing joint-venture companies in Thailand (Thai AirAsia) and Indonesia (Indonesia AirAsia) to create new hubs in Bangkok and Jakarta. In both cases, the operations of these companies were contracted out to AirAsia, which received a monthly fee from these associate companies.

From the beginning, Fernandes had set his sights on long-haul travel, guided by the example of his hero, Freddie Laker, the pioneer of low-cost transatlantic air travel. However, this risked his good relations with the Malaysian government because it put AirAsia into direct competition with the national airline, Malaysia Airlines. Hence, Fernandes established a separate company, AirAsia X to develop its long-haul business. AirAsia X is owned 16% by AirAsia (with an option to increase to 30%), 48% by Aero Ventures (co-founded by Tony Fernandes), 16% by Richard Branson's Virgin Group, with the remaining 20% owned by Bahrain-based Manara Consortium and Japan-based Orix Corporation. Operationally, AirAsia and AirAsia X are closely linked.

In 2007, flights began to Australia, followed by China. By July 2009, AirAsia X had flights from KL to the Gold Coast, Melbourne, and Perth in Australia; Tianjin and Hangzhou in China; and Taipei and London using five Airbus A340s, with three more to be delivered by year-end. Planned future routes included Abu Dhabi (October 2009), India (2010), and later Sydney, Seoul, and New York. At Abu Dhabi, AirAsia X planned to have a hub that would serve Frankfurt, Cairo, and possibly East Africa too: "You just can't get to East Africa from Asia," observed Fernandes.⁴ To support its expansion, AirAsia X ordered ten Airbus A350s for delivery in 2016.

AirAsia's Strategy and Culture

Strategy

AirAsia described its strategy as follows:

- Safety first: partnering with the world's most renowned maintenance providers and complying with world airline regulations.
- High aircraft utilization: implementing the region's fastest turnaround time at only 25 minutes, assuring lower costs and higher productivity.
- Low fare, no frills: providing guests with the choice of customizing services without compromising on quality and services.
- Streamline operations: making sure that processes are as simple as possible.
- Lean distribution system: offering a wide and innovative range of distribution channels to make booking and traveling easier.
- Point-to-point network: applying the point-to-point network keeps operations simple and costs low.⁵

Prior to its expansion into long-haul, AirAsia identified its geographical coverage as encompassing (three-and-a-half hours) flying time from its hubs. Fernandes' confidence in his growth strategy rested on the fact that "This area encompasses a population of about 500 million people. Only a small proportion of this market regularly travels by air. AirAsia believes that certain segments of this market have been under-served historically and that the Group's low fares stimulate travel within these market segments."⁶ Its slogan "Now Everyone Can Fly!" encapsulated AirAsia's goal of expanding the market for air travel in Southeast Asia.

To penetrate its target market, AirAsia placed a big emphasis on marketing and brand development. "The brand is positioned to project an image of a safe, reliable low-cost airline that places a high emphasis on customer service while providing an enjoyable flying experience." For an LCC, AirAsia had comparatively large expenditures on TV, print, and internet advertising. AirAsia used its advertising expenditures counter-cyclically: during the SARS outbreak and after the Bali bombings, AirAsia boosted its spending on advertising and marketing. In addition, it sought to maximize the amount of press coverage that it received. AirAsia also built its image through co-branding and sponsorship relationships. A sponsorship deal with the AT&T Williams Formula 1 race car team resulted in AirAsia painting one of its A320s in the livery of a Williams race car. Its sponsorship of Manchester United encouraged it to paint its planes with the portraits of Manchester United players. It also sponsored referees in the English Premier League. A cooperative advertising deal with *Time* magazine resulted in an AirAsia plane being painted with the *Time* logo.

Its internet advertising included banner ads on the Yahoo mobile homepage and a Facebook application for the Citibank–AirAsia credit card. The overall goals were increasing visibility, encouraging interaction, and allowing users to immerse themselves in the AirAsia brand.

This heavy emphasis on brand building provided AirAsia with a platform for offering services that met a range of traveler needs. AirAsia offered an AA express shuttle bus connecting airports to city centers with seats being bookable simultaneously with the online booking of plane tickets. Fernandes also founded Tune Hotels, a chain of no-frills hotels co-branded with AirAsia. Tune Money offered online financial services—again co-branded with AirAsia.

Culture and Management Style

AirAsia's corporate culture and management style reflected Tony Fernandes' own personality: informal, friendly, and cheerful. In the same way that culture and brand identity of Southwest Airlines and the Virgin airlines (Virgin Atlantic, Virgin Blue, and Virgin America) reflect the personalities of founders Herb Kelleher and Richard Branson, respectively, Fernandes has used his personality and personal style to create a distinct identity for AirAsia. His usual dress of jeans, open-neck shirt, and baseball cap provide a clear communication of AirAsia's unstuffy, open culture. Its team spirit, commitment to job flexibility, and lack of hierarchy were reinforced from the top: Fernandes worked one day a month as a baggage handler, one day every two months as cabin crew, and one day every three months as a check-in clerk.

The share offer prospectus described AirAsia's culture as follows:

The Group prides itself on building a strong, team-orientated corporate culture. The Group's employees understand and subscribe to the Group's core strategy and actively focus on maintaining low costs and high productivity. AirAsia motivates its employees by awarding bonuses based upon each employee's contribution to AirAsia's productivity, and expects to increase loyalty through its ESOS [employee

share ownership scheme] which will be available to all employees. The Group's management encourages open communication which creates a dynamic working environment, and meets all its employees on a quarterly basis to review AirAsia's results and generate new ways to lower costs and increase productivity. Employees . . . frequently communicate directly with AirAsia's senior management and offer suggestions on how AirAsia can increase its efficiency or productivity. . .

In addition to the above, AirAsia:

- inculcates enthusiasm and commitment among staff by sponsoring numerous social events and providing a vibrant and friendly working environment
- strives to be honest and transparent in its relations with third parties. . .
- fosters a non-discriminatory, meritocratic environment where employees are offered opportunities for advancement, regardless of their education, race, gender, religion, nationality or age, and
- emphasizes maintaining a constant quality of service throughout all of AirAsia's operation through bringing together to work on a regular basis employees based in different locations.⁷

AirAsia's Operations

AirAsia's operations strategy comprised the following elements:

- *Aircraft*: In common with other LCCs, AirAsia operated a single type of aircraft, the Airbus A320. (It switched from Boeing 737s in 2005.) A single aircraft type offered economies in purchasing, maintenance, pilot training, and aircraft utilization.
- *No-frills flights*: AirAsia offered a single class, which allowed more seats per plane. For example, when it was operating its Boeing 737s, these were equipped with 148 seats, compared to 132 for a typical two-class configuration. Customer services were minimal: complimentary meals and drinks were not served on board—but snacks and beverages could be purchased, passengers paid for baggage beyond a low threshold, and there was no baggage transfer between flights. AirAsia did not use aerobridges for boarding and disembarking passengers, which was another cost-saving measure. Flights were ticketless and there was no assigned seating. Such simplicity allowed quick turnaround of planes, which permitted better utilization of planes and crews.
- *Sales and marketing*: AirAsia engaged in direct sales through its website and call center. As a result, it avoided paying commission to travel agents.
- *Outsourcing*: AirAsia achieved simplicity and cost economies by outsourcing those activities that could be undertaken more effectively and efficiently by third parties. Thus, most aircraft maintenance was outsourced to third parties, contracts being awarded on the basis of competitive bidding. Most of AirAsia's information technology requirements were also outsourced.

- Information technology: AirAsia used Navitair's Open Skies computer reservations system (CRS), which linked Web-based sales and inventory system, which also linked with AirAsia's call center. The CRS was integrated with AirAsia's yield management system (YMS) that priced seats on every flight according to demand. The CRS also allowed passengers to print their own boarding passes. In 2006, AirAsia implemented a wireless delivery system which enabled customers to book seats, check flight schedules, and obtain real-time updates on AirAsia's promotions via their mobile phones-an important facility in the Asia-Pacific region because of the extensive use of mobile phones. The YMS helped AirAsia to maximize revenue by providing trend analysis and optimize pricing; it also gave information on future passenger numbers that was used by AirAsia's Advanced Planning and Scheduling (APS) system to minimize operational costs by optimizing supply chain and facilities management. These two IT systems allowed AirAsia to reduce costs in logistics and inbound activities. During 2005, AirAsia adopted an ERP (enterprise resource planning) system to support its processes, facilitate month-end financial closing, and speed up reporting and data retrieval.8 This was superseded by an advanced planning and scheduling system, which optimized AirAsia's supply chain management and forecasted future resource requirements.
- *Human resource management*: Human resource management had been a priority for AirAsia since its relaunch under Tony Fernandes. A heavy emphasis was given to selecting applicants on the basis of their aptitudes, then creating an environment and a system which developed employees and retained them. AirAsia's retention rates were exceptionally high, which it regarded, first, as an indicator of motivation and job satisfaction and as a cost-saving measure—because employees were multi-skilled, AirAsia's training costs per employee tended to be high. Job flexibility at all levels of the company, including administration, was a major source of productivity for AirAsia.

AirAsia: Cost Information

To offer a comparative view of AirAsia's operational efficiency and cost position, Table 1 provides operating and financial information on Malaysia's two leading airlines: Malaysia Airlines and AirAsia. Although Malaysia Airlines' route network was very different from that of AirAsia's (Malaysia Airlines had a larger proportion of long-haul routes), it was subject to similar cost conditions as AirAsia.

For the first time since its relaunch in 2002, AirAsia made a loss in 2008. This was the result of Fernandes' decision to unwind AirAsia's futures contracts for jet fuel purchased. When crude oil prices started to tumble during the latter half of 2008, Fernandes believed that AirAsia would be better off taking a loss on its existing contracts in order to benefit from lower fuel prices.

Going Long-haul

Fernandes was aware that expanding from short-haul flights in Southeast Asia to flights of more than four hours to China, Australia, Europe, and the Middle

| | AirAsia | Malaysia Airlines |
|---|---------|--------------------------|
| Operating data | | |
| Passengers carried (millions) | 11.81 | 13.76 |
| Available seat kilometers (billions) | 18.72 | 53.38 |
| Revenue passenger kilometers (billions) | 13.49 | 36.18 |
| Seat load factor (%) | 75.0 | 67.8 |
| Cost per available seat kilometers (senª) | 11.66 | 22.80 |
| Revenue per available seat kilometers (sen) | 14.11 | 20.60 |
| Number of aircraft in fleet December 31, 2008 | 78.0 | 109.0 |
| Number of employees | 3,799 | 19,094 |
| Aircraft utilization (hours per day) | 11.8 | 11.1 |
| Financial data (RM, millions) ^a | | |
| Revenue | 2,635 | 15,035 |
| Other operating income | 301.8 | 466.0 |
| Total operating expense | 2,966.0 | 15,198.3 |
| of which: | | |
| —Staff costs | 236.8 | 2,179.9 |
| —Depreciation | 347.0 | 327.9 |
| —Fuel costs | 1,389.8 | 6,531.6 |
| —Maintenance and overall | 345.1 | 1,146.4 |
| -Loss on unwinding derivatives | 830.2 | _ |
| —Other operating expenses ^b | 139.2 | 5,020.0 |
| Operating profit | (351.7) | 305.5 |
| Finance cost (net) | 517.5 | 60.8 |
| Pre-tax profit | (869.2) | 264.7 |
| After-tax profit | (496.6) | 245.6 |
| Total assets | 9,520.0 | 10,071.6 |
| of which: | | |
| —Aircraft, property, plant and equipment | 6,594.3 | 2,464.8 |
| —Inventories | 20.7 | 379.7 |
| —Cash | 153.8 | 3,571.7 |
| -Receivables | 694.4 | 2,020.1 |
| Debt | 6,690.8 | 433.4 |
| Shareholders' equity | 1,605.5 | 4,197.0 |

TABLE 1Comparing operational and financial performance between AirAsiaand Malaysia Airlines, 2008

Notes:

^aRM: Malaysian ringgit; 1 ringgit: 100 sen (cents). During 2008/9 the average exchange rate was US\$1 • RM3.43. ^bFor AirAsia the main components were aircraft lease expenses and loss on foreign exchange. For Malaysia Airlines the main components were hire of aircraft, sales commissions, landing fees, and rent of buildings. **Sources:** Company annual reports.

East required major changes in operating practices and major new investments, primarily in bigger planes. The creation of AirAsia X was intended to facilitate a measure of operational independence for the long-haul flights while also spreading the risks of this venture among several investors. The investors in AirAsia X also contributed valuable expertise: Virgin Group had experience in establishing and operating four airlines (Virgin Atlantic, Virgin Express, Virgin Blue, and Virgin USA), and the chairman of Air Ventures was Robert Milton, the former CEO of Air Canada.

| ost short-haul, no-frills four hours' flying time departing city A320 with 180 seats | Low cost long-haul, no frills More than four hours' flying time from departing city |
|---|---|
| departing city | city |
| A320 with 180 spats | |
| AJZO WILLI TOO SEALS | Airbus A330 with more than 330 seats |
| class | Economy and Premium (previously known as XL) |
| gned seating, plus ss Boarding option | Assigned seating with seat request option |
| of light meals and ks available for purchase pard | Pre-ordered full meals available including Asian, Western, vegetarian, and kids' meal; light snacks also available for purchase onboard |
| | gned seating, plus ss Boarding option of light meals and ks available for purchase |

TABLE 2Comparing AirAsia and AirAsia X

Table 2 shows the principal differences in AirAsia and AirAsia X's operations and services.

Kuala Lumpur to London: Price and Cost Comparisons

A comparison of prices and costs allows a clearer picture of AirAsia's ability to compete in the long-haul market—a market in which AirAsia had to establish itself against some of the world's major airlines. Between KL and London, AirAsia was in competition with at least six international airlines, the closest of which were Malaysia Airlines, Emirates, and British Airways.

A comparison of economy, round-trip airfares between the two cities is shown in Table 3. As Table 4 shows, these fare differentials reflected differences in cost between AirAsia and its long-haul competitors. These cost differences do not take account of differences in load factors, which can have a major effect on the average cost per passenger. AirAsia reported that its KL–London flights had a load factor in excess of 90%. For the airlines as a whole, Table 5 shows load factors.

| | AirAsia Xª (US\$) | Cheapest other airline ^b (US\$) | AirAsia price advantage (%) | Cheapest other airlines |
|----------------------|-------------------|---|--------------------------------|--|
| KL–London round trip | 433.96° | 683.68 | 36.5 | 1. Gulf Air 2. Qatar Air 3. Emirates |
| London–KL round trip | 433.96° | 530.35 | 18.2 | 1. Emirates 2. Etihad 3. Gulf Air |

TABLE 3 Fare comparisons: AirAsia and its competitors between Kuala Lumpurand London

Notes:

^aAverage fare between September 1 and October 1, 2009.

^bAverage of lowest airline fare on each day between September 1 and October 1, 2009.

^cAverage outbound fare: \$187.87; average inbound fare: \$209.48; meals and baggage charges: \$36.61.

| | AirAsia | British Airways | Malaysia Airlines | Emira | tes |
|---|----------------------------------|----------------------------------|----------------------------------|--------------------------------------|---------|
| Aircraft type Route ^a Maximum passenger capacity | Airbus 340-300 KUL–STN 286 | Boeing 747-400 KUL–LHR 337 | Boeing 747-400 KUL–LHR 359 | Boeing 777-300 KUL–DXB–LHR 360 | |
| | | | _ | KUL-DXB | DXB-LHR |
| Flight fuel cost | 79,299 | 159,522 | 159,522 | 77,525 | 80,822 |
| Leasing costs | 5,952 | 0 | 0 | 0 | 0 |
| En route navigation charges | 7,949 | 12,294 | 12,294 | 1,435 | 6,613 |
| Terminal navigation arrival charges | 419 | 645 | 645 | 0 | 645 |
| Landing/parking | 1,100 | 2,200 | 2,200 | 2,200 | 2,200 |
| Departure handling | 6,000 | 12,000 | 12,000 | 12,000 | 12,000 |
| Arrival handling | 6,000 | 12,000 | 12,000 | 12,000 | 12,000 |
| Segment totals | | | | 105,160 | 114,280 |
| Total cost per flight ^b | 106,719 | 198,661 | 198,661 | 219,440 | |
| Average cost per passenger ^b | 373.14 | 589.50 | 553.37 | 609.56 | |

TABLE 4Flight operating cost comparison: Kuala Lumpur to London (in US\$)

Notes:

^aKUL = Kuala Lumpur, STN = London Stansted, LHR = London Heathrow, DXB = Dubai.

^bExcluding maintenance, depreciation, meal services, and crew salaries.

Source: S. Buchholz, N. Fabio, A. Ileyassoff, L. Mang, and D. Visentin, *AirAsia: Tales from a Long-haul Low Cost Carrier* (Bocconi University, 2009). Data based on NewPacs Aviation Tool Software. Used by permission of the authors.

The Outlook for Long-haul

There can be little doubt that AirAsia had been remarkably successful in building a budget airline in Southeast Asia. Its cost efficiency, growth rate, brand awareness, and awards for customer service, airline management, and entrepreneurship all pointed to outstanding achievement, not simply in replicating the LCC business model pioneered by Southwest Airlines but in adapting that model and augmenting it with innovation, dynamism, and marketing flair that derived from Tony Fernandes' personality and leadership style.

However, its AirAsia X venture presented a whole set of new challenges. AirAsia had successfully transferred several of its competitive advantages from AirAsia to AirAsia X. The low costs associated with fuel-efficient new planes, secondary airports, and human resources practices had allowed AirAsia X to become the low-cost

| | 2004 | 2005 | 2006 | 2007 | 2008 |
|-------------------|------|------|------|------|------|
| AirAsia | 77.0 | 75.0 | 78.0 | 80.0 | 75.5 |
| Emirates | 73.4 | 74.6 | 75.9 | 76.2 | 79.8 |
| British Airways | 67.6 | 69.7 | 70.0 | 70.4 | 71.2 |
| Malaysia Airlines | 69.0 | 71.5 | 69.8 | 71.4 | 67.8 |

TABLE 5Difference between airlines in load factors (%)

Source: S. Buchholz, N. Fabio, A. Ileyassoff, L. Mang, and D. Visentin, "AirAsia: Tales from a Long-haul Low Cost Carrier," (case report, Bocconi University, 2009). Used by permission of the authors.

operator on most of its routes. The AirAsia brand and corporate reputation provided AirAsia X with credibility on each new route it inaugurated. By sharing web-based and telephone flight booking systems along with administrative and operational services between the two airlines, AirAsia X was able to secure cost efficiencies that would not be possible for an independent start-up.

Nevertheless, doubts remained over AirAsia X's ability to compete with established international airlines. Unlike AirAsia, which was attracting a whole new market for domestic and regional air travel, AirAsia X would have to take business away from the established international airlines whose business models offered some key competitive advantages over that of long-haul LCCs. In particular, the dense domestic and regional route networks of the established carriers offered feeds for their intercontinental flights. These complementarities were supported by throughticketing, baggage transfer, and frequent-flyer schemes. Their sources of profit were very different from the LCCs: most of their profit was earned from first- and business-class travelers, which permitted subsidization of economy-class fares.

These challenges pointed to the advantages of closer integration of AirAsia X with AirAsia. AirAsia X's CEO, Azran Osman-Rani, had argued for the operational and financial rationale of merging AirAsia X into AirAsia: "It would be difficult for AirAsia in the future if it did not have trunk routes as [this] is where the traffic volumes come from, so AirAsia needs growth from AirAsia X and the merger allows it to tap growth opportunities in the long-haul markets." Responding to allegations that the real rationale for the merger was to allow AirAsia to finance AirAsia X's losses, Azran said: "Rubbish, we can clearly dispute that. For the first quarter ended March 31, 2009 our net profit was RM 18 million and we are net cash flow positive. We even had a little cash at RM 3 million. We are in a very good position and on a much firmer footing and now is an interesting time to talk about a merger."⁹

Notes

- 1. Operating profit before depreciation, amortization, and interest as a percentage of average total assets.
- 2. See www.tonyfernandesblog.com, accessed June 3, 2009. Website no longer available.
- Quoted by T. Lawton and J. Doh, *The Ascendance of* AirAsia: Building a Successful Budget Airline in Asia (Ivey School of Business, Case No. 9B08M054, 2008).
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- 6. "AirAsia Berhad," Offering Circular (October 29): 3.
- 7. Ibid.: 5.
- C. Cho, S. Hoffman Arian, C. Tjitrahardja, and R. Narayanaswamy, *AirAsia: Strategic IT Initiative* (student report, Faculty of Economics and Commerce, University of Melbourne, 2005).
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