

Singapore Airlines: Achieving Sustainable Advantage Through Mastering Paradox

The Journal of Applied Behavioral Science
2014, Vol. 50(2) 150–170
© The Author(s) 2014
Reprints and permissions:
sagepub.com/journalsPermissions.nav
DOI: 10.1177/0021886314522323
jabs.sagepub.com



Loizos Heracleous¹ and Jochen Wirtz²

Abstract

We explore how Singapore Airlines has become one of the highest performing and respected airlines in the world through its ability to transcend organizational paradoxes. We address four paradoxes: cost-effective service excellence, simultaneous decentralized and centralized innovation, being simultaneously a follower and a leader in service development, and accomplishing standardization as well as personalization in customer interactions. We employ empirical data from multiyear case research on Singapore Airlines to outline how the organization simultaneously balances dual capabilities (seen as poles of the paradoxes) that most other organizations would consider distinct or incompatible. We conclude that the ability to balance opposing poles and in this way transcend paradoxes is what affords Singapore Airlines its sustainable competitive advantage and that this ability is becoming more and more relevant to organizational effectiveness as competition intensifies.

Keywords

paradox, sustainable advantage, dual strategy

Introduction

Singapore Airlines (SIA) has consistently outperformed its competitors throughout its history, has delivered healthy returns since its founding in 1972, and has never reported an annual operating loss. Its balance sheet has almost no gearing, and except for its initial capitalization, it has funded its growth largely through retained earnings while

¹University of Warwick, Coventry, UK

²National University of Singapore, Singapore

Corresponding Author:

Loizos Heracleous, Warwick Business School, University of Warwick, Coventry CV4 7AL, UK.
Email: loizos.heracleous@wbs.ac.uk

still consistently paying dividends. This has been accomplished in the context of an unforgiving, hypercompetitive industry environment. According to IATA, the global airline industry had an estimated \$31.7 billion cumulative losses between 2001 and 2010 (IATA, 2011). Globally, the industry has never earned a real rate of return on its capital employed (“Open skies,” 2003), and has in fact destroyed shareholder value like few other industries. In this environment, SIA has achieved consistent profitability, has become the most awarded airline in the world, and is the only airline other than Southwest to be listed in *Fortune*’s list of most admired companies (*Fortune*, 2013). In this article, we examine, from a strategy and organization perspective, how SIA has accomplished this level of performance.

We found that SIA has achieved this through effectively implementing an unconventional dual strategy: differentiation through service excellence and innovation, together with simultaneous cost leadership in its peer group. This strategy derives from SIA’s ability to achieve organizational ambidexterity through transcending paradoxes. These paradoxes include the accomplishment of simultaneous service excellence and cost effectiveness, engaging in both centralized and decentralized innovation, being both a follower and a leader in service development, and exhibiting standardization as well as personalization.

Dual Strategy, Ambidexterity, and Paradox

The Possibility of Dual Strategies

Michael Porter argued that dual strategies would be impossible to achieve and be sustained over time, because they necessitate contradictory investments and organizational processes (Porter, 1980, 1985). Service excellence and innovation require significant resource investments, as well as a value system that privileges the pursuit of excellence; cost leadership on the other hand requires cutting cost wherever possible while maintaining adequate quality, and a value system that privileges thrift. Porter argued that a company should not attempt to realize more than one generic strategy, since it would risk being “stuck in the middle,” achieving neither cost leadership nor differentiation:

Achieving competitive advantage requires a firm to make a choice. . . . Being “all things to all people” is a recipe for strategic mediocrity and below-average performance, because it often means that a firm has no competitive advantage at all. (Porter, 1985, p. 12)

Porter conceded that firms could temporarily achieve such strategies if competitors are stuck in the middle, having achieved neither cost leadership nor differentiation; if cost is strongly affected by market share and intercompany relationships; or if a firm pioneers a major technological or process innovation (Porter, 1985). But an integrated strategy would be fleeting in Porter’s view, since such advantages would be copied by competitors, leading to the need for firms to ultimately make a clear choice about which generic strategy to pursue and focus their resources and implementation efforts on, in a highly aligned and internally consistent manner (Porter, 1996).

Research has shown however that differentiation and low cost can indeed be compatible under certain conditions, such as a high ability to differentiate the product or service, combined with the presence of economies of scale, scope, and learning effects (Hill, 1988). Furthermore, the generic strategies proposed by Porter are not necessarily mutually incompatible, but can be seen as different dimensions of strategic positioning (Miller & Dess, 1993). This and other research (Miller & Friesen, 1986) have shown empirically that many successful competitors employ a combination of generic strategies rather than distinct types. This literature therefore has shown that it is possible to achieve dual strategies but has not investigated *how* this can be accomplished in practice.

Ambidexterity as a Means of Realizing Dual Strategies

The successful implementation of dual strategies therefore requires ambidextrous capabilities. Several scholars have advocated that companies should aim to balance features that are considered contradictory, incompatible, or in tension. For example, Abell (1999) recommended that firms should balance competing for the present, with developing competencies for the future, mirroring March's (1991) suggestion to balance exploitation of current organizational arrangements with exploration, the search for new ways of competing and new offerings. Abell (1999) recommended that firms should have two planning horizons, short term and long term, that would be in an iterative relationship with each other. He also suggested that firms should balance financial controls (present performance) with strategic controls (whether the organization effectively develops competencies for future success). Still, Abell (1999) did not address or advocate the possibility of having a dual generic strategy, within the same organizational setup.

Tushman and O'Reilly (1996) recommended that companies could balance the present (exploitation) with the future (exploration) by instituting separate subsidiaries with separate strategies and organizational characteristics; integrated through a common executive team at the corporate level, an approach that has become labeled in the literature as "structural ambidexterity." Markides and Oyon (2010) similarly suggested that adopting a second business model is an appropriate response to a disruptive competitor and that the two business models could be kept sufficiently separate to avoid organizational conflicts between them, but potentially integrated selectively to pursue synergies when these are possible.

Gibson and Birkinshaw (2004) moved away from structural ambidexterity (having separate units or business models focusing on either exploitation or exploration) toward contextual ambidexterity, which they viewed as the ability of individuals to exhibit both alignment to current goals as well as adaptability for the future by constantly making judgments about how best to allocate their time, within a supportive organizational context. They recommended the use of performance management with stretching targets, coupled by social support, to enable individuals to balance alignment in the present and adaptability for the future (Birkinshaw & Gibson, 2004).

Even though the above research is enlightening, there is still a significant gap in the current state of knowledge. We still do not know enough about *how* organizations can

realize dual generic strategies within the same organizational set-up. Porter (1980) maintained that this was not possible to sustain beyond the short term. Abell (1999) framed the discussion temporally, in terms of competing for the present and preparing for the future, or balancing exploration and exploitation, in March's (1991) terms. Tushman and O'Reilly (1996), as well as Markides and Oyon (2010), framed the discussion in terms of different business models and units (structural ambidexterity) that should be kept separate according to the former authors, or perhaps cautiously integrated if the markets are similar and organizational conflicts can be avoided, according to the latter. Finally, Gibson and Birkinshaw (2004; see also Birkinshaw & Gibson, 2004) moved the debate toward the level of individual behaviors and development of a supportive organizational context, to balance alignment and adaptability.

Viewing Ambidexterity From a Paradox Lens

A paradox involves “contradictory yet interrelated elements that exist simultaneously and persist over time” (Smith & Lewis, 2011, p. 382; see also Lewis, 2000). Poole and van de Ven (1989) suggested that there are four generic ways to deal with paradoxes, where A and B are seen as poles of the paradox. First, accepting that A and B are opposing and trying to gain insights from this opposition; second, assuming that A and B operate at different levels of analysis and engaging in spatial separation; third, assuming that A and B are each prevalent at different time periods and engaging in temporal separation; and finally looking for a perspective that integrates A and B and attempting a synthesis.

Adopting a paradox lens allows us to conceptualize ambidexterity not simply as involving tensions and tradeoffs between poles that are meant to be separate, but importantly in terms of developing organizational responses and capabilities that can embrace or synthesize these tensions (Andriopoulos & Lewis, 2009; Smith & Lewis, 2011), following Poole and Van de Ven's (1989) fourth possibility of a synthesis. Andriopoulos and Lewis (2009), for example, identified nested paradoxes relating to innovation, involving the pursuit of both profit as well as breakthroughs with respect to strategic intent, both tight and loose coupling with respect to customer orientation and requirements, and both passion and discipline with respect to personal drivers. They found that the poles that constitute these paradoxes can be simultaneously fulfilled through integration and differentiation aspects of organizational arrangements, going beyond previous recommendations of structural and contextual ambidexterity.

Case studies of organizations that have managed to implement dual strategies can help us gain further insights. Heracleous and Wirtz (2010) examined dual strategy at SIA and offered initial ideas on the paradoxes that SIA balances, but did not go in depth on the processes and practices involved. Heracleous (2013) offered an analysis of how Apple Inc manages to deliver outstanding products and services in terms of innovation and design, at an industry-leading level of organizational efficiency. This is accomplished through organizational and strategic choices on areas such as product-market focus, flat organization design with simplicity in processes and selective outsourcing, related diversification with real synergies, and building an ecosystem rather

than simply value chains. These choices simultaneously deliver competencies that most organizations would consider distinct or incompatible (groundbreaking innovation combined with intense efficiency).

Methodology

We conducted a longitudinal in-depth case study of Singapore Airlines, beginning in 2001 and continuing to 2011, utilizing multiple sources of data. During this period, we visited the SIA headquarters seven times (on average every 1.5 years); visited the SIA Training Centre over a dozen times; took field notes; conducted 31 in-depth interviews with senior management, middle management, and cabin crew; gathered and examined published data such as SIA's annual reports, press reports, industry information from bodies such as IATA; and finally became frequent flyers with SIA over several years, which allowed us to gain substantial personal experience of the service levels. Interviews lasted an average of 1 hour each. We transcribed the interviews and analyzed the data in an iterative fashion guided by central themes arising from ambidexterity theory (exploration themes related to service excellence and innovation, and exploitation themes related to efficiency). We thus followed the analytic strategy of interrelating data with theoretical themes until over time links between concepts emerge, are elaborated, and finally saturation of understanding is reached (Yin, 2009).

We triangulated interview data with our observations within SIA and our experiences as frequent flyers in order to enhance the validity of our analysis of SIA's internal competencies and processes. We also triangulated interview data relating to the industry and SIA performance, with data from SIA annual reports, IATA reports, and press articles, in order to enhance the validity of our analysis with respect to SIA's external environment, in a process that Yin (2009) calls data triangulation. Furthermore, as an additional validity mechanism (Heracleous, 2001), we shared our findings on the four paradoxes and on how SIA balances them with SIA managers during executive development programs and on other occasions, who agreed with our findings and helped us refine them through further conversations.

Our initial aim in conducting this case study was to investigate the strategy and organizational aspects of SIA that enable it achieve sustainable competitive advantage (which we defined as comparative outperformance in terms of profitability in relation to the industry) over the years. We gathered information on various organizational aspects including human resource development practices, innovation processes, organization design, cultural values, and financial performance. We found that SIA's cost per available seat kilometer was comparatively very low, near budget-airline levels (enabling SIA to reach among the highest efficiency levels within the flag carriers strategic group), while at the same time the airline consistently received accolades for service excellence, delivering service levels that far exceeded those of most other flag carriers. This prompted us to investigate further the organizational practices and processes that allowed SIA to become ambidextrous.

We therefore realized that the in-depth study of SIA could be a *revelatory* case (Yin, 2009) in the sense that it could shed light the *how* of ambidexterity. In doing so, it

could help us gain a better understanding of how apparently competing capabilities could coexist in an organization, and address a significant gap in the literature, on how ambidexterity can be accomplished in practice. Furthermore, SIA could be seen as a *unique* case (Yin, 2009), since in the aviation industry competitors tend to follow Porter's (1980) generic strategies of differentiation or cost leadership rather than attempt an integrated strategy. The aforementioned two qualities (being a revelatory and a unique case) were put forward by Yin (2009) as rationales to conduct single case studies, and they characterize our case selection in terms of theoretical sampling (Eisenhardt & Graebner, 2007).

Once we became aware of SIA's ability to integrate competencies that are usually incompatible or in conflict, our emergent research question became: *How* can an organization become ambidextrous? Case studies are appropriate methods to answer *how*- and *why*-type questions (Yin, 2009). Furthermore, they are suitable when a phenomenon is important, yet existing theory cannot explain how it occurs (Eisenhardt & Graebner, 2007), as was the case with SIA's ambidexterity. A key perspective in existing ambidexterity theory was structural separation of exploration and exploitation in separate subsidiaries (e.g., Tushman & O'Reilly, 1996), yet at SIA we could see both exploration and exploitation within the same organizational unit. Another key perspective emphasized instituting stretching goals combined with social support (Gibson & Birkinshaw, 2004), yet we could see that at SIA there was much more than this more involved, and that this was at best a very partial explanation.

For the aforementioned reasons, we decided to pursue an inductive, in-depth case study of how SIA manages to integrate processes of exploitation (through intense efficiency) and exploration (through service excellence and innovation). As usual with inductive case studies, our aim was to develop rather than test theory. In terms of Siggelkow's (2007) three uses for case research, the SIA case both *motivated* our emergent research question, over time *illustrated* how ambidexterity can be achieved in practice, and finally served as *inspiration* for extension of theory, in this case enabling us to introduce the paradox lens to the study of ambidexterity.

Managing Paradoxes to Accomplish Dual Strategy

We employed the paradox perspective to gain insights into how SIA can operationalize a dual strategy through apparently contradictory organizational capabilities. This perspective, particularly Poole and Van de Ven's (1989) discussion of the potential of synthesis of the poles of the paradox, encourages thinking in terms of both/and (dualities), rather than in terms of either/or (dualisms). We found that SIA has managed to accomplish the implementation of dual strategy through mastering four paradoxes at the organizational level: cost-effective service excellence, innovating simultaneously in a centralized and decentralized manner, being both a follower and a leader, and finally achieving both standardization as well as personalization. Table 1 outlines these paradoxes.

As Table 1 shows, SIA combines elements that other organizations would see as distinct or incompatible. This occurs at both the level of strategy as well as at the level

Table 1. Implementing Dual Strategy at Singapore Airlines through Mastering Paradoxes.

Organization level	Dual strategy at SIA	
	Cost leadership through . . .	Differentiation through . . .
Paradox 1	Cost effective	Service excellence
Paradox 2	Simultaneous decentralized, and	Centralized innovation
Paradox 3	Being a follower . . .	As well as a leader in service development
Paradox 4	Standardization, as well as . . .	Personalization in customer interactions

of organization, where strategy is realized. At the level of strategy, SIA has achieved both sustained differentiation, as well as cost leadership in its peer group, generic strategies that according to Porter (1980) should be considered distinct. With regard to cost leadership, in the airline industry, a common measure of cost is cents per available seat kilometer (ASK). This calculation includes all operating expenditure for a flight, such as salaries, fuel, depreciation, and catering (less cargo revenues for that flight) divided by available seat kilometers (number of available seats times number of kilometers flown times the number of seats). SIA's average cost per available seat kilometer during the period 2001 to 2009 was US\$4.57 cents (Singapore \$7.47 cents, using average exchange rates for this period), as shown by data in its Annual Reports. In 2005, full service airlines had ASK costs of between US\$8 and 16 cents in Europe, 7 and 8 cents in the United States, and 5 and 7 cents in Asia. Budget carriers had costs of between 4 and 8 cents in Europe, 5 and 6 cents in the United States, and 2 and 3 cents in Asia (Vincent, Boyce, Strik, & Polizzi, 2007).

To put this into perspective, SIA had lower costs than any full service airline, located anywhere in the world (including Asia), making it a cost leader in its peer group. Its costs are lower than those of budget carriers located in the United States or Europe. As we will discuss further below, SIA manages this through a variety of factors such as having one of the youngest fleets in the industry, lower labor costs due to relatively conservative salaries and high productivity of employees, a high proportion of long-haul flights, and a culture of intense efficiency, and SIA cost levels approach those of budget carriers. Yet, no budget carrier comes even close to the service excellence and network coverage offered by SIA—delivering a very basic, no-frills, and often frustrating travel experience.

Porter (1980) maintained that the strategic combination of cost leadership and differentiation would be impossible to maintain in the long term and that organizations that attempted it would end up stuck in the middle and lose any competitive advantage they previously had. Our study indicates, on the other hand, that it is possible to achieve this combination through skillful management of paradoxes. SIA's dual strategy is supported by a number of organizational arrangements that involve the integration of elements that other companies would consider distinct, even contradictory. We describe below the four key paradoxes we have uncovered and the related organizational processes and practices.

Paradox 1: Achieving Cost-Effective Service Excellence

It is relatively easy to achieve service excellence if a company pours enough money into it, accompanied by the right processes. And it is possible to achieve cost leadership if a company does not aim to be a service and innovation leader. The real challenge, and what leads to superior performance, is to achieve both. Service excellence at SIA is achieved via a variety of factors. First, SIA engages in strategic human resource management processes such as extensive training that lasts for 4½ months, which is more than twice as long as the industry average and includes unusual topics such as wine appreciation, interaction style and poise, and emotional and cultural intelligence. This higher investment in training supports service excellence, which increases customer loyalty and reduces turnover of customers, therefore reducing customer acquisition costs. This training includes an understanding of the airline industry and the need to be cost-competitive, which reinforces the cultural value of frugality.

Furthermore, there are ongoing programs such as SIA (Staff Ideas in Action) that encourage employees to come forward with ideas for improvement and be recognized for it. There is symbolic recognition of excellent service in company communications, and through awards for staff who display service excellence above the call of duty. There is true empowerment of both young managers and frontline staff, giving the opportunity to gain exposure through high levels of responsibility. SIA encourages experimentation and has a forgiving culture for implementing new processes internally—but by the time a process reaches the customer, it must be perfect.

The policy of internal promotions (vs. external appointments) leads to the presence of senior people who have in-depth understanding of the SIA way and can provide not only technical knowledge but also political and emotional support to junior employees, through the process also instilling the company values to them. The management rotation system moreover encourages a broad, corporate rather than a narrower divisional or functional output—and a sense of common destiny.

The infrastructure strategy contributes to service excellence. SIA has one of the youngest fleets in the world, with an average age of 80 months, compared with the industry average of 148 months (Singapore Airlines, 2013). Its depreciation policy is more conservative than the industry, depreciating planes over 15 years to 10% residual value (industry practice is to depreciate planes over 20-25 years). Changi Airport, SIA's hub, is regularly voted as the world's best airport, and it is also one of the most efficient.

How does SIA achieve intense cost efficiency? In terms of infrastructure, a young fleet has added benefits in addition to lower repair and maintenance costs and lower fuel consumption. A young fleet can more easily support a higher utilization rate (at SIA planes fly for 13.7 hours per day, vs. an industry average of 11.3 hours per day; SIA Annual Report, 2013; IATA, 2010). Young planes also have fewer problems during service and maintenance, which means lower costs in terms of compensating passengers for flight delays or cancellations and replacement aircraft costs. According to Nick Ionides, Vice President for Public Affairs, physical co-location near the operations is vital:

We are a customer service business, but to support that, it's operations. We are here today, in the building that's attached to the aircraft hangar, outside my window is the runway. We can smell jet fuel every day, we can see from an operational standpoint everything. I think when you're in a spectacular, impressive building in the most prestigious address in Singapore, it's very difficult for people to ensure that your cost base is as low as it can be. We are quite frugal in many ways.

In addition, SIA exercises its bargaining power effectively. Vendors like to associate themselves with SIA, since it is an excellent reference client, and SIA uses that line of argument extensively in their negotiations. SIA typically buys large volumes, for example, a high number of orders for particular types of aircraft, that SIA can pay cash for, due to its healthy balance sheet, obtaining substantial discounts that are inaccessible to most competitors. According to Tan Pee Teck, Senior Vice President Product and Services,

We have this policy of keeping our planes new. We have pretty good discipline when we develop new hardware, strict controls on the weight, the seats will get better and better, more features, but it must not get heavier. . . . I think also the SIA brand has brought us a lot of benefits when we negotiate with suppliers, whether it's the F&B, catering companies or ground companies. We're always able to get a better price, based on the willingness of our service partners to want to keep our account.

Furthermore, employees are highly productive. A study by Doganis (2006) showed that SIA employees were the second most productive airline employees (in terms of available tons/km per \$1,000 of labor cost) after Korean Airlines. This is due to a number of reasons. First, SIA is headquartered in Singapore where meritocracy is widely accepted and combined with a strong work ethic. Second, SIA through its brand can attract bright young graduates (typically first class honors students from leading universities) who are motivated to perform and learn. The combination of relatively conservative starting salaries with significant responsibilities given to these young graduates only a few months into their jobs also enhances productivity. Third, SIA's pay is about average in the Singapore labor market, but not above it, and lower compared to large European and U.S. airlines.

Staff accept the package because of the exposure they receive when working in SIA—not only do they associate with a world leading company, but also at a young age they get significant responsibility and learning. If they leave SIA, they are highly sought after in other service industries. Finally, SIA's employees have a keen interest in the airline's profitability and understand the importance of service excellence as well as cost effectiveness in achieving profitability. According to Maggie Li, Senior Manager Inflight Services,

Cost is always on top of my mind, we're always very conscious about it. But it doesn't mean we should do it at the expense of customers. Because we also realize customers come and travel with us because of our quality standards. So that part must be maintained.

Sim Kim Chui, Vice President of Product Development, discusses what has become an obsession at Singapore Airlines, wastage reduction:

We try to really reduce wastage. Wastage in the sense that what I take away, it'll not affect the customers in any way. So in SIA prudent wastage reduction is what we do day in day out. And you'll be surprised how much we can reduce wastage. Keep your costs down without affecting your service in any way.

Employees' interest in profitability via service excellence as well as efficiency is partly motivated though the bonus scheme, where all employees receive a bonus based on the same formula directly related to profitability. It is not untypical to receive a group-based bonus of 6 months' salary in a good year (independent of individual performance, which is rewarded through salary increments and promotions), or to receive little or even no bonus during years of low profitability. During crises, such as the recent global financial crisis starting in 2008, pre-agreed procedures with the unions kicked in, which reduced unionized employees' salaries by 7.5% and managers' salaries between 10% and 20% (the more senior the managers, the higher the reduction). The bonus scheme combined with the prearranged, automatic salary cuts during downturns give employees a strong stake in the financial performance of SIA. This means that annual pay for unionized staff can range from 92.5% to 150% of base pay, and for managers from 80% to 150%, depending on the financial performance of the airline. This policy creates high alignment between performance and reward, not only at the individual level but also at the company level, and it helps keep the cost structure flexible especially during downturns when preserving cash and cutting fixed costs matter most.

All these factors combined lead to a dual culture in SIA—anything that touches the customer has to exude SIA quality and be consistent with its premium service positioning—embedded as a cultural value of customer orientation. Anything below the line of visibility is subjected to rigorous cost management. For example, SIA's headquarters is in a low-cost location connected to an aircraft hangar at the airport and with modest interiors. This cost consciousness, as a cultural value, is visible not only when dealing with suppliers and operating aircraft but is engrained in every SIA employee. This front-back stage service quality management process goes beyond traditional understandings of this distinction that centered on discovering the similarities and differences between customers' front-stage experience and employees' back-stage knowledge (e.g., Mangold & Babakus, 1991). Rather, at SIA the front/back-stage concept is useful in guiding investment decisions (invest to create service excellence in whatever the customer experiences), and to an extent the focus of cost-cutting efforts (reduce cost as far as possible, without affecting safety or functionality, in what the customer does not have contact with).

Paradox 2: Simultaneous Centralized and Decentralized Innovation

SIA has a reputation of being a serial innovator, having introduced many firsts in the airline industry over the years, and having sustained this innovative orientation over decades in the face of intense cost pressures, industry crises, and push toward commoditization. Examples include SIA's Krisworld entertainment system, Dolby sound,

book-the-cook service where business and first class customers can order the dishes they want to eat before they travel, the widest business class seats in the world, and the suites on the A380 (which SIA calls “a class beyond first”). SIA was the first airline to fly the A380, and the first to launch ultra-long-haul flights between Singapore and New York, Los Angeles, and San Francisco, without an economy class, in its place having an “executive economy” class (later because of strong passenger demand, SIA offered the world’s longest all business class flights on this route). Innovation is high on the agenda of SIA, given its links with competitive differentiation. According to Nick Ionides, Vice President of Public Affairs,

If you’re not constantly moving forward in this industry, you’re moving backwards, staying the same, because of all the competitors out there. We’ve had competition on every route since day one, that’s not changed. Competition is quite intense nowadays, and yes on the service aspect it’s very intense as well. But that’s why we continue to invest in training, investing in selecting the right people, really knowing that’s the differentiator for SIA. And the moment we drop the ball on that and say that, okay we’re the best on service and we don’t need to improve anymore, that’s when we start moving backwards. And that’s when others catch up.

SIA’s approach to innovation involves the seamless combination of, on the one hand, hard structured, rigorous, and centralized innovation, and on the other hand, soft, emergent, distributed, but equally significant innovation (Heracleous, Wirtz, & Johnston, 2005). Enshrined in the product innovation department, centralized innovations follow a “hard” and highly structured process, involving steps such as opportunity identification and selection, concept evaluation, design and development, and launch. These are mostly major, discontinuous innovations such as the nonstop service between Singapore and New York with upgraded business and “executive economy” classes, or the design of the A380 cabin. Ideas for major innovations emerge from a number of channels: discussions with suppliers (e.g., Airbus, for which SIA was an important launch customer, as SIA had the capability and credibility to launch a breakthrough cabin product and in-flight experience for the A380, creating the necessary buzz for both companies), feedback from customers (sliding satisfaction ratings with a product or class induce examining how to improve ratings again), and proactive hunting for ideas on the Internet, technology fairs, and conferences.

The product innovation department consists of a small group of people who tend to rotate in and out from departments from all over the organization about every 2 to 3 years. Only for major projects like the A380 do key team members stay longer to see through the entire development cycle. The department’s key task is to conceive several innovative ideas and move selected ones through the development cycle to commercial introduction. The core team is then augmented by staff from all departments on shorter-term placements, to bring in specific knowledge. Coming up with new ideas and moving them through the cycle are the main key performance indicators for people in the product innovation department. Also, being in this department allows ambitious employees to shine and prove themselves. It is glamorous inside SIA to be involved in high-profile new product development.

This “hard,” centralized approach is complemented by a softer, emergent innovation approach that can best be described as “distributed innovation.” Distributed innovation is initiated and implemented by individual functional departments. It is primarily an unstructured, emergent process that focuses on continuous improvement and tends to be more fluid and flexible. SIA’s culture encourages a stream of new ideas from its various functions, such as In-flight Services, Ground Services, and Loyalty Marketing. At SIA employee suggestions are an important tool used with a focus to further cut costs and improve efficiency. SIA’s Staff Ideas in Action program has been running for almost 30 years. In 2007 to 2008, for example, there were nearly 5,948 ideas contributed at the Group level; all ideas were evaluated, and more than 40% were implemented. There is a Top Suggestor award given by the CEO, accompanied with a cash award.

These ideas are developed and implemented by people in those functions in a decentralized, distributed manner, using department budgets unless higher levels of investment are needed at a later stage. Distributed innovation is especially important in sustaining the aspect of service excellence that requires the totality of the components of a service encounter to be excellent and synergistic, and it helps ensure that all functional departments focus on improving and aligning their respective services. Innovation is everyone’s business at SIA, not just what a centralized innovation department does while everyone else is concentrating on their day job. According to Nick Ionides, Vice President of Public Affairs,

Everyone in this company really understands the value of innovation. More than just it being valuable, it is actually a requirement at this company being in the business where your competitors, with many of them with very deep pockets, are able to catch up to you by spending money to match your product for example. You always have to stay a step ahead.

This fluid process enables and encourages “live” innovations that are owned by specific departments, which continuously monitor and develop them further, based on staff and customer feedback. In addition, the influence and direct involvement of operations in the innovation process means that the ability to consistently and seamlessly deliver, a cornerstone of SIA’s success, is not compromised by the introduction of innovations that sound good but cannot be delivered reliably. For example, one idea that was seriously considered but in the end shot down by cabin crew was whether to allow passengers to order in-flight drinks on the Krisworld entertainment system. This idea was not implemented because cabin crew could foresee that the drinks could not be delivered within a short amount of time (especially shortly after take-off and during meal serving times) and with the necessary customization (e.g., cocktails, or freshly brewed coffee), especially when several orders come through at the same time, and that therefore customers’ expectations would not be met consistently. This operational ownership of innovations at the department level is crucial for SIA, reinforcing its key competency of delivering consistent and reliable service in every customer transaction.

This culture of constant decentralized innovation is partially fed by constantly rotating smart, young, and ambitious executives every 2 to 3 years who aim to shine and to demonstrate their ability to the company. As the airline industry is under constant cost pressure, a key focus is to bring about significant savings in each of the departments, ideally while at the same time achieving leaps in service quality. Rotation takes place across the entire company—a manager can today be in charge of in-flight catering, and tomorrow of revenue management. Besides creating opportunities for managers to prove themselves, rotation provides integration across what otherwise might develop as inward-looking departmental silos. The only managerial positions that do not get rotated are specialists in the finance, accounting, legal, and engineering departments.

Paradox 3: Being a Leader and a Follower at the Same Time

The choice of where to lead and where to follow depends on what areas are important for the customer experience. SIA is a leader, engaging in substantial innovation in all processes that the customer experiences, but simultaneously a conservative follower, engaging in incremental improvements using tried and tested technology in back-office functions that customers do not directly experience. According to Sim Kim Chui, VP Product Development,

Giving more doesn't mean you have to spend until you spend every single cent. We spend wisely. We prioritize the passenger needs. I have 100 dollars to spend I must spend on what is important to the customer. SIA deliberately would not spend on certain things because this is what we think the customer puts as lower priority; but if the customer puts as very high priority, it is where we'll put the money.

SIA executives note that SIA has had a long history of innovations, starting with new service offerings that were against IATA rules, which early on in its history prompted SIA to temporarily leave IATA. These early innovations were simple but ended up significantly changing the travel experience as they were imitated over time by competitors. Such innovations included offering free alcoholic drinks on board, better quality food (at some time IATA even regulated the quality and quantity of cheese in sandwiches on board), and free headphones to watch movies. Since then, SIA has nurtured its innovation capabilities, a can-do attitude and the confidence to embark on world-firsts, and high-investment and high-risk projects other airlines might feel less comfortable pursuing. SIA executives say, for example, that SIA took a lot of risk and stuck its neck out on a number of in-flight entertainment innovations such as being the first airline to launch individual video-on-demand for all classes of travel. Other examples include “Apple” compatible equipment and software for music and Dolby sound, high-cost upgrades during crises (such as launching upgraded seats in all classes), and book-the-cook service for first and business class passengers. SIA aims to be the first to introduce new services so that it can sustain its positioning as the industry leader in the eyes of travelers, editors, and writers of travel magazines;

industry experts; and award-giving bodies. For example, the marketing benefits of the A380 launch were substantial—in terms of strengthening SIA’s image as a service leader. Millions around the globe watched the takeoff and landing of the first SIA A380 flight from Toulouse to Singapore in real time on the web and later in news broadcasts. Load factors were high for A380 flights even during the world economic crisis as passengers wanted to experience the new aircraft. The company culture, supported by stakeholders’ expectations of the SIA brand, highlights innovation and creates buy-in on the strategic importance of this capability rather than just lip service. During new recruits’ induction program, for example, the belief is instilled that SIA has no choice but to innovate, so that it can stay ahead in a hypercompetitive industry. The innovation process is continuous. According to Tan Pee Teck, Senior Vice President of Product and Services,

I think [customers] want to know what’s next. A380, it came out 4-5 years ago, almost time for refresh in the next 2 years. What’s next? What are you going to do to improve your programming? Who’s the next big Chef who’s coming along? So you have to refresh that concept. And you have to see what your neighbor is doing. Because everything you develop, it will become out of date the moment it goes out, if you’re not forward thinking enough.

On the other hand, SIA is a follower in the back office and other noncustomer facing processes. For example, SIA implemented a revenue management system that was largely off the rack and had been successfully implemented in many other airlines. It was a follower here, aiming for low cost and implementation risk. Another example is SIA’s Headquarters, located in Changi Airport in an old building rather than in a shiny new building in the center of town. The focus on innovation is firmly where its customers and other stakeholders can experience it, creating competitive differentiation. In the back office, the attention shifts from risky, high-impact innovations to continuous improvement, cost-effectiveness, and the proven and tested. Simultaneous innovation on many fronts is seen as too risky, and managers believe that SIA needs a stable operational base to enable it to offer both incremental and radical innovations to passengers. If back office processes were equally continuously innovative, there might be too much change, too much risk, spreading resources and expertise too thinly, perhaps in the process compromising SIA’s current singular focus on the customer.

Paradox 4: Achieving Simultaneous Personalization and Standardization

Standardization is key to all high-volume service operations, relating to areas such as staff appearance, service procedures, internal processes, IT systems, and infrastructure. Standardization leads to predictability, safety, and cost control. If standardization is based on customer needs and desires, it also leads to customer satisfaction. However, standardization cannot consistently deliver the “wow” factor over time. Consider a firm starting to send a bottle of Champagne (or upgrade vouchers) to their loyal customers for their birthdays. If well done, the first birthday present may create a wow, an

unexpected pleasant surprise. In the second year, it may still create a warm glow but subsequently often becomes taken for granted. In fact, if not delivered anymore after some time, it can even create disappointment and dissatisfaction. Therefore, standard processes surpassing expectations today, creating a wow experience and customer delight, will fail to surprise in the future because customers simply raise their expectations, and the wow gradually becomes “as expected.”

SIA understands that standard processes cannot be used to create sustained customer delight. Rather, SIA’s formula for sustained wow experiences relies on combining standardization, which is necessary but not sufficient for creating the wow factor, with personalization. There is standardization of on-board service processes, for example, cabin crew appearance, the way they greet passengers, or the way they serve food and drinks. Whereas standardization supports customer satisfaction and consistent delivery of the high-quality SIA experience, personalization makes passengers feel special and individual because it is unexpected and not routine from the passenger’s perspective.

At SIA, personalization is attributed to an ingrained culture of customer service, developed historically and sustained by relevant strategic human resource management processes including recruitment, training, and the evaluation and reward system. This process instills pride in belonging to SIA, and a strong sense of identity. Crew and management say that this kind of service is in their blood and is always top of mind. According to Chew Tai Lu, Vice President of Product Innovation,

The commitment of SIA for innovation is clear; that is what customers expect from us. I would think the differentiating point would be because it’s this holistic requirement, in the sense not just customer facing, but it’s operational flow, service attitude and approach to make SIA service unique. Because if my product doesn’t coincide with the service culture of the flight attendant, the whole thing would not work anymore. It would not help in retaining that personalized service of the cabin crew. Whatever we do, we don’t want to do at the expense of that.

Examples of personalization include Krisflyer PPS and Solitaire passengers (the two highest tiers in the frequent flyer program) being greeted by name, or cabin crew knowing a frequent flyer’s favorite wine or drink and bringing it to them even before they even request it. Personalization can also be emergent, as, for example, when a passenger requests a vegetarian meal, without having reserved it and without the flight menu containing a vegetarian option. The flight crew will creatively put together a vegetarian meal for that person from whatever food options are available on the flight.

Importantly, cabin crew are trained to think on their feet and look for opportunities to impress. Such opportunities may arise from (often unexpressed) special needs of passengers (such as when a passenger does not feel well, looks uncomfortable, travels with small children, or runs out of battery in their notebook). The ability to wow is instilled through attitude and soft skills training (e.g., on how to assess situations and recognize opportunities to go the extra mile for a passenger). There are internal programs such as “Think on Your Feet” and “SOAR” (Service Above All the Rest) that

reinforce the desire to offer excellent service. Staff use terms such as SOARers to describe their colleagues who display these characteristics. Internal communications including in-house publications and videos are aimed at trading tips, giving ideas, driving the SOARing attitude and role modeling. The people element is what executives sometimes refer to as the “software” in the process.

It has to be a combination of hardware and software. You have to keep the hardware at a certain minimum level. But I think it’s really the personal thing, personalization, what you can do for them as a person to keep them. So I think that’s where, perhaps most Asian airlines, have the advantage, because maybe it’s more cultural, the inclination to want to tackle the customer at an individual level. (Tan Pee Teck, Senior Vice President Product and Services)

Wow experiences can be planned or emergent. An example of emergent experiences would be cabin crew’s conversational competence and knowledge about various topics that might be discussed. If a passenger converses with a cabin crew member about wines from different regions and vintages, they would most probably find someone who can elaborate on the types of wines served on board (a result of the “wine appreciation” course). If a passenger asks about SIA or airlines in general, they are likely to find a high level of awareness of industry trends and how SIA has to keep innovating to stay ahead.

Paradoxically, at SIA seamless standardization supports personalization. Because standard processes are designed to be simple and can be imbued effectively and delivered easily, they become second nature and do not require too much cognitive processing power, which allows cabin crew the mental space to read customers. At the same time, there needs to be some slack in terms of time. It takes time and effort to go the extra mile. Therefore, SIA tends to have more cabin crew per flight than its main competitors. Even though this is more expensive, it is at the customer interface where the added investment delivers real differentiation.

Organizational Practices That Support Managing Paradoxes

Taking the analysis at a broader level, we found that there are three sets of practices that can enable an organization to effectively balance paradoxes.

Embed the Balancing of Paradoxes Within the Organizational Culture

Culture is impossible to imitate by competitors because it is deeply rooted in an organization’s history and processes. Since its inception, SIA has been single-mindedly focused on becoming an airline international travelers prefer while at the same time being cost effective, having been told by the government that if it lost money, it would not be bailed out. When it split from Malaysian Airlines in 1972, SIA had no home market to speak of. Singapore’s population was tiny, about 3 million people, relatively

poor, and the government budget was low with many other pressing priorities that Singapore did not have the resources to support a loss-making airline. The message to SIA was clear—we will close you down or sell you off if you cannot survive with the startup capital provided. This was a stretching goal, which combined with the social support provided through a common organizational identity supported contextual ambidexterity (Gibson & Birkinshaw, 2004).

The service excellence and efficiency principles that underlie SIA's dual strategy were developed decades ago when the airline was formed. According to the Chairman's statement in the 1972-73 SIA Annual Report:

Singapore Airlines is able to absorb, apply and sometimes improve the high level technology of the west, at a lower cost than western airlines, and at the same time to provide the refined and gracious service for which the East is traditionally renowned.
(J.Y. Pillay, Chairman)

In 1972, a focus on service excellence was in effect a strategic innovation, since service was not seen as crucial in the industry at the time. Other key decisions followed from there; cabin crew had to be properly selected, developed, and rewarded; things should be done efficiently; and profits could fund further expansion and renewal of the fleet. These principles have been continually nurtured and reinforced over the years through strategic human resource processes so that they have become part of SIA's DNA.

SIA's organizational design and processes makes individuals feel part of a community where not delivering great service would let down not only a customer but also their peers, who also act, when needed, as a safety buffer and a support group for their emotionally demanding job. In conjunction with service excellence, the need for cost-effectiveness and constant productivity improvements is shared by SIA employees who appreciate the need to be flexible and try to keep the cost structure competitive. For example, the unions and management agreed to make part of everyone's pay variable, earning less during crises, but benefiting considerably during the good years with high, pre-agreed bonuses. Tying the fortunes of the company closely to those of the employees has over many years instilled high interest by employees in the performance of the company.

Make Strategic Use of Technology to Support Dual Strategy

Technology can transcend semantic distinctions like standardization and personalization, or apparent contradictions such as cost-effective service excellence, by enabling the provision of both at the same time. For example, Google uses the same search algorithm (standardization) to support searches for users who speak a variety of languages (personalization). Financial projections on rates of return are important to technology investments, but are also subject to all kinds of assumptions and are often unreliable. What SIA additionally does, is to examine the fit between the technology and its dual strategy.

For example, seats on the A380 are the widest in the world but also the simplest in design, with as few mechanically moving parts as possible and almost no chance of malfunction, delivering service excellence at low long-run costs. Another example is investment in maintaining one of the youngest fleets in the world, which enhances the service offering through the experience of flying in a young aircraft that incorporates service innovations, but at the same time is more fuel efficient, has lower maintenance costs, and can more easily achieve higher utilization rates in terms of flying time.

The above discussion suggests that investment decisions should also be guided by considerations of strategic alignment and competency building, not simply by financial projections, which are often unreliable. The relevant question here is what investments should we undertake to achieve both prongs of our dual strategy? At SIA, training cabin crew for over twice the amount of time as the industry average (4½ months at SIA vs. 6-8 weeks in the industry) may seem expensive, but it is essential to instilling the dual strategy mindset to new recruits in a way that will pay off manifold in future. Another investment decision that shows this approach is the business class seats introduced since 2006 in a 1-2-1 pattern, being the widest in the industry. This seat size and configuration reduces the number of available seats, but helps achieve higher load factors and support premium pricing, while being of such a simple design that would almost never break, enabling efficiency in maintenance and low long-run costs. Finally, SIA is the only airline with its own wine cellar, keeping vintages for up to 7 years before it serves them on board. Its purchasing power ensures low costs, and the cellar ensures availability of difficult-to-find vintages when it needs them, supporting differentiation. SIA has also invested S\$1 million to build a ground tasting facility that enables the food tasting in pressurized flight conditions (taste sensitivity is blunted by up to 40% at 30,000 feet because of the drier air). This ensures that its cuisine remains top notch while the development of new dishes with delicate spices is right first time. It is extremely difficult to calculate return on investment on such initiatives, but the strategic logic is clear for SIA. They can lead to true differentiation while at the same time supporting efficiency.

Harness the Power of Business Systems and Context to Support Dual Strategy

Value chains involve linear thinking (inputs-conversion-outputs) but a value system involves networks of interconnected actors and enables thinking in terms of self-reinforcing virtuous circles. Creation of partnerships and alliances at SIA are guided by tough criteria of strategic alignment. SIA is a desirable partner given its brand equity, which allows it to be selective when choosing its partners. It partners up with leading hotels, restaurants, spas, and retailers to offer “lifestyle privileges” to its PPS and Solitaire members (the two highest tiers of frequent flyers). In doing so, it enhances its differentiation by selecting high-end partners, but it also uses its negotiating power to earn fees when its frequent flyers use these services.

SIA raises its antennas and engages other actors in its business system to create multiple feedback channels (front line, customers, competitors, media). For example,

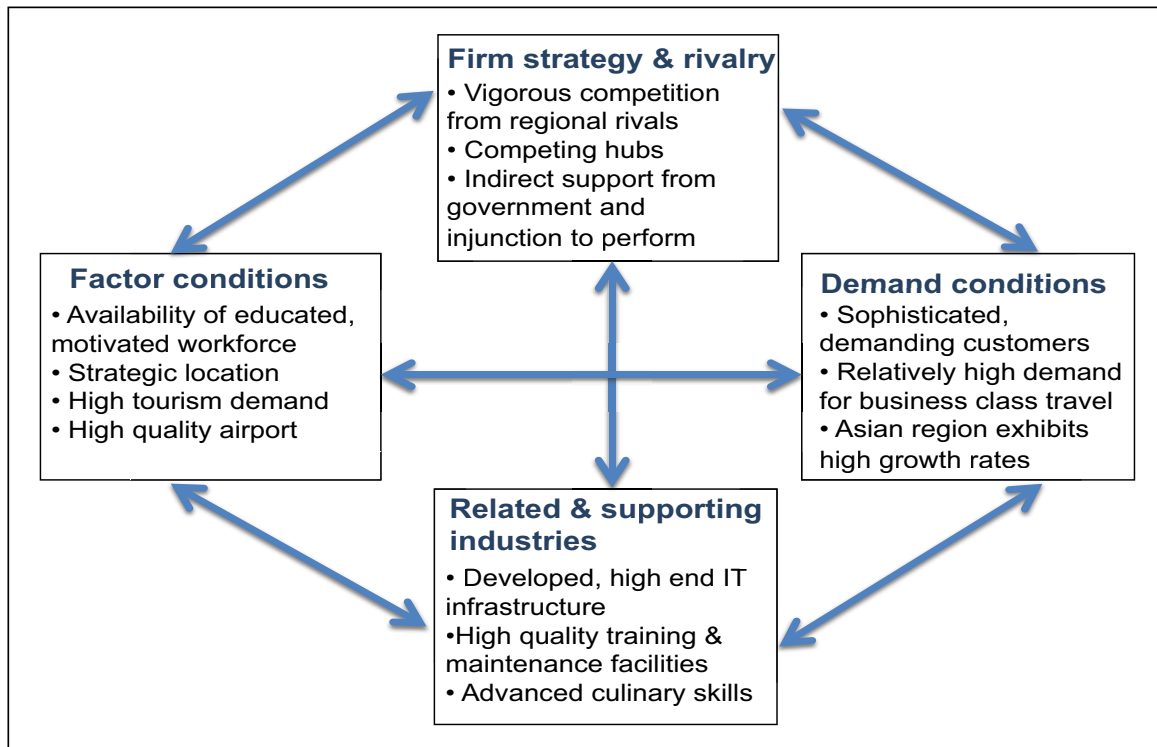


Figure 1. Contextual factors relevant to Singapore Airlines' competitive advantage.

it uses its frontline staff as information channels to and from its customers, taking action on customer feedback and rather than just affording it lip service. It engages its frequent flyers in focus groups during the development of substantial innovations, benchmarks competitor in-flight offerings, follows the Skytrax rankings of leading airlines as well as IATA surveys as tools of competitive intelligence, and takes the pulse of its Singapore image through articles in the local media. Given SIA's positioning as a premium airline, customers expect a lot more, are faster to complain, and the media watches SIA hawkishly. SIA takes the intelligence it receives through its networks seriously, ensuring both that its service levels are kept at the leading edge, supporting differentiation, and that any cost-saving ideas that either its staff propose or others have developed will be quickly learned and adopted.

Thinking in terms of business systems highlights self-reinforcing loops (virtuous circles) that support the dual strategy. For example, truly superior service enables premium pricing that in turn can fund further innovations and sustain a young fleet, which contributes to superior service, continuing the virtuous circle. At the same time, innovations that offer service excellence can also increase efficiency. These include the young fleet, the business class seats that are designed to never break, and the pressurized tasting chamber that leads to getting development of new dishes right first time.

SIA's industry and national context are also relevant to its competitive success. Figure 1 below outlines the main factors, using Porter's (1990) diamond model.

As can be seen, the external environment is conducive to SIA's success. Related and supporting industries and factor conditions contribute to SIA's high-end offerings.

And as Porter (1990) suggested, vigorous competition in its home environment as well as demanding customers sharpen a firm's competitive instincts and capabilities and aid its global success. Having said the above, the environment can be conducive for a firm, but it cannot explain sustained competitive success, which derives from clear strategic choices and organizational capabilities; in SIA's case, dual strategy and ambidexterity.

In Conclusion

The ability to master paradox and balance apparently contradictory competencies and positions is becoming increasingly necessary, because of the simultaneous quality and cost pressures in most industries and the advancement of technology that challenge or reshape existing business models. SIA has shown that mastering paradoxes is possible through the basic building blocks that every organization has at its disposal. These include the organization culture, strategic HRM, strategic investments in technology that can support dual strategies, optimal organization design that leads not only to efficiency but also to adaptability and learning, skillful use of market power, and sound strategic choices of where to commit scarce capital and where to focus innovation resources. Sustainable competitive advantage can follow, because such self-reinforcing complex systems are very difficult for competitors to imitate. They are path-dependent, specific to the organization concerned, and deeply embedded in its DNA. Even though such systems are specific to the organizations concerned however, the paradoxes companies have to deal with are not. The ability to resolve paradoxical tensions in a manner that does not compromise either pole of the paradox can be a path to competitive success.

Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The authors received no financial support for the research, authorship, and/or publication of this article.

References

- Abell, D. F. (1999, Spring). Competing today while preparing for tomorrow. *Sloan Management Review*, 73-81.
- Andriopoulos, C., & Lewis, M. W. (2009). Exploitation-exploration tensions and organizational ambidexterity: Managing paradoxes of innovation. *Organization Science*, 20, 696-717.
- Birkinshaw, J., & Gibson, C. (2004, Summer). Building ambidexterity into an organization. *MIT Sloan Management Review*, 47-55.
- Doganis, R. (2006). *The airline business* (2nd ed.). Abingdon, England: Routledge.
- Eisenhardt, K. M., & Graebner, M. E. (2007). Theory building from cases: Opportunities and challenges. *Academy of Management Journal*, 50, 25-32.

- Fortune*. (2013). *World's most admired companies*. Retrieved from http://money.cnn.com/magazines/fortune/most-admired/2013/list/?iid=wma_sp_full
- Gibson, C., & Birkinshaw, J. (2004). The antecedents, consequences, and mediating role of organizational ambidexterity. *Academy of Management Journal*, 47, 209-226.
- Heracleous, L. (2001). An ethnographic study of culture in the context of organizational change. *Journal of Applied Behavioral Science*, 37, 426-446.
- Heracleous, L. (2013). Quantum strategy at Apple Inc. *Organizational Dynamics*, 42, 92-99.
- Heracleous, L., & Wirtz, J. (2010, July-August). Singapore Airlines' balancing act. *Harvard Business Review*, 145-149.
- Heracleous, L., Wirtz, J., & Johnston, R. (2005, Winter). Kung Fu service development at Singapore Airlines. *Business Strategy Review*, 26-31.
- Hill, C. W. (1988). Differentiation versus low cost or differentiation and low cost: A contingency framework. *Academy of Management Review*, 13, 401-412.
- IATA. (2010, March). *Financial forecast*. Retrieved from www.iata.org/economics
- IATA. (2011, March). *Financial forecast*. Retrieved from www.iata.org/economics
- Lewis, M. W. (2000). Exploring paradox: Toward a more comprehensive guide. *Academy of Management Review*, 25, 760-776.
- Mangold, W. G., & Babakus, E. (1991). Service quality: The front-stage vs the back-stage perspective. *Journal of Services Marketing*, 5(4), 59-70.
- March, J. G. (1991). Exploration and exploitation in organizational learning. *Organization Science*, 2, 71-87.
- Markides, C., & Oyon, D. (2010). What to do against disruptive business models. *MIT Sloan Management Review*, 51(4), 25-32.
- Miller, A., & Dess, G. G. (1993). Assessing Porter's (1980) model in terms of its generalizability, accuracy and simplicity. *Journal of Management Studies*, 30, 553-585.
- Miller, D., & Friesen, P. H. (1986). Porter's (1980) generic strategies and performance: An empirical examination with American data. Part II: Performance implications. *Organization Studies*, 7, 255-261.
- Open skies and flights of fancy. (2003, October 2). *The Economist*. Retrieved from <http://www.economist.com/node/2099875>
- Poole, M. S., & Van de Ven, A. H. (1989). Using paradox to build management and organization theories. *Academy of Management Review*, 14, 562-578.
- Porter, M. E. (1980). *Competitive strategy*. New York, NY: Free Press.
- Porter, M. E. (1985). *Competitive advantage: Creating and sustaining superior performance*. New York, NY: Free Press.
- Porter, M. E. (1990). *The competitive advantage of Nations*. New York, NY: Free Press.
- Porter, M. E. (1996, November-December). What is strategy? *Harvard Business Review*, 61-78.
- Siggelkow, N. (2007). Persuasion with case studies. *Academy of Management Journal*, 50, 20-24.
- Singapore Airlines. (2013). *Annual report*. Retrieved from <http://www.singaporeair.com/pdf/Investor-Relations/Annual-Report/annualreport1213.pdf>
- Smith, W. K., & Lewis, M. W. (2011). Toward a theory of paradox: A dynamic equilibrium model of organizing. *Academy of Management Review*, 36, 381-403.
- Tushman, M. L., & O'Reilly, C. A. (1996). Ambidextrous organizations: Managing evolutionary and revolutionary change, *California Management Review*, 38(4), 8-30.
- Vincent, C., Boyce, M. S., Strik, J., & Polizzi, D. (2007). *Aviation 2010: Achieving efficiency and differentiation in turbulent times* (IBM Institute for Business Value). Retrieved from <http://www-935.ibm.com/services/us/gbs/bus/pdf/g510-6619-00-aviation2010.pdf>
- Yin, R. (2009). *Case study research* (4th ed.). Los Angeles, CA: Sage.