Healthiness of Business Ecosystem and Successful Platform Strategy: The Case of Incheon International Airport*

Ki-Chan Kim**
Sung-Sang Lee***
Ruth Angelie B. Cruz****
John Laurence A. Enriquez*****
Jung-Sun Baek******

Incheon International Airport (IIA) has become the great pride of Korea as it has grown to become a world-class airport rated as the World's Best Airport for its customer-centered service and innovative activities for seven consecutive years in the World Airport Evaluation held by the Airports Council International (ACI).

The airport is creating a healthy business ecosystem in which different functions such as immigration, shopping, and transit have been successfully aligned. This is the result of the collective efforts and passion of all the organizations that have coordinated and worked tirelessly to bring in innovative changes with a dynamic mindset. The role of the Incheon International Airport Corporation (IIAC) is crucial in that it works as a keystone or leader that provides an effective platform for all of its business ecosystem members.

This paper traces and analyzes how functions and roles of many different organizations were synergized to create a successful business ecosystem in which members work both cooperatively and competitively, co-evolve capabilities, and share value. The paper also examines the business ecosystem structure of the IIA through the content, platform, network, and terminal (CPNT) model. From a device standpoint, the IIA is just a terminal—a place where aircraft take off and land and immigration is managed—but from a business ecosystem standpoint it is a platform that provides not only solutions but also serendipities and emotions. In addition, we investigate the role of the IIAC as a keystone and how it creates and executes its platform strategy. Finally, the healthiness of the IIA business ecosystem is assessed through the three health indices: productivity, robustness, and niche creation (Iansiti & Levien, 2004c). The paper provides a strategic model for business management from a new perspective through analyzing the healthiness of the business ecosystem and platform competitiveness of the IIA.

Key Words: Business ecosystem, ecosystem healthiness, keystone, platform, platform strategy, CPNT model

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** Professor, Business Administration Department and Dean of Strategic Planning, The Catholic University of Korea(kckim@catholic.ac.kr), Main Author

*** Professor, Industry-University Collaboration, The Catholic University of Korea(sspapari@naver.com)

**** Graduate Student, Business Administration Department, The Catholic University of Korea(ruthabcruz@gmail.com)

***** Graduate Student, Business Administration Department, The Catholic University of Korea (enriquezjohnlaurence@gmail.com)

****** Executive Director, HR group, Incheon International Airport Corporation(jsbeak@airport.kr)

Ⅰ. Introduction

In an era of globalization, openness, and information, the Incheon International Airport (IIA) continues to deliver services and values beyond expectation. It is no wonder that the airport has been graded as the best airport for its services by the Airports Council International (ACI) for seven consecutive years. According to former IIA President and CEO Chae-Wook Lee, "By realizing their vision of becoming 'the global airport specialist that leads the world's airport industry,' Incheon International Airport will be the place that all Koreans are proud of, people around the world want to visit, other airports want to benchmark, a place where Korean culture and art are fully experienced and where employees are proud to be a part of the airport."

The IIA has been active in improving the level of its airport services as a role model for other airports, and due to these efforts the ACI created a special award for them. The IIA also capitalizes on its strong brand power to be effective in its overseas business. It has strengthened its brand value by exporting its advanced technologies to overseas countries, including Iraq, Russia, the Philippines, Nepal, and Cambodia.

For over a decade, the IIA has grown with creativity, passion, and a vision for the future. Since its opening, over 35 million passengers, 2.5 million tons of cargo, and 5.6 million transfer passengers have traveled through the airport despite various factors that have negatively affected the demand for aviation services. It now operates flights to 176 cities in 50 countries, and it is 2nd worldwide in cargo volume and 8th in international passenger traffic.

The IIA is a great example of a healthy business ecosystem that crosses various functions and businesses such as immigration, shopping, and transit. There are 35,000 employees, with 900 being from the Incheon International Airport Corporation (IIAC) and the rest coming from over 550 public and private institutions—23 government agencies, 67 airlines, 49 duty-free shops and restaurants, and 43 subcontractors—all of whom are devoted to fulfilling their duties with a strong sense of responsibility. Orchestrating all the activities in the airport is the IIAC, which acts as a keystone that provides the platform that allows members to engage in cooperative competition and to share value.

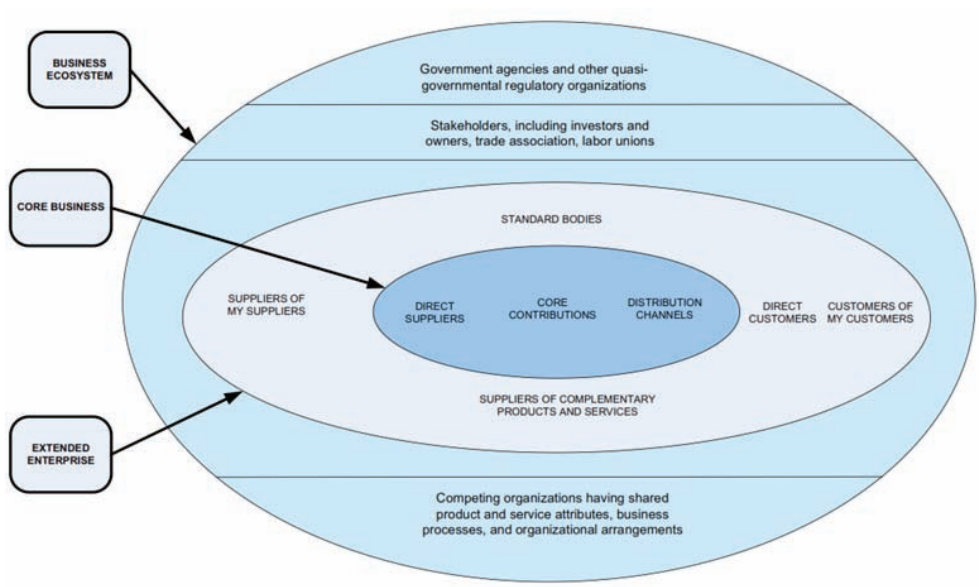
Ⅱ. Literature on Business Ecosystem and Platform

2.1 What are business ecosystems?

James Moore coined the term "business ecosystem" in his *Harvard Business Review* (1993) article "Predators and Prey: A New Ecology of Competition" and explained that "In a business ecosystem, companies co-evolve capabilities around a new innovation: they

work cooperatively and competitively to support new products, satisfy customer needs, and eventually incorporate the next round of innovations." He further defined the concept of a business ecosystem later on as "an economic community supported by a foundation of interacting organizations and individuals—the organisms of the business world (1996)." The members of the ecosystem include the organizations and their customers, suppliers, lead producers, competitors, and other stakeholders (see Figure 1). According to Moore (1996), over time the members of the ecosystem co-evolve their roles and capabilities and tend to align themselves with the directions set by one or more central companies in the ecosystem.

Iansiti and Levien (2004a) defined the business ecosystem by comparing it to a biological ecosystem. "Like business networks, biological ecosystems are characterized by a large number of loosely interconnected participants who depend on each other for their mutual effectiveness and survival." Similar to the members of a business ecosystem, biological species thrive by maintaining ecological balance in the community. A disturbance in the natural order of things in the ecosystem will result in undesirable effects on individual species, as the ecosystem's structure and function are tightly linked in such a way that neither structure nor function can be changed without affecting the other (Cairns & Pratt, 1986). Taking this into consideration, it can be said that the effectiveness of functions and processes can be measured based on the relationships between and among companies (Sydow & Windeler, 1998).



〈Figure 1〉 The business ecosystem (Moore, 1996).

Iansiti and Levien also defined four network strategies that ecosystem members adopt as their roles in the community (Iansiti, 2005; Iansiti & Levien, 2004a). The first is the "keystone" organization, which actively improves the overall healthiness of the ecosystem, resulting in sustained performance of the firm. Keystones create a value that is widely shared within the network. The next role is that of the "dominator", which has a high physical presence within the network and captures most value for itself. Dominators integrate either vertically or horizontally to control a large part of their networks. Next is the "hub landlord," which has a low physical presence in the community, but like the dominator it captures most of the value for itself while contributing very little, if any, value to the ecosystem. The dominator and hub landlord strategies, when exercised excessively, may endanger the existence of the whole business ecosystem in the long run. The last network strategy is the "niche player," which develops specialized capabilities that set it apart from the other organizations in the network. These business organisms collectively create much of the value in a healthy ecosystem and constitute the bulk of the ecosystems to which they belong. However, niche players have the least influence and power over the ecosystem.

According to March (1991), there are two are fundamental activities of organizations and other adaptive systems—exploration and exploitation. Since both activities draw from the same pool of limited resources, organizations are bound to make trade-offs between them (Levinthal & March, 1993). These activities rely on various organizational routines and capabilities (Benner & Tushman, 2003; Galunic & Eisenhardt, 2001), and therefore a specialization in either one is easier than efficiently performing a mixture of the two (Greve, 2007). Although exploration and exploitation are difficult to combine, prior studies suggest that too little of either reduces performance (Fagiolo & Dosi, 2003; He & Wong, 2004; Katila & Ahuja, 2002; Levinthal & March, 1993).

Thus, it could be argued that a healthy mix of exploration and exploitation is beneficial for organizations. Various studies have identified indices of health that could ultimately assess whether efforts in relation to explorative and exploitative activities are successful or futile.

Iansiti and Levien enumerated indicators for a healthy ecosystem—productivity, robustness, and niche creation—which are critical measures for the overall healthiness of a business (or biological) ecosystem (Iansiti & Levien, 2002, 2004c).

2.1.1 Productivity

Productivity has been defined as how effectively the ecosystem converts inputs such as raw materials into living organisms. According to Iansiti and Richards (2006), business ecosystem productivity is the "network's ability to consistently transform technology and other

raw materials of innovation into lower costs and new products." These activities could be characterized under the concept of exploitation, defined by March (1991) as the use and refinement of existing knowledge, technologies, and products. This view is reinforced by a study done by He and Wong (2004) that stated that improving existing product quality and production flexibility, reducing production cost, and improving yield or reducing material consumption are all part of the exploitative innovation strategy. We can thereby surmise that productivity is an exploitative activity undertaken by an organization to maintain the cost effectiveness of its market niche, which is achieved through utilizing operational capabilities. There are several ways to measure productivity, and one of them is through return on invested capital (Iansiti & Levien, 2004c). This reflects the level of activity, which Karhiniemi (2009) described as an ecosystem metric that could be calculated in terms of interaction (transactions, business networking, contacts, different activity participation) and turnover of members (joining/leaving members, customer numbers). To optimize network effectiveness, Sydow and Windeler (1998) identified three influencers of productivity: effective resource usage, the application of norms to guarantee accountability, and significant rules that influence effectiveness. However, it can be said that productivity measures should capture not only the present productivity of the ecosystem but also increases in productivity, which are reflected in improvements in the effectiveness of the business ecosystem in converting the raw materials of value creation into lowered costs and new products through innovation. In relation to this, output per hour of employees, otherwise known as labor productivity, is the most commonly used productivity measure. It is appropriate for service organizations because this sector is labor intensive and its workforce is the main source of intellectual property, organizational cultures, communities of practice, knowledge networks, etc. A company's human capital consists of the people whose talent and experience create the products and services that make customers come to the firm and not to a competitor. Labor productivity is the ratio of the output of goods and services in dollars to the labor hours devoted to the production of that output (Iansiti & Richards, 2006).

2.1.2 Robustness

Robustness is defined as the capability of organizations to survive disruptions such as unforeseen technological revolutions (Iansiti & Levien, 2004c). It pertains to the creativity demonstrated by the organization, which could be in the form of new products and services developed to address the aforementioned industry change. Robustness can be achieved through increasing new product sales, investing in R&D, and obtaining patents. The persistence or recovery in the value of the ecosystem members after a major disruption can be used as an indicator of the organizations'

robustness, which can be in the form of financial beta measurements and firm survival rates since healthy ecosystems promote the survival of a diverse set of firms, including those that populate a variety of niches, after inevitable disruptions (Iansiti & Richards, 2006). According to Karhiniemi (2009), ecosystems can be measured based on member-related metrics in terms of financials (department, access to capital, cost structures), roles (changes in operations, behavior patterns), business models (disruptive business logics, pricing), organization (balanced scorecard, personnel changes, types of organizations, sizes), satisfaction (ecosystem evolvement, opportunities), input and output of products and services (utilization rates, value creation), or history (past successes and failures in decisions and actions); or based on structure-related metrics in terms of species (number, changes), input channels (specific communications, operations in the value chain), platforms (APIs, tools, compatibility, standards, training, ways of use), or business relations (methods, ways to operate, ways to share, common practices). The simplest measure of the robustness of an ecosystem is the survival rates of its members over time or as compared with other related ecosystems (Iansiti & Levien, 2004c). The concept of robustness could then be related to exploration, characterized as the search for new knowledge, use of unfamiliar technologies, and creation of products with unknown demand (March, 1991). He and Wong (2004) stated that activities such as introducing new products, extending product range, opening up new markets, and entering new technology fields fall under the explorative innovation strategy.

2.1.3 Niche Creation

Robustness and productivity do not completely capture the health of business ecosystems because it is important that these ecosystems exhibit variety or diversity through supporting many types of organizations (Iansiti & Richards, 2006). Niche creation is the ability to support a diverse group of species through variety. Variety, in business and biology, "suggests an ability to absorb external shocks and the potential for productive innovation." The best measure of niche creation is the ecosystem's capability to enrich diversity through the formation of significant new functions—i.e., niches (Iansiti & Levien, 2004c). This innovation or niche creation proves instrumental in helping business ecosystems increase diversity over time, and this diversity yields new alternatives and choices for consumers that depend on such business ecosystems (Iansiti & Richards, 2006). However, what matters is not just any diversity but the kind of diversity that creates value in business and brings to life meaningful new categories that provide new functionalities, enable new scenarios, or lead to the discovery of new technology or ideas (Baldwin & Clark, 2000; Iansiti & Levien, 2004b). Competitiveness, as described by Karhiniemi (2009), is also a valuable ecosystem metric in relation to

opportunity. It can be in the form of comparisons vs. other ecosystems in products or services (performance, quality, market share, satisfaction, returns, scalability), in innovations (number of lift-up products and new products), in technology (number of critical assets, intellectual property), in personnel (expertise, availability), in manufacturing (capacity, processes, machinery, quality), or in brands (key members' brand values). Another leading indicator of innovation or niche creation is the valuation new firms receive from investors. Return on venture capital also proves to be a good gauge of the effectiveness of investment in innovation and niche creation. Venture capital is generally defined as the primary source of funding for start-up activity in new ecosystem domains (Iansiti & Richards, 2006).

2.2 What are platforms?

Corso et al. (1996; Muffatto & Roveda, 2000) view a "platform" as a set of norms and standards to integrate subsystems that develop over time, within some limitations, forming a sort of technological trajectory.

Another perspective specifically defines a product platform as "a set of subsystems and interfaces developed to form a common structure from which a stream of derivative products can be efficiently developed and produced" (Meyer, 1997; Meyer & Lehnerd, 1997).

Meyer, Muffatto, and Roveda (2000) provided their own definition of a platform: "a product platform is a set of subsystems and interfaces intentionally planned and developed to form a common structure from which a stream of derivative products can be efficiently developed and produced."

Quaadgrass (2005) also cited broad definitions of a platform to give an industry-wide explanation of the concept in her paper. Breshnahan and Greenstein (1999) describe a platform as "a bundle of standard components around which buyers and sellers coordinate efforts….the nexus of compatibility standards between hardware and software is the hallmark of a platform."

Another definition by Henderson and Kulatilaka (2004) provides a broader and more precise description of a platform as a system of interacting components and as "a set of capabilities used by multiple parties in a manner that (1) creates options value through design efficiency and flexibility, (2) creates network effects that include both connectivity and effects due to a complementary system of goods and services, and (3) has explicit architectural control points influenced by the platform investors."

These capabilities include people, process, technology, and organization, which make it far broader than technology alone.

2.3 The Business Ecosystem and the Platform

Iansiti and Levien (2004a) define a platform as a "set of solutions to problems that is made available to the members of the ecosystem through a set access points or interfaces." In

the software industry, these interfaces are called application programming interfaces (APIs), and even though this terminology is not normally used in other industries, the same rationale is being followed. In relation to the ecosystem, "platforms serve as an embodiment of the functionality that forms the foundation of the ecosystem, packaged and presented to members of the ecosystem through a common set of interfaces." The ecosystem members, in turn, use these interfaces as a kind of toolkit for creating their own products, which results in the standardization of the ecosystem.

Iansiti and Levien (2004a) summarized the definition of the platform as "the 'package' through which keystones share value with their ecosystems." The keystones provide the "starting point" through which the other members can start their own value creation.

Ⅲ. The Incheon International Airport Business Ecosystem

As mentioned above, the airport has about 35,000 staff members－900 employees from the Incheon International Airport Corporation (IIAC) and the rest from governments, airlines, duty-free shops, and subcontractors. There are over 550 public and private institutions: 23 government agencies including the Ministry of Justice, Customs, and Korea Immigration Service; 67 airlines including Korean Air, Asiana Airlines, and Northwest Airlines; 49 duty-free shops and restaurants such as Shilla Duty Free, Lotte Duty Free, and Walkerhill; and 43 subcontractors like security services, cleaning services, and parking-management subcontractors.

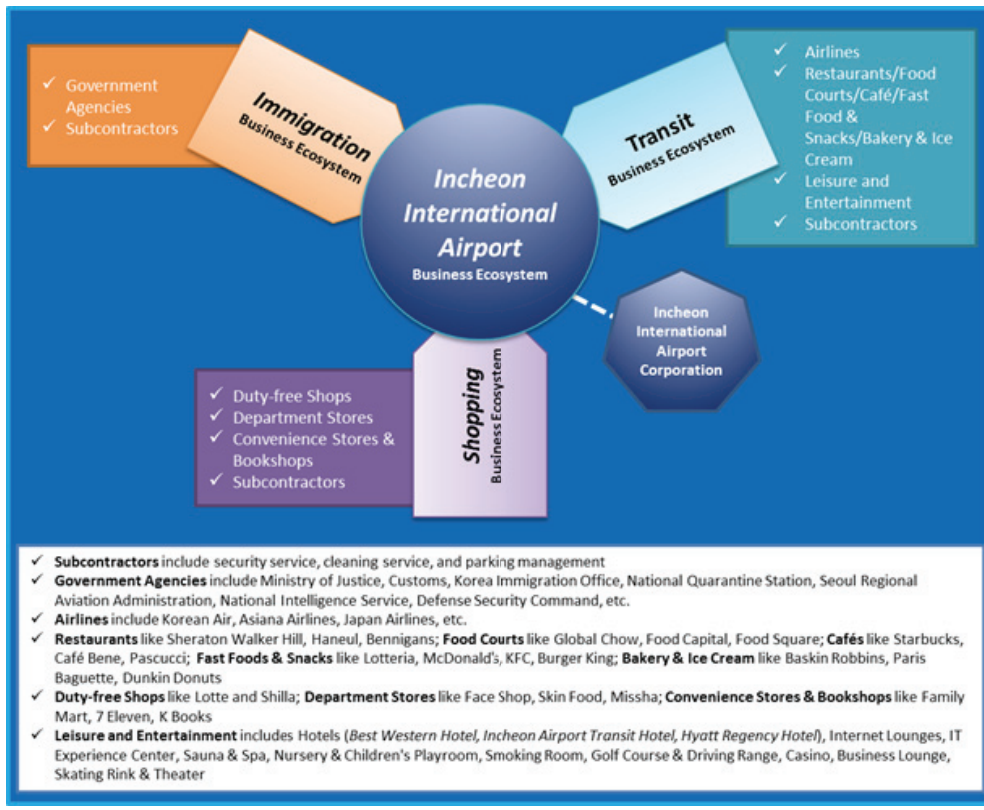
The IIA's overall business ecosystem encompasses three different ecosystems: immigration, shopping, and transit, and these functions are orchestrated by the IIAC (see Figure 2).

3.1 The Content, Platform, Network, Terminal (CPNT) Model of Incheon International Airport

The CPNT concept has generally been used in the Information and Technology industry, and has pertained to how its components, content, platform, network, and terminal are interlinked to provide value to the consumers. This paper would adopt the CPNT Model of the Incheon International Airport, as translated from "Case Study: Creating Shared Value through Business Ecosystem and Platform Evolution of Incheon International Airport" (Kim, Kwak, Song, & Im, 2012). The components as mentioned above and how it is attributable to Incheon International Airport's business ecosystem would be and discussed in the sections that follow.

3.1.1 Terminal (device perspective) vs. platform (business ecosystem perspective)

From a device standpoint, Incheon International



〈Figure 2〉 The Incheon International Airport (IIA) business ecosystem.

Airport is just a terminal, a place where aircraft take off and land and immigration is managed, but from a business ecosystem standpoint it is a platform that provides not only solutions but also serendipities and emotions.

3.1.2 Network: A 35,000-person collaboration system

Incheon International Airport is a network of 100,000 passengers that go in and out of the airport every day and over 550 organizations and 35,000 employees that are working to provide the best services possible.

(1) Korea Mini State Council

Within the IIA, representatives of government agencies are sitting down together to discuss issues and solutions to provide better services, and that is why the airport is called a Mini State Council, where important government agencies and business organizations converge and form committees such as the IIA Operation Discussion Committee, the Security Committee, and the Service Improvement Committee. Communication and collaboration among different organizations have been smooth and successful, which is one of the core competencies of the IIA that sets it apart from its

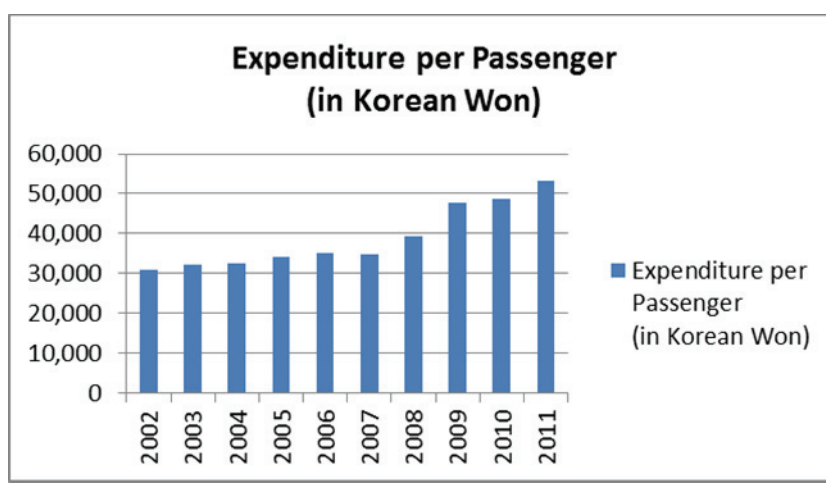
competitors.

(2) Airstar Avenue: An Integrated Brand of Duty-free Shops

Airstar Avenue, the airport's independent, duty-free shopping area, is the world's second-largest duty-free shop in terms of sales revenue. It is a joint marketing effort involving 85 duty-free shops, including 500 brand commercial facilities, and it is also a place where businesses have been rationally integrated into a zone not only for comfortable shopping but also for cultural experience. Airstar Avenue offers a wide range of products at reasonable prices, a pleasant shopping environment, convenient facilities, and excellent service. The IIA's goal is to be recognized as the airport where the customers are the "stars," and this has proven to be an effective marketing strategy to attract customers, especially the growing number of transit/transfer passengers. As of 2011, passengers using the IIA had purchased an average of $44 (53,336 Korean Won) worth of products, compared with $16 average spent at Heathrow Airport in London and $6 at O'Hare Airport in Chicago. About 50% of passengers using the IIA purchased over $100 worth of products. With the addition of the French luxury brand Louis Vuitton in September 2011, the IIA transformed itself into one of the world's top duty -free shopping locations.

(3) Smart Outsourcing: Service-Level Agreement and Service-Level Management

Through the Service-Level Agreement (SLA), the IIA and its subcontractors redefined its passenger services and discussed ways to improve the quality of services and evaluation measures. Also, through service-level management (SLM), they conducted evaluations



Source: Incheon International Airport Corporation.

〈Figure 3〉 Expenditure per passenger

based on certain criteria and provided incentives or imposed penalties on service providers based on the results of the evaluation, thus raising the quality of services provided at the airport to a world-class level.

3.1.3 Contents/Features

The IIA offers fast immigration services and also provides diverse amenities and convenient services for passengers. The researchers have categorized the contents and features as described in the IIAC's Social Responsibility Report (2011, 2012b) into (1) efficient services, (2) technologically advanced processes, and (3) entertainment and recreation.

(1) Efficient Services

Safety and security are the primary and foremost goals in airport operation. The IIA fulfills its role as the first gateway to Korea through its world-class safety and security system and by tightening airport facility maintenance with the goal of zero aviation accidents, security accidents, and material accidents. According to the IIAC Airport Statistics (2012a), there were zero airline accidents, and only six and five ground-safety accidents for the years 2010 and 2011, respectively.

The IIA office broke away from its previous work-arrangement system of dividing immigration officers into officers for departure and officers for arrival and integrated its structures into one team for the first time in its 50-year history under a flexible work-arrangement system. This involved assigning more officers to departure immigration counters in the morning, when the number of departing passengers was high, and assigning more officers to arrival immigration counters in the afternoon, when the number of arrival passengers was high. Such a flexible work-arrangement system allowed the IIA to achieve 30% of the effects of increased officers and to shorten the processing time by 40%.

Through a close collaboration with government agencies, the IIAC was able to improve both the speed and quality of customs procedures. The Ministry of Justice used its Advanced Passenger Information System (APIS) to identify potential smugglers of drugs or imitation products, and then notification was made to Incheon Airport Customs at least two hours before arrival so that officers could effectively screen passengers.

(2) Technologically Advanced Processes

As part of its efforts to simplify services and enhance operating efficiency, the IIA built the U-Airport, which combines IT and BT. With the introduction of the U-Airport, automatic immigration procedures and self-check-in is now possible, and enhanced operation efficiency measures such as the cyber terminal that provides customers with a one-stop service has enabled the airport to provide service at world-class speed, with the immigration procedure for departure taking an average of 16 minutes and that for arrival taking 12 minutes. In addition, the delayed

luggage rate is 0.13 out of 10,000, which is one of the lowest in the world, and the IIA has reached 80,000 hours of non-stop air-navigation facility operation, maintaining excellent service efficiency.

In collaboration with the Incheon Airport Immigration office, the IIA introduced an automated immigration screening system to provide more advanced immigration services. Passengers carrying e-passports simply have to scan their passports and index fingers in an automatic machine at the immigration counter, which only takes about 10 seconds.

By introducing the passenger peak-forecasting system, the IIA was able to maximize the efficiency and effectiveness of airport operations. In 2005, when the system was first introduced, a total of 25.6 million passengers used the IIA and 1,171 officers (airport officers include security officers and customs officers as well as officers dispatched by the Ministry of Justice) were appointed to serve the passengers. In 2010, the number of airport officers increased by 8% to 3,300, although the number of passengers using the airport increased by 130% to 33 million passengers.

Encouraged by the successful implementation of the passenger peak-forecasting system, the airport introduced the baggage peak-forecasting system in 2010. The number of passengers using the IIA grew more than twice compared with the initial years of airport establishment, and the number of transfer passengers grew from less than 10% to almost 20%, making baggage handling more and more difficult. As for transfer passengers, baggage-handling capacity and speed were very important because about 50% of baggage had to be transported from the arriving plane to the departing plane within 45 minutes during the peak hours. Of such emergency baggage cases, about 15% of the baggage lacked Baggage Source Messages (BSMs) and could not to be sorted automatically. Therefore, baggage had to be handled manually, or baggage tags had to be re-scanned to sort and transport baggage again, which made it very difficult to handle baggage quickly and accurately.

In order to expedite departure and arrival processing times, processing must be fast not just for passengers but also for baggage. The IIA has an 88-km baggage-handling system, tightly linked with check-in counters, underground tunnels, and departure gates, that contains transaction capacity enough to handle 12,600 pieces of baggage for departure, 10,800 for transfer, and 33,120 for arrival. It can sort baggage pieces for each destination within 26 minutes for departure, 19 minutes for transfer, and 18 minutes for arrival regardless of the location at which the baggage was checked in. In 2008, the IIA introduced a high-speed baggage-handling system to connect Terminal 1 and the concourse, which are located about 900 m apart. As a result, the airport is able to automatically process and transfer baggage for 100 m within 14 seconds, shortening baggage handling time by nearly half compared with the previous conveyer-belt baggage-handling system.

3) Entertainment and Recreation

Because airports are gateways connecting the world, they are an effective place to promote a country's culture and improve a country's image. The IIA holds a variety of cultural events, such as the royal promenade and Lunar New Year/holiday events that show Korea's unique culture, and it also operates the Korean Cultural Center, the Korean Culture Museum, the Traditional Culture Experience Center, and other cultural activities that promote Korean culture to the world. Under the slogan "Incheon Airport puts wings on culture," the airport holds cultural performances of various genres every day of the year in collaboration with cultural arts groups, and it strives to develop fresh cultural content that will inspire customers and encourage international travelers to visit Korea again.

In effect, the airport is becoming a large performance hall, where impressive performance culture can be experienced for low fees. In the Traditional Culture Experience Hall, which is the most popular place at the airport among foreigners, visitors can enjoy various traditional performance genres such as "pansori" and traditional fan dances during their last minutes in Korea. Travelers can also make their own souvenirs such as "hanji" crafts, fans, and kites and carry them home along with their many other pleasant memories. The IIA is not only an airport filled with the spirit of culture and art but also a space filled with emotions and memories. In addition, the IIA launched a new challenge last year—the Sky Music Festival, which consists of a large orchestral performance held under the open sky with twinkling of stars above and airplanes landing and taking off in the background. Finally, the airport offers 29 transit tour programs, such as the Kimchi Tour, to attract transfer passengers.

The IIA divides its duty-free shoppers into detailed categories, sets up promotion plans tailored to their needs, and conducts joint marketing with AIRSTAR Avenue to provide a more convenient and pleasant shopping experience to for customers. Various sales promotions and large giveaway events such as automobile giveaways provide domestic passengers with a more interesting and exciting shopping environment. Brochures are printed in Chinese and Japanese for the rapidly increasing numbers of tourists from China and Japan, and exclusive discount coupons are distributed to transit passengers.

There are also free Internet, fax, copying, and scanning services available 24 hours a day at the Internet Lounge. When passengers bring their own laptops or mobile devices, they can use the free WiFi service anywhere in the airport. In addition, at the IT Experience Center they can experience the ubiquitous world and other state-of-the-art mobile services. Also, in the airport there is a hotel, a lounge, massage services, free showers for transfer passengers, and a Kids' Zone for passengers with children. In 2010, about 100,000 passengers used the airport hotel and 37,000 passengers used the massage services.

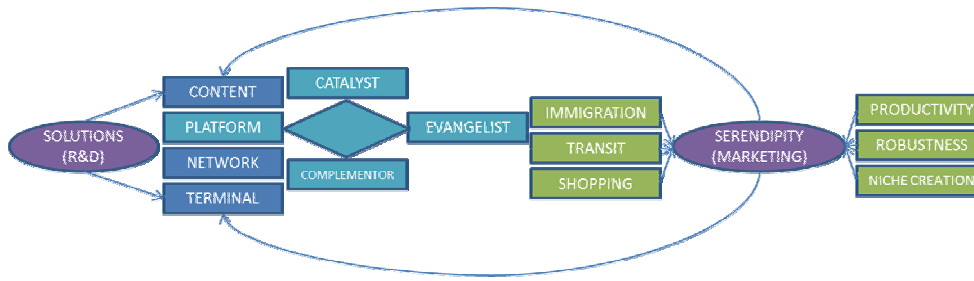
〈Table 1〉 CPNT Model of Incheon International Airport

	Contents	Platform	Network	Terminal
Incheon International Airport	A "Culture Port" by combining airport and cultural experience	From a business ecosystem standpoint, IIA is a platform that not only provides solutions but also serendipities and emotions.	Collaboration of 35,000 employees, various operation committees, and smart outsourcing	From a device standpoint, IIA is just a place where aircraft take off and land and immigration is managed
Immigration	Speedy immigration service + cultural space	IIAC as keystone that (1) focuses on customers, (2) emphasizes collaboration philosophy with partners, (3) pursues continuous innovation through communication among ecosystem members, and (4) gives focus on enhancing value of ecosystem members	Collaboration of government agencies - Mini State Council	Incheon International Airport: an airport with the world's best facilities, accommodating 44,000,000 people per year
Shopping	High quality shopping spaces tailored for customer needs		World-class "Airstar Avenue," a complex of duty-free shops, where businesses have been rationally integrated into a zone not only for comfortable shopping but also for cultural experience; achieved through a healthy network and strategic partnerships	
Transit	Cultural performances and other activities; provision of high-class commercial facilities and customized tour programs		Common marketing to attract transit passengers	

Translated from "*Case Study: Creating Shared Value through Business Ecosystem and Platform Evolution of Incheon International Airport*" *(Kim et al., 2012)*

3.2 Platform Strategy

The IIAC is a keystone with a central role in fostering unity and communication among the many organizations working for the airport and striving for harmony with all of its stakeholders in order to promote a culture that goes beyond competition to bring forth genuine mutual growth. Because the airport is a multiplex facility that houses over 550 organizations, a win-win synergy with its stakeholders is likely to act as the most important catalyst for its future. The IIAC classifies its stakeholders into five major groups



〈Figure 4〉 The platform strategy of the Incheon International Airport.

–customers, government, business partners, the local community, and employees (see Figure 5)–and operates targeted communication channels with each group.

3.2.1 Incheon International Airport Corporation: a Keystone that Values its Stakeholders

As a socially responsible business, the IIAC regards one of its most important indices to be its ability to listen to and reflect the opinions of a diverse range of stakeholders. This includes gathering opinions on how best to balance work and life issues and improve the workplace environment for its employees, and on how to develop mutually beneficial, win-win relationships with its business partners. At the same time, the airport listens to and reflects the voices of its customers, as well as constantly monitoring the opinions expressed by the surrounding the airport on ways to enhance the development of the local community.

As of 2010, 43 companies and 5,933 part-

	Customers	Business Partners	Local Community	Government	Employees
	Arriving/Departing Passengers Connecting Passengers Welcoming/Seeing off Parties Other Visitors, Citizens	Airlines Airport Tenant Companies Airport Resident Companies Partner Companies Private Funding Company(s)	Local Residents Municipal Government NGOs, Environmental Groups Social Welfare Groups Academic Societies Association, Schools	Government Entities	Employees, Labor union Employee families
Core Value	Based on an untiring service mind, we will build the world's best airport that is fast, the safest, and most comfortable, with many sophisticated attractions.	We will grow together with our business partners by establishing a cooperation system based on trust and win-win policy to create the best airport service.	Based on transparent and ethical management, we will fulfill our duties as a public corporation, contributing to the development of the country and local community.	Based on reasonable partnership, we will trust each other and create new value.	We will strive to acquire the capacity as the world's best airport through learning and self-innovation based on creative passion, boundless imagination, flexibility, and unbending challenging spirit.
Major Issue	- Simplifying Immigration Process - Expanding Customer Amenities - Satisfying the Right to Know	- Expanding Revenues for Commercial Facilities - Win-Win Cooperation	- Expanding Education/ Cultural Facilities - Communication with Local Community - Development of Local Community	- Management Efficiency - Job Creation	- Sharing Policy Decisions - Employment Stabilization - Performance-Based Compensation

Source: Incheon International Airport Corporation: Social Responsibility Report 2011

〈Figure 5〉 Stakeholders of the Incheon International Airport.

ner employees worked with the IIA for the common goal of becoming a global airport leader. "Building collaborative partnership, enhancing competence of partner companies, and fostering unity between airport employees" are the airport's three strategies of active leadership in its strategy of win-win cooperation. The IIA has established a "Business Partner Day" and strives to build a partnership of shared values by hosting the Win-Win Cooperation Workshop with 43 partner CEOs and by consulting with partner companies regarding their grievances. Also, to enhance business- partner competence, the IIA provides support for ethical management activities, rewards outstanding partner companies and employees, and operates programs fostering a sense of involvement for members of the airport, including encouragement of peak-season shifts, family invitation events, and summertime retreats.

The IIA has provided assistance amounting to 68.36 billion Korean Won through 10% deductions from landing fees and commercial facility rent to help resident companies' management. It has also raised the bidding rate from 80.5% to 97.75% and increased transportation and lunch allowances to realistic levels, spending 21 billion Korean Won on improving welfare. The airport's support for business partners amounts to 89.4 billion Korean Won annually, as well as job creation for 770 persons. In addition, the airport has expanded its purchasing from small and medium-sized enterprises (SMEs) to 50%, or 218.3 billion Korean Won, in 2010.

Recognizing that an airport depends on the organic operation of diverse consultative bodies and organizations, the IIA has implemented joint planning and taken the lead in integrating these involved parties, and this has created many positive results. Six consecutive wins of the Airport Service Quality (ASQ)

〈Table 2〉 Value-Sharing Program with Business Partners

Main Program	Frequency	Activities of The Management Level
Business Partners Win-win Cooperation Workshop	Once / Year	Sharing Incheon Airport's Management Policies and Future Direction (CEOs Of 43 Companies)
Field Representatives Meeting	Twice / Year	Listening and Sharing Opinion with the Middle Management (Field Representatives of the 43 Companies)
Grievance Consulting for Partner Companies	Once / Year	Difficulties in Work / Searching Ways for Improvement (168 Participants)
Encouraging Workers During Peak Season	Lunar New Year / Thanksgiving	Field Visitation, Encourage Employees Personally
Business Partners' Day	Once / Year	Foster Basis for Win-win And Mutual Growth as Strategic Partners (3,000 Attendants)
VOF (Voice of Field)	Once / Year	Listen to the grievance of resident field employees (87 opinions gathered)

Source: Incheon International Airport Corporation: Social Responsibility Report 2011

Award is proof of the collective achievement that comes not just from the effort of the airport company but also from all of the members doing their best in their own fields. Sharing the excitement of such outcomes unites everyone working at the airport and motivates everyone to feel that they are a part of one big family.

3.2.2 Incheon International Airport Corporation: A Keystone that Creates the Platform for Service

(1) Service-Improvement Committee

In the fall of 2003, the IIAC concluded that groundbreaking measures were urgently needed to improve the quality of services offered to passengers, and it made a proposition to the Blue House to organize the Airport Service Improvement Committee (ASIC). The requirement was to establish the consultation committee in order to discuss problems from the passengers' perspective and to take specific actions to improve the quality of airport services. In October 2003, the ASIC was launched upon the order of Korean President Moo-Hyun Noh. The CEO of the IIAC was appointed as the Chairman of the Committee, and its members included representatives from seven government agencies—Incheon Airport Customs, the Incheon Airport Immigration Office, the National Quarantine Station, the Seoul Regional Aviation Administration, the National Intelligence Service, the Defense Security Command, and the IIA Police—and representatives from three airline entities—Korean Air, Asiana Airlines, and the Airline Operators Committee.

The purpose of the committee was solely to improve the quality of services offered by the IIA. Since the CEO of IIAC served as the Chairman, the IIAC was able to make recommendations on service improvement directly to representatives from airlines and government agencies. In addition, because representatives from all relevant entities were members of the Committee, the structural foundation was established to put together more concrete measures.

(2) Service-Level Agreement and Service-Level Management

As a means to enhance the quality of services provided by more than 6,000 staff members of subcontractors and to maintain the level of services, the IIA introduced a Service-Level Agreement (SLA) and Service-Level Management (SLM) in 2005. When the IIA first opened, its subcontractors paid little attention to customer services and were unfriendly to passengers, so the passengers coming in and out of the airport were not impressed with the services or the dedication of airport officials in the early days of its establishment.

Through the SLA, the IIA and its subcontractors agreed on a new definition of "passenger services" and discussed ways to improve the quality of services as well as evaluation measures. Through SLM, they conducted evaluations based on certain criteria and provided incentives to or imposed penalties on service providers ac-

cording to the results of the evaluations, which resulted in improvement in the quality of services provided at the airport.

Both the SLA and SLM enabled the IIA and its subcontractors to communicate on a constant basis. Subcontractors made their voices heard and the IIAC made its best effort to accommodate the requests of its subcontractors while discussing and developing evaluation criteria, setting common goals for service improvement, and writing evaluation reports. Throughout the discussion process, the IIAC and its subcontractors worked as a team—not as client and contractors—in thinking about ways to improve services for passengers using the airport.

(3) Three Aspects of the Incheon International Airport Business Ecosystem Platform

1) A consolidation of interfaces

The IIA acts not only as a hub for airplanes but also as a hub for buses and trains. In order to provide a customer-oriented public transportation system, the airport conducts transportation status surveys and holds public-transportation-improvement meetings twice a year. As a result, 99 bus routes that include late-night buses and routes heading to the provincial areas are now available, which is double the number at the early stage of the airport's existence, and over 3,000 buses are in daily operation. In 2010, bus stops were relocated in the curb-side areas where passengers get on or off from buses or cars so that customers could easily find their way to the airport, and a taxi call system was introduced. With the launching of the Incheon Airport Railway in December 2010 connecting Seoul Station, Gimpo Airport, and the IIA, it became possible to reach IIA in 43 minutes on an express train from Seoul Station.

With the complete opening of the airport railway, the Transportation Center that connects the airport railway and the passenger terminal has been developed into a shopping area, utilizing idle space and enhancing customer convenience with commercial facilities for casual shopping and amenities. On the plaza on the B1 level, an indoor ice rink and performance stage will soon be installed, and a multiplex theater will open as well. The performance stage will hold various performances 2 - 3 times every day, and a visual media system will be installed on the large columns to broadcast videos. The IIA strives to present its airport facilities as new-concept cultural spaces where airport visitors, local residents, and the general public can come to enjoy culture, dining, and shopping.

2) A "set of solutions" providing a variety of solutions through competitive killer content

The IIA provides the basic functions of safety, speed, and convenience in all of its three major functions: immigration, transit, and shopping.

2.1) Immigration

The IIA has become one of the most efficient airports, boasting the fastest boarding and alighting times. The average take-off processing time was shortened from 29 minutes in 2005 to 18 minutes in 2009 and to 16 minutes in 2010, while the average landing processing time was shortened from 20 minutes in 2005 to 13 minutes in 2009 and 12 minutes in 2010.

Through shortening the immigration processing time, the IIA provides differentiated service to passengers, which allows them to enjoy the culture and art experiences in the airport.

2.2) Shopping

The IIA has an independent duty-free shop under the brand name Airstar Avenue, which is the world's second-largest duty-free shop in terms of sales revenue. Passengers can purchase cosmetics, leather goods, and other accessories at 85 duty-free shops that sell as many as 500 brands of products. As of 2011, passengers using the airport purchased an average of $44 worth of products as compared with $16 in case of London's Heathrow Airport and $6 for Chicago's O'Hare Airport. About 50% of passengers using the airport purchased over $100 worth of products. As the French Luxury brand Louis Vuitton opened its first duty-free shop at the IIA on Sep 10th, 2011, Incheon Airport turned itself into one of the world's best airports that has the world's top class duty free shops. CEO Chae-Wook Lee stated "We are the world's best airport and Louis Vuitton is the world's top fashion brand. We are a perfect fit". In addition, the airport satisfies the tastes of passengers from around the world. It has premium restaurants such as those in the Walkerhill Hotel, but it also has fast-food chains like McDonald's, Starbucks, and Dunkin' Donuts that offer a wide variety of menu choices for passengers.

2.3) Transit

In 2010, the IIA began to engage in active overseas marketing by presenting its strengths as a transit airport while at the same time advertising its connecting flights at 17 cities abroad, including Beijing, Tokyo, and Manila. It also discussed its response to climate change in the changing business environment with related institutions at a cooperative meeting. As a result, a connecting-flight incentive system and 29 transit tour programs, such as the Kimchi Tour, were developed to attract transfer passengers. In addition, connecting-flight

〈Table 3〉 Departure and Arrival Processing Time in IIA

	International Aviation Recommended Time	2009	2010
Departure (minutes)	60	18	16
Arrival (minutes)	45	13	12

guides fluent in foreign languages were deployed, and the ease of transit was improved by implementing such things as simplified immigration procedures and expanded amenities. The minimum connection time at the airport is now 45 minutes, one of the shortest in the world, compared with the world standard of 60 to 70 minutes. In recognition of such efforts, the IIA was awarded the Best International Transit Airport Award in March 2010, and, despite a decrease in connecting seats and unfavorable domestic and international economic conditions, it successfully secured 5.2 million connecting passengers.

3) A "set of serendipities" providing heart-warming experiences to customers

Waiting has become a pleasure for passengers because the IIA offers diverse amenities and convenient services. With exquisite wood flooring in the waiting areas, passengers feel a sense of comfort in surroundings that are both beautiful and environmentally friendly. Shopping is one of the biggest highlights, with many famous and premium brands on sale. There are also free Internet, fax, copy,

〈Table 4〉 Landing Fees per Flight

	Incheon	Narita	Kansai	Beijing	Hong Kong	Singapore
Landing fees (in 10,000 Korean Won)	311	1,158	1,199	337	378	380

〈Table 5〉 IIA Business Ecosystem Platform as a Set of Solutions and Serendipities

	SERENDIPITY	SOLUTION (killer contents)
Incheon International Airport	Maximize elements of experience	Fulfill basic functions of airport (safety, speed and convenience)
Immigration	Provide more experience opportunity including shopping, culture and art, and romance of traveling thanks to the speedy immigration processing time	World's best immigration processing time (departure and arrival); provide convenience and time saving (passenger peak-forecasting system, etc.)
Shopping	Provide unexpected pleasure/fun including great space and service. Example: wood-made flooring, feeling the culture and arts, and shopping ambience while customers are on their way for flight departure	Combination of cultural space with shopping and the arts
Transit	Provide unexpected pleasure as a bonus for transfer passengers (customized tour program, high-class facilities, etc.)	World's best transit processing time; convenience through elimination of baggage receiving and additional check-ins in transfer flights

Translated from "*Case Study: Creating Shared Value through Business Ecosystem and Platform Evolution of Incheon International Airport*"(*Kim et al., 2012*)

and scanning services available 24 hours a day at the Internet Lounge. When passengers bring their own laptops or mobile devices, they can use free WiFi service anywhere at the airport. Finally, at the IT Experience Center, they can experience the ubiquitous world and other state-of-the-art mobile services.

Also, in the airport there are a hotel, a lounge, massage services, and free showers for transfer passengers, and a Kids' Zone for passengers with children. In 2010, about 100,000 passengers used the airport hotel, and 37,000 passengers used the massage services. There is also a separate tour program for passengers who want to travel outside the airport.

Ⅳ. Healthiness of Incheon International Airport Business Ecosystem

4.1 Productivity

Productivity is the ecosystem's ability to efficiently and consistently transform technology and other raw materials of innovation into lower costs and new products (Iansiti & Levien, 2004c).

The IIA has continually provided its customers with high-quality services. Most importantly, the airport provides the most efficient immigration processing, with the immigration procedure for departure taking an average of 16 minutes and arrival taking 12 minutes. In addition, the growth in the number of airlines and passengers has been remarkable. In 2001, 47 airlines offered flights to 109 cities and served about 17 million passengers, but in 2010, 67 airlines offered flights to 172 cities and accommodated 33.48 million passengers – almost twice as many passengers as in 2001 (see Figure 6). Despite the increasing number of passengers, the airport has successfully handled operations through the flexibility of immigration officer assignments, state-of-the-art automated systems, and excellent synergy of organizations working at the airport. The airport's increasing productivity measured as revenue and operating profit is proof to that success.

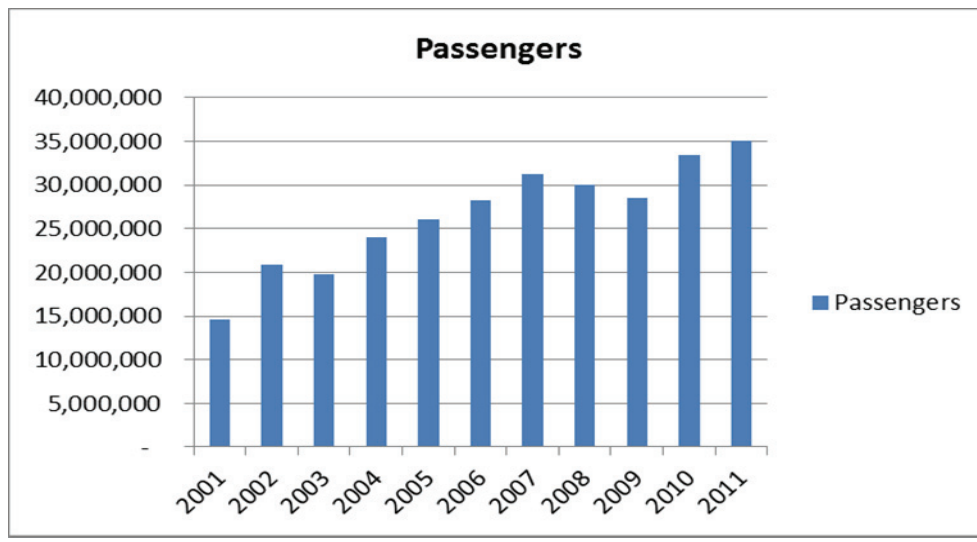
4.2 Robustness

According to Iansiti and Levien (2004c), robustness is defined as the capability of organizations to survive disruptions such as unforeseen technological revolution and changes in customer tastes and preferences.

The IIA has prepared itself for future airport demands through its Phase 3 construction. It has also prepared itself for the changing needs of passengers by incorporating an automated passenger and baggage peak-forecasting system.

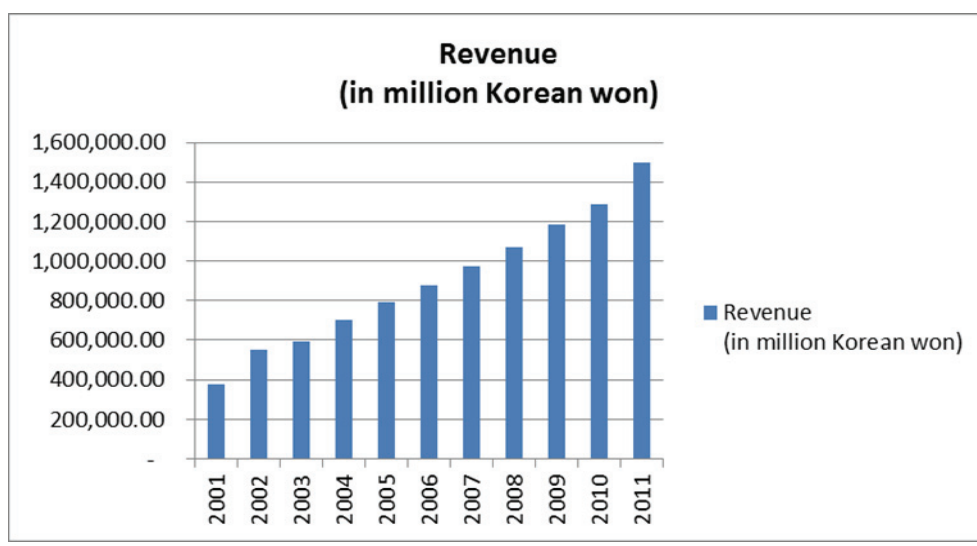
4.2.1 Phase 3 Construction to Secure Future Airport Demand

The IIA is currently implementing its Phase 3 airport infrastructure expansion construction



Source: Incheon International Airport Website: Airport Statistics

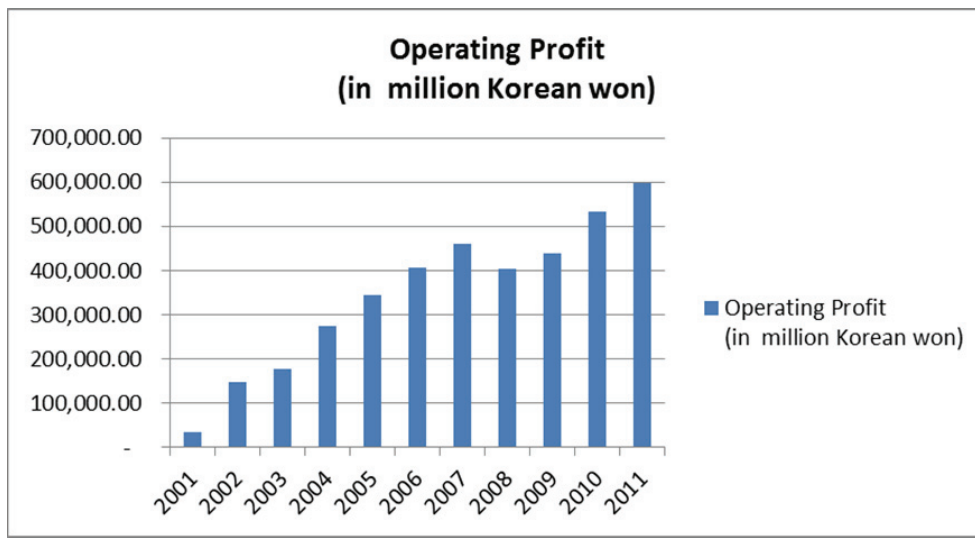
〈Figureg 6〉 Passengers.



Source: Incheon International Airport Corporation

〈Figure 7〉 Revenue

in order to secure its position as the Northeast Asian hub airport. As the airport's competitors such as Shanghai Pudong Airport and Haneda Airport were speeding up their facilities expansion, the IIA began its Phase 3 airport design in March 2010, with a plan to finish construction by 2017, and it held an open competition for the design of its passenger



Source: Incheon International Airport Corporation

〈Figure 8〉 Operating profit

terminal No. 2 in October 2010. When the Phase 3 airport construction is completed, the IIA's passenger capacity will increase from 44 million to 62 million annually, and cargo-handling capacity will increase from 4.8 million tons to 5.8 million tons, enabling the airport to further strengthen its competitiveness as a hub airport.

4.2.2 Passenger and Baggage Peak-forecasting system

By introducing the passenger peak-forecasting system, the IIA was able to maximize efficiency and the effectiveness of airport operation. With the baggage peak-forecasting system, efficiency in baggage handling has greatly improved as the number of passengers using the IIA grew more to than twice what it was in the initial years of the airport's existence, and the number of transfer passengers grew from less than 10% to almost 20%.

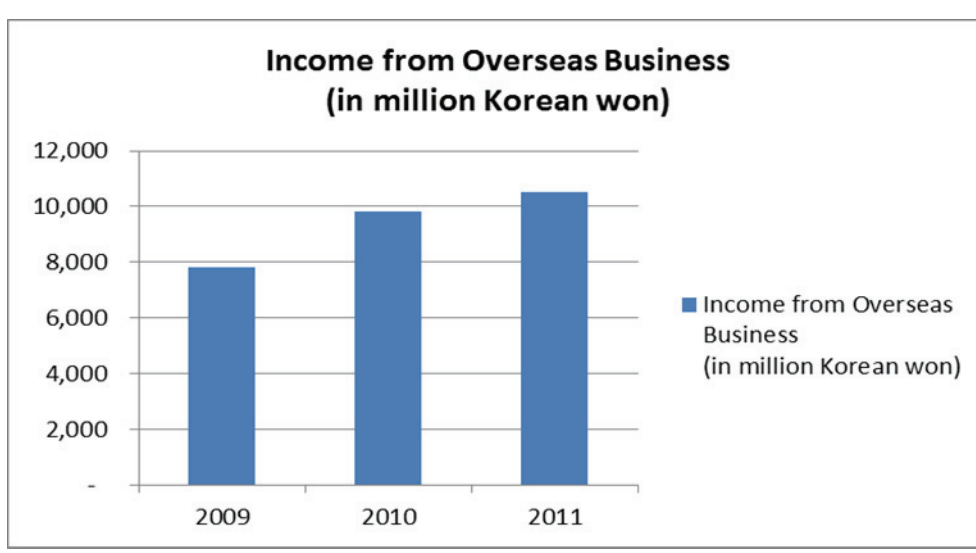
4.3 Niche Creation

Niche creation is the ability to support a diverse group of species through variety. It is the ecosystem's capability to enrich diversity through the formation of significant new functions, or niches (Iansiti & Levien, 2004c). However, what matters is not just any diversity but the kind of diversity that creates value in business and brings to life meaningful new categories that provide new functionalities, enable new scenarios or lead to the discovery of new technology or ideas (Baldwin & Clark, 2000; Iansiti & Levien, 2004b).

The IIA has strived to reach new markets by expanding their business abroad. It has also continued to develop valuable new functions and features as part of its future business growth by developing the Airport City. In 2012, the IIA signed an agreement with British Airways that will open up new routes and flights, and an agreement with the Australian Flight Center for collaboration on future product development.

4.3.1 Expanding Overseas Business

Incheon Airport has moved away from its initial catch-up-based growth model from its early development stages to establish its international airport consulting services, with internationally recognized state-of-the-art technology and know-how, as a new engine of growth based on its global brand power of being a six-time winner of the ASQ index award. With the successful opening of the Erbil International Airport in Iraq in September 2010, The IIAC's first project abroad ($31.5 million investment), orders have been received for feasibility studies for the Mactan Cebu Airport in the Philippines ($10.5 million) and an airport in Nepal, and for design and supervision of the Cambodia Siem Reap Airport. Also, in June 2011, the IIA participated in the operation and modernization of Russia's Khabarovsk Airport by participating on the board of directors with its purchase of 10% equity, and it is steadily building a strategic cooperative system that is valued at $1.5 million. The IIA will now work on securing its organizational power and branching out from consultation to investment in shares and consignments to



Source: Incheon International Airport Corporation: Social Responsibility Report 2012 (Korean Ver.)

〈Figure 9〉 Income from overseas business.

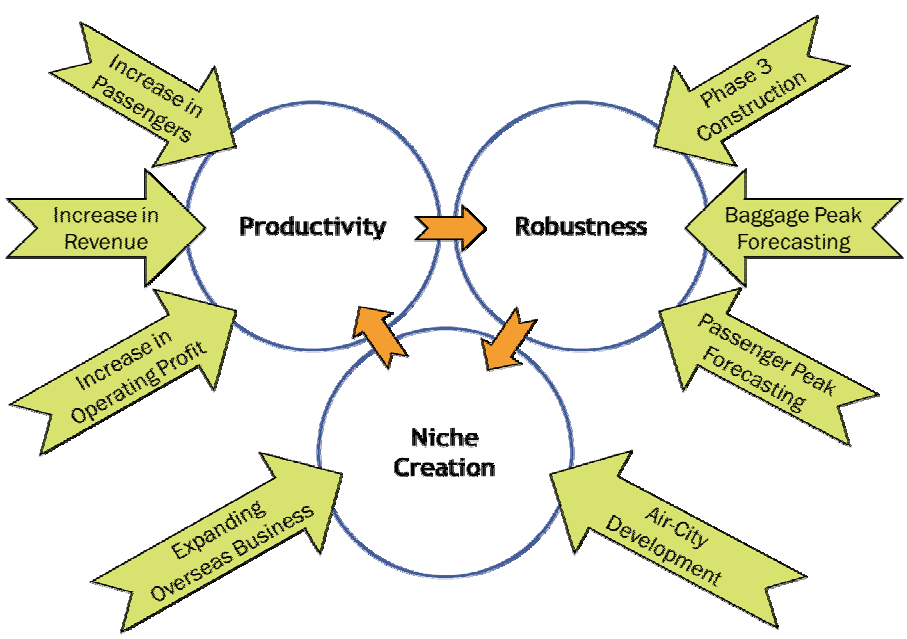
build its brand as an expert global airport corporation that is well-balanced in growth and profitability.

The IIA has been promoting the establishment of consulting services abroad as a new engine of growth, based on its know-how accumulated from airport construction and airport operation worldwide. Also it is establishing a completely integrated safety and security system, which is essential for the operation of an airport, and it is maximizing economic value creation through the efficiency of its operations.

4.3.2 Air-City Development

Major hub airports around the world are strengthening the role of airports by developing the area surrounding the airport, and IIA is also developing the concept of an "airport city"—called Air City—to create more added value. In Air City, there will be shopping malls, places to relax, tourism and leisure centers, entertainment facilities, and convention centers, as well as logistics centers.

Air City is planned to be a value-oriented, multifunctional airport city that will be a part of the IIAC's future business growth. It will involve developing the vicinity of the airport to build an international business district, a recreational complex, hotels, and a water recreational complex. In 2010, the free economic zone development plan was finalized, heightening the feasibility of the Air City development plan. As part of the fund-raising for Phase-1 development, which in-



〈Figure 10〉 The interplay between Productivity, Robustness and Niche Creation

volves the international business district in zone IBC-I, the airport made a public announcement inviting businesses to the core industrial zone and accepted letters of intent, while also boldly liquidating unprofitable businesses to speed up the project. As of December 2012, hotels, studio apartments and a golf course in zone IBC-I are successfully in operation, and construction for a hotel and hospital is under way and on schedule. At the south-side water basin, the Phase-1 water park construction has been completed to improve the scenery and is now ready for tourism. The IIA held the 7th Sky Festival in the IBC-I area to promote Air City, and it will continue its efforts to create added value by continuing to build a cooperation system and providing promotional support.

Ⅴ. Conclusion

For ten years, the IIA has grown to become a world-class airport, and it is now one of the major centers of the economy. With its amazing success as the World's Best Airport for seven consecutive years in the World Airport Evaluation held by ACI for its customer-centered service and innovative activities, The IIA has now become a brand deeply instilled in the hearts and minds of people worldwide as the world's favorite airport.

The success of the Incheon International Airport Corporation is bigger than the company itself. Such breathtaking success is the fruit of the collective efforts and passion of all the organizations that have coordinated and worked tirelessly to contribute innovative changes with a dynamic mindset. With the IIAC working as an effective keystone that provides an efficient platform, the IIA business ecosystem has proven to be an exemplar of a healthy and successful business ecosystem that others can benchmark.

As the former president and CEO noted, "Such external accomplishments serve as greater encouragement in achieving the vision of becoming a global expert airport corporation to lead the airport industry and have been the foundation of accomplishing seven consecutive years of solid, profitable business outcomes."

Incheon International Airport has gone above and beyond the conventional functions of an airport, and has thereby become the leader in its industry. The case of Incheon International Airport gives an idea of how the health indicators of Productivity, Robustness and Niche Creation can contribute to an organization's growth. This type of case analysis which makes use of the CPNT and business ecosystem models could be used and expended on other industries whose ecosystems are composed of many different stakeholders. By adopting these theories, enterprises can develop useful business models. This paper can provide a strategic model to enterprises to manage their businesses more effectively based on a healthy business ecosystem with a competitive platform.

The model presented on this paper can serve

as a starting point in which other organizational studies could be based. This paper did not make use of empirical data, and only qualitative factors have been taken into consideration. This current limitation could be addressed and become the bases of future research. The healthy business ecosystem model could be tailored to other industries, wherein other measurement bases can be utilized. The consideration and development of other indices of business ecosystem heath could also be topics for future research.

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기업생태계의 건강성과 성공적 플랫폼전략: 인천국제공항 사례*

김기찬** · 이성상*** · Ruth Angelie B. Cruz**** · John Laurence A. Enriquez***** · 백정선******

요 약

인천국제공항은 ACI (Airports Council International)의 공항평가에서 7년 연속으로 세계최우수공항으로 선정되었으며, 이는 인천국제공항의 고객중심의 서비스와 혁신적인 경영활동의 산물로써 한국에 큰 긍지를 심어주었다. 인천국제공항은 출입국, 쇼핑, 환승의 세 개의 상이한 기능이 성공적으로 결합된 건강한 기업생태계를 창조하여왔다. 이는 진취적이며 적극적인 정신을 지니고 변화와 혁신을 위해 상호 협력하여 열심히 일하는 인천국제공항과 관련된 모든 공공기관과 민간조직체 구성원들 공동의 노력과 열정의 결과다. 인천국제공항 생태계의 핵심자 (Keystone)와 리더로써의 인천국제공항공사는 모든 기업생태계 참여자들에게 효과적인 플랫폼을 제공해야하는 매우 중요한 역할을 수행하고 있다.

본 연구는 인천국제공항과 관련된 서로 다른 여러 기관과 조직체들의 기능과 역할이 어떻게 시너지를 창출함으로써 성공적인 인천국제공항 기업생태계를 구축하고 있는지, 어떻게 기업생태계 참여자들이 서로 협력하고 경쟁력을 키워왔으며 역량을 향상시키고 가치를 공유하는가에 대해 추적하고 분석하였다. 본 연구에서는 인천국제공항 기업생태계 구조를 CPNT (Contents, Platform, Network, Terminal) 모형을 통해 분석하였다. 인천국제공항은 Device관점에서 보면 항공기의 이착륙과 출입국관리를 위한 장소인 터미널에 불과하나 기업생태계관점에서 보면 솔루션 뿐 만 아니라 흥분과 감동을 제공하는 플랫폼이라고 할 수 있기 때문이다.

아울러 핵심자 역할을 하고 있는 인천국제공항공사가 어떻게 인천국제공항 플랫폼을 효과적으로 창조하고 실행하여왔는가에 관해서도 연구하였다. 마지막으로 인천국제공항 기업생태계 건강성을 세 가지 건강성지표인 생산성 (Productivity), 강건성 (Robustness), 혁신성 (Niche Creation) (Iansiti & Levien, 2004c)에 의해 평가하였다.

본 연구는 인천국제공항의 경영사례를 기업생태계의 건강성 및 플랫폼 경쟁력차원에서 분석함으로써 새로운 시각에서 기업경영의 전략적 틀을 제공할 수 있을 것이다.

주제어: 기업생태계, 기업생태계 건강성, 핵심자, 플랫폼, 플랫폼 전략, CPNT 모형

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** 가톨릭대학교 경영학부 교수(kckim@catholic.ac.kr)
*** 가톨릭대학교 산학협력중점교수(sspapari@naver.com)
**** 가톨릭대학교 대학원 석사과정(ruthabcruz@gmail.com)
***** 가톨릭대학교 대학원 석사과정(enriquezjohnlaurence@gmail.com)
****** 인천국제공항공사 인재경영실장(jsbeak@airport.kr)

〈Teaching Note〉

Healthiness of Business Ecosystem and Successful Platform Strategy: The Case of Incheon International Airport

Ⅰ. Synopsis

Incheon International Airport (IIA) has become the great pride of Korea as it has grown to become a world-class airport rated as the World's Best Airport for its customer-centered service and innovative activities for seven consecutive years in the World Airport Evaluation held by the Airports Council International (ACI).

The airport is creating a healthy business ecosystem in which different functions such as immigration, shopping, and transit have been successfully aligned. This is the result of the collective efforts and passion of all the organizations that have coordinated and worked tirelessly to bring in innovative changes with a dynamic mindset. The role of the Incheon International Airport Corporation (IIAC) is crucial in that it works as a keystone or leader that provides an effective platform for all of its business ecosystem members.

This paper traces and analyzes how functions and roles of many different organizations were synergized to create a successful business ecosystem in which members work both cooperatively and competitively, co-evolve capabilities, and share value. The paper also examines the business ecosystem structure of the IIA through the content, platform, network, and terminal (CPNT) model. From a device standpoint, the IIA is just a terminal—a place where aircraft take off and land and immigration is managed—but from a business ecosystem standpoint it is a platform that provides not only solutions but also serendipities and emotions. In addition, we investigate the role of the IIAC as a keystone and how it creates and executes its platform strategy. Finally, the healthiness of the IIA business ecosystem is assessed through the three health indices: productivity, robustness, and niche creation.

Based on the analyses performed, it can be said that Incheon International Airport has gone above and beyond the conventional functions of an airport, and has thereby become the leader in its industry. The case of Incheon International Airport gives an idea of how the health indicators of productivity, robustness and niche creation can contribute to an organization's growth. With the IIAC working

as an effective keystone that provides an efficient platform, the IIA business ecosystem has proven to be an exemplar of a healthy and successful business ecosystem that others can benchmark. This type of case analysis which makes use of the CPNT and business ecosystem models could be used and expended on other industries whose ecosystems are composed of many different stakeholders. By adopting these theories, enterprises can develop useful business models. This paper can provide a strategic model to enterprises to manage their businesses more effectively based on a healthy business ecosystem with a competitive platform.

The model presented on this paper can serve as a starting point in which other organizational studies could be based. This paper did not make use of empirical data, and only qualitative factors have been taken into consideration. This current limitation could be addressed and become the bases of future research. The healthy business ecosystem model could be tailored to other industries, wherein other measurement bases can be utilized. The consideration and development of other indices of business ecosystem heath could also be topics for future research.

II. Teaching Points

1. What sets the Incheon International Airport (IIA) from other airports?
2. What elements comprise the IIA business ecosystem, what role does the Incheon International Airport Corporation (IIAC) play in this business ecosystem and what are the aspects of the IIA business ecosystem platform?
3. How does the IIA business ecosystem fare in relation to various ecosystem health indices?
4. The IIA has built a successful business ecosystem. Now, what does the case of IIA teach us, and what should IIA do to improve its business ecosystem healthiness for future sustainability?
5. Competition among airports is increasing, and the IIAC, as a keystone player of the IIA business ecosystem, needs evolution. What kind of additional innovative initiatives are required for IIAC to maintain its role as a successful keystone?

III. Assignment Questions

1. What sets the Incheon International Airport (IIA) from other airports?

IIA has grown to become a world-class airport rated as the World's Best Airport for its customer-centered service and innovative activities for seven consecutive years in the

World Airport Evaluation held by the Airports Council International (ACI). The IIA offers fast immigration services and also provides diverse amenities and convenient services for passengers. These include:

a) U-Airport Built on Cutting-Edge Technology,
b) World's first Passenger and Baggage Peak-forecasting system,
c) State-of-the-art Baggage Handling System,
d) Flexibility of Officer Assignments,
e) Automated Immigration Screening system,
f) High Speed and Quality of Customs Procedures,
g) Arts and Culture, and
h) High-Class Shopping and Commercial Facilities.

For more information regarding IIA, refer to the Incheon International Airport Corporation: Airport Statistics and Incheon International Airport Corporation: Social Responsibility Report 2012 available on their website: http://www.airport.kr/.

2. What elements comprise the IIA business ecosystem, what role does the Incheon International Airport Corporation (IIAC) play in this business ecosystem and what are the aspects of the IIA business ecosystem platform?

James Moore coined the term "business ecosystem" in his Harvard Business Review (1993) article "Predators and Prey: A New Ecology of Competition" and explained that "In a business ecosystem, companies co-evolve capabilities around a new innovation: they work cooperatively and competitively to support new products, satisfy customer needs, and eventually incorporate the next round of innovations."

The IIA consists of employees from the IIAC and representatives of governments, airlines, duty-free shops, and subcontractors. The IIA business system encompasses three different ecosystems: immigration, shopping, and transit.

The functions of immigration, shopping, and transit are orchestrated by the IIAC, which acts as a keystone or a platformer. IIAC leads member organizations and all other business ecosystem participants in creating and sharing value. The IIAC has the central role of fostering unity and communication among the many organizations working for the airport by listening to, and striving for harmony among, all of its stakeholders in order to foster a culture that goes beyond win-win to bring forth genuine mutual growth. The theory of healthy business ecosystems can be applied to the case of IIA, as its ecosystem is composed of many different organizations which have different functions. When these various components work well together, the ecosystem creates value, and is deemed healthy.

Similarly, the platform theory can be applied to the case of IIA, as the IIAC plays the part of a platformer. Iansiti and Levien define a platform as a "set of solutions to problems that is made available to the members of the

ecosystem through a set access points or interfaces" in their article, The Keystone Advantage: What the New Dynamics of Business Ecosystems Mean for Strategy, Innovation, and Sustainability for the Harvard Business School Press. There are three aspects of the IIA business ecosystem platform. Firstly, it is a consolidation of interfaces: the IIA not only acts as a hub for airplanes but also as a hub for buses and trains. Secondly, it is a "set of solutions" providing a variety of solutions through competitive killer contents: IIA provides basic functions of safety, speed, and convenience in all of its three major functions: immigration, transit, and shopping. Lastly, it is a "set of serendipities" providing memorable experiences to customers: the IIA offers diverse amenities and convenient services for passengers so that waiting turns out to be pleasurable.

3. How does the IIA business ecosystem fare in relation to various ecosystem health indices?

Iansiti and Levien introduced three indices of healthy business ecosystems in an article for the Harvard Business Review (March 2004) entitled Strategy as Ecology; Productivity, Robustness, and Niche Creation.

Productivity was defined as the ecosystem's ability to efficiently and consistently transform technology and other raw materials of innovation into lower costs and new products. The IIA has continually provided its customers with high-quality services, including the most efficient immigration processing, in which the immigration procedure for departure takes an average of 16 minutes and arrival 12 minutes. Also, the growth in the number of airlines and passengers as well as earnings is a testament to the IIA's productivity.

Robustness was defined as the capability of organizations to survive disruptions such as unforeseen technological revolution and changes in customer tastes and preferences. The IIA is currently implementing its Phase 3 airport infrastructure expansion construction in order to secure its position as the Northeast Asian hub airport. When the Phase 3 airport construction is completed, its passenger and cargo handling capacity will increase, enabling the airport to further strengthen its competitiveness as a hub airport. Also, the IIA was able to maximize efficiency and effectiveness of airport operation by introducing the passenger peak-forecasting system.

Niche creation is the ecosystem's capability to enrich diversity through the formation of significant new functions, or niches. The IIA has strived to reach new markets by expanding its business abroad. It has also continued to develop valuable new functions and features as part of its future business growth plans by developing the Airport City. Also, the airport signed agreements with British Airways, which will open new routes and flights, and with the Australian Flight Center for collaboration on future product development.

4. The IIA has built a successful business ecosystem. Now, what does the case of IIA teach us, and what should IIA do to improve its business ecosystem healthiness for future sustainability?

The case of IIA teaches us that long-term ecosystem health considerations are more important than maximizing short-term performance. The relationships between ecosystem members play a crucial role in creating capabilities and providing sustainable growth. Leveraging these relationships and making use of each member's core competency would make the ecosystem as a whole healthier. An ecosystem is just as good as its weakest link. Taking this into consideration, the performance of all members should be monitored, and members who fail to bring value into the chain should either be improved or replaced. A choice between expending resources to help other ecosystem members or looking for better-performing entities to supplant their functions should be made.

5. Competition among airports is increasing, and the IIAC, as a keystone player of the IIA business ecosystem, needs evolution. What kind of additional innovative initiatives are required for IIAC to maintain its role as a successful keystone?

Iansiti and Levien, in their article, The Keystone Advantage: What the New Dynamics of Business Ecosystems Mean for Strategy, Innovation, and Sustainability for the Harvard Business School Press, summarized the definition of the platform as "the 'package' through which keystones share value with their ecosystems." The keystones provide the "starting point" through which the other members can start their own value creation.

Business ecosystem evolution should revolve around creating value for the customers. Diversifying the IIA's offerings and markets could involve essential innovations that the ecosystem needs. With this in mind, the IIA should anticipate what customer needs have to be filled and how the airport could cater to these needs. The IIA should investigate the idea of what the airport of the future will be —and the current effort to develop Air City is an example of this. They should consider leveraging their position as the industry leader to create new services, not only for airport users but also for other airports and industry players in general. Being the industry leader also gives the IIA an edge in redefining the industry standard, and offering new experiences for users. Having said this, the IIA should work closely with other ecosystem members and share knowledge and resources in order to develop innovation and subsequently evolve. Anticipating future customer needs may seem to be a difficult task, but it will be crucial in maintaining the IIAC's current position as a successful keystone and bring the company into the future.