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Table of Contents

1. Introduction 3

2. Research objective 4

3. Background 5

3.1 Hong Kong International Airport ("HKIA") 5

3.2 Airport Authority Hong Kong ("AA") 5

4. Application of Abell's framework 8

4.1 Introduction of Abell's framework 8

4.2 Who are AA's core customers? 8

4.2.1 Segmentation by age group 9

4.2.2 Segmentation by travel purposes 9

4.2.3 Segmentation by dwell time 9

4.3 Identifying customers' needs 11

4.3.1 Importance of identifying customers' needs 11

4.3.2 Types of customer needs 12

4.3.3 Millennials 12

4.3.4 Leisure and business travellers 13

4.3.5 Passengers with different dwell time 14

4.4 Meeting the customers' needs 16

4.4.1 "Quality Function Deployment" – addressing each type of customer needs 16

4.4.2 "Human Activity Modelling" – creating a holistic customer experience 19

4.4.3 "Customer Relationship Management" – customising each airport experience 20

5. Missions accomplished? 23

5.1 To what extent has AA fulfilled its customers' needs? 23

5.2 To what extent does AA's mission statement align with its customers' needs? 24

6. Conclusion 25

A customer-centric performance review of Airport Authority Hong Kong – Application of Derek Abell's three-dimension business definition framework

1. Introduction

In the most primitive form, airports are in essence a piece of land for aircraft take-off and landing. However, the role of airports has evolved dramatically over the years. A few decades ago, an airport operated almost like a bus terminal, purely a mega-sized transportation facility where passengers could catch their planes. Nonetheless, as air transportation become more prevalent and accessible, passengers' needs and expectations continue to rise. Traditional functions have turned into standard provisions and airports strive to remain competitive through expanding its scope of service to not only meet, but to exceed their customers' expectations.

As a result, airports have grown into some of the most complex and diverse facilities in the world today, which can be analogised to a "small city with all of the associated functions from receiving aircraft to providing chapels" (Pitt, 2001, p.150). Given the pace of aviation development, it is crucial that airport operators remain sensitive to market changes and are able to adapt to the rapidly changing industry climate. Consequently, the changing nature and scope of airports require a prompt review of the airport operator's strategies to ensure that the provision of services are consistent with the future market trends.

Furthermore, the robust growth in the number of global air passengers also has profound impact on airport operations both in terms of increased efficiency demand as well as the ever more diversified customer needs to cater to. According to the International Air Transport Association ("IATA"), a globally recognised worldwide airline trade association, the number of annual air travellers proliferated by 170% in 20 years' time since 1998 to reach 4 billion in 2017 (Garcia, 2018). Moreover, over the next 20 years, 44% of increase in passenger volume will come from China and India (IATA, 2019).

Given that Hong Kong is a major gateway and transit hub connecting mainland China with the rest of the world, it could be reasonably expected that HKIA would experience strong associated growth. Passenger traffic at HKIA has increased by 50% in the past 10 years and is expected to surge from 75 million in 2018 to 102 million in 2030, according to a consultancy report (Airport Authority, 2018). The ever-increasing traffic volume poses major challenges to operations efficiency. But an even more challenging disruption to the traditional airport services is the diversity created by the variety of passenger users, who vary from travel characteristics, travel purposes to consumer preferences. All in all, the expected changes in customer profile give rise to the need to examine whether AA's current measures and its strategic directions are sufficiently relevant to the needs of contemporary customers.

2. Research objective

In light of the abovementioned factors, the paper aims to examine the performance of AA through a customer-centric approach and analyse its successes and/or shortcomings. Abell's 3-D framework will be used in the analysis so as to shed light on the customers' perspectives and desired strategies, from which an assessment shall be made on the extent to which AA's missions are adequately aligned with the needs of its present-day customers.

The following research questions are formulated so as to address the above objective:

1. To what extent has AA fulfilled its customers' needs?
2. To what extent does AA's mission statement align with its customers' needs?

3. Background

3.1 Hong Kong International Airport ("HKIA")

HKIA serves as the commercial international airport in the city of Hong Kong. Since the relocation of the old Kai Tak International Airport, HKIA commenced operations on the reclaimed island Chek Lap Kok after an overnight transition in July 1998. Over the following 20 years, HKIA has become one of the most renowned airports in the world, accumulating over 70 "World's Best Airport" awards.

Needless to say, HKIA offers great connectivity by air to over 220 destinations through working with 120 airlines, and its unique geographic location enables passengers to reach half of the world's population within 5 hours of flight from the airport. Apart from air transport, the airport has developed strong links with the Pearl River Delta area which can be connected seamlessly by coaches, limo and even ferries to and from HKIA.

In 2018, HKIA handled a record high passenger volume of 74.7 million, ranking 8th in the world according to the traffic statistics released by ACI (2019). The total number of flights climbed up mildly by 1.7% but this translated into a growth of 2.5% in passenger volume. This means that the airport was able to serve more passengers with a modest, controlled air traffic growth, which is a healthy indication given the airport's current limited runway capacity. In addition, HKIA was crowned the world's busiest freight hub, having handled 5.1 million tonnes of cargo throughout the year with a 1.5% year-on-year increase.

3.2 Airport Authority Hong Kong ("AA")

Managing one of the world's busiest airports requires prudent management and expertise. For this purpose, the Hong Kong government established Airport Authority Hong Kong ("AA") in 1995. As such, AA is a statutory body governed by law, namely the Airport Authority Ordinance, and is regulated by the government's Civil Aviation Department ("CAD") to ensure that aviation safety standards are met. However, even though AA is overseen by the government, it is deemed as a half-governmental body that is financially independent and endowed with sufficient autonomy and expertise to operate the airport on its own.

As an airport operator, the core role for AA is the management of aeronautics-related business. The crux of any airport is the airfield, which includes runways, taxiways and the ramp. Except air traffic control which is managed by the CAD, AA operates and manages the entire airfield including safety and service delivery, provision and maintenance of infrastructure as well as daily ramp operations. An extended arm of the airfield is the terminal buildings, within which AA is responsible for the provision of facilities, flow management and service delivery.

Moreover, AA also manages non-aeronautical activities that complements the provision of a more extensive airport service scope. Retail and catering offerings are a major commercial stream that is becoming increasing important to passengers. In this respect, AA manages the trade-mix planning, licensing, onward property management as well as marketing and advertisement. Furthermore, HKIA has grown into the world's most prominent cargo hub in 2018 with cargo tonnage exceeding 15% of that of the second busiest cargo airport, Memphis International Airport, which is the central logistic hub for FedEx Express. To this end, AA is responsible for managing the cargo franchisees, cargo facilities and the expansion of freight routes. Additionally, AA also manages property development in and around the airport, with the recent development of SkyCity, an integrated commercial complex adjacent to the airport, being a prominent project at hand.

All in all, AA is entrusted, by virtue of law, with the authority and responsibility to operate and development the airport with a view to maintaining HKIA's status as an international aviation hub. This is evidently translated into its vision, which is "to strengthen HKIA as the leading international aviation hub and a key engine for the economic growth of Hong Kong". In the following chapters, this paper will take a closer look at AA's corresponding mission statement in relation to its recent performance.

Figure 1 – Facts and figures of HKIA

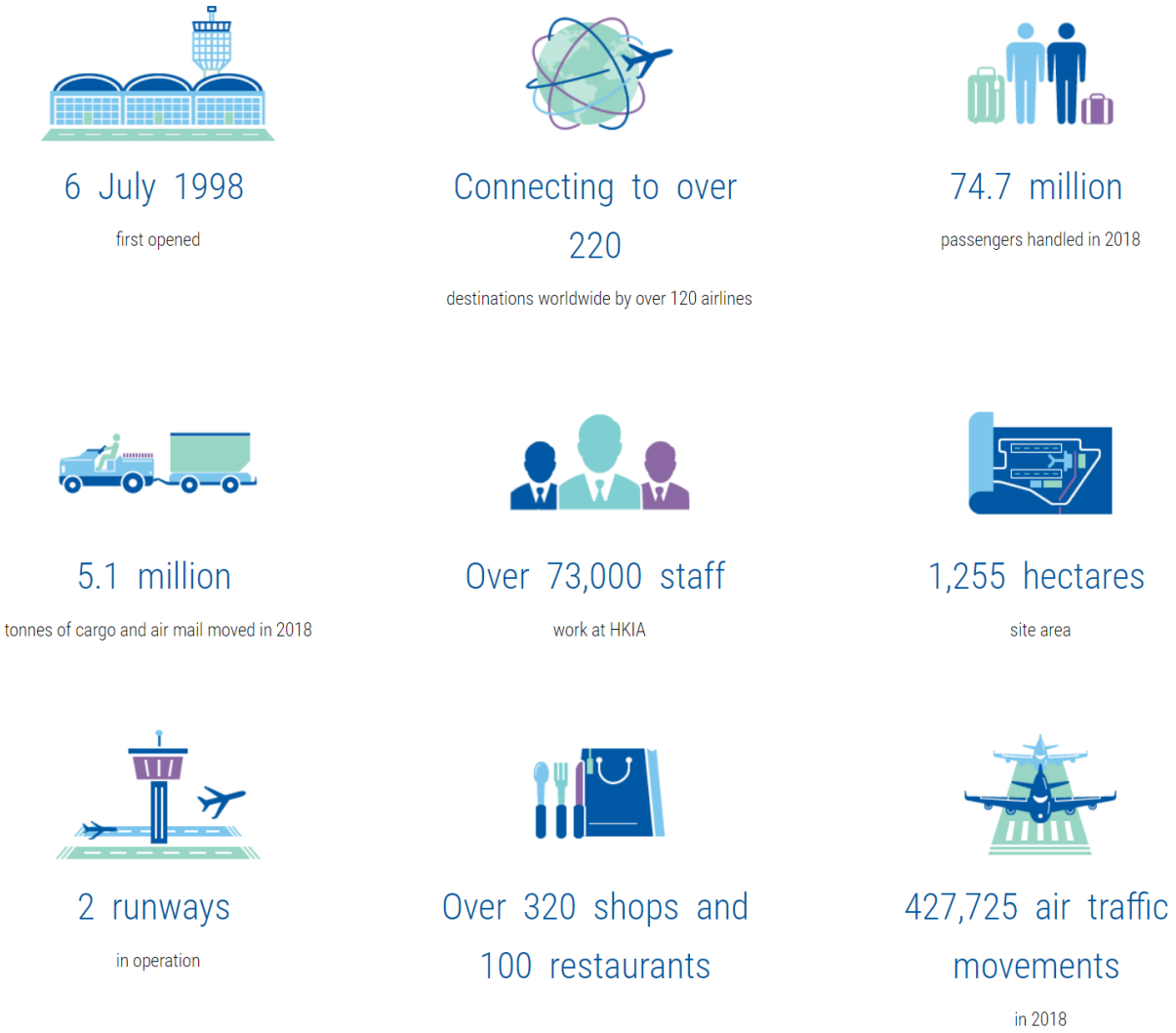


Figure 2 – Vision and Mission Statements of AA

4. Application of Abell's framework

4.1 Introduction of Abell's framework

Derek Abell's (1980) seminal work endows an organisation's business with a three-dimensional definition. In essence, this framework begs three questions when analysing a business:

- Who are the customer groups?
- What are the customer needs?
- How can the needs be satisfied?

The framework is strategically important to an organisation on different levels. On a corporate level, leaders gain a more holistic picture of the organisation's performance and opportunities to assess whether they are mapping the right direction towards the corporate vision. On a business level, the model provides a reality check framework for management to delve into their customers' views instead of solely focusing on the products or services being offered. On a working level, Abell's framework also prompts the organisation to explore suitable means in furtherance of satisfying the customers' needs.

AA has now been established for over two decades. Coupled with the fast-changing industry dynamics, the said business definition framework would act as a useful tool in examining the success and shortcoming of the airport operator as well as determining upcoming strategies.

4.2 Who are AA's core customers?

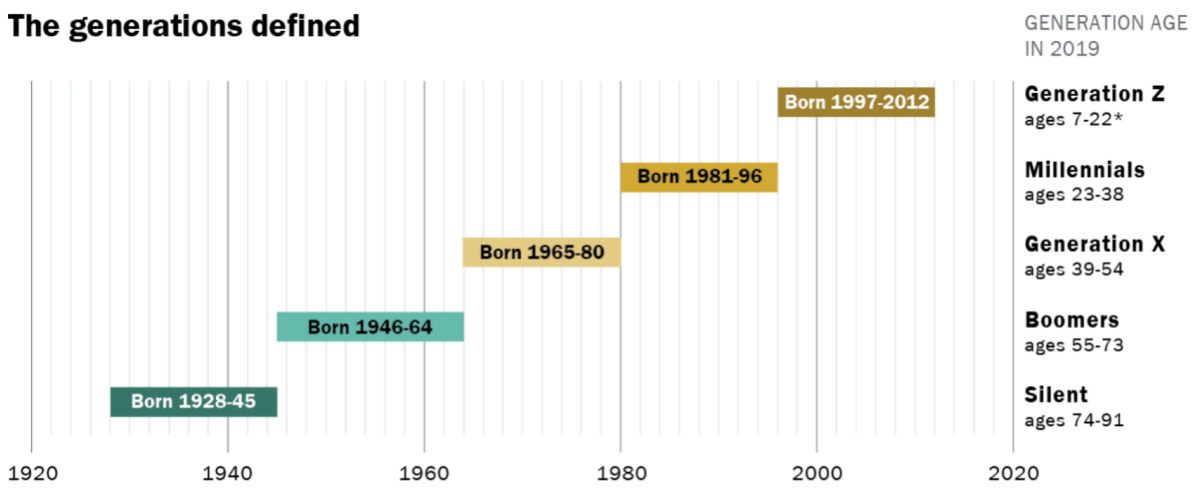
The "customers" of an airport operator are remarkably diverse. Unlike regional airports that adopt a particular positioning to serve particular client groups, for example by focusing solely on domestic, short-haul or cargo flights, HKIA can be described as a "24/7 intercontinental airport" that caters to a wide range of customers (de Neufville, 2003). Jimenez, Claro and Pinho (2014) posits that customer groups other than 'passengers' are emerging in the recent years, as airport business continue to expand and even globalise, for example through acquisitions or provision of consultancy services to other airports. In the case of AA, it would appear that while the airport's clientele is gradually growing into more non-aeronautical sectors such as property development and consultancy projects, the predominant customer group remains to be airport passengers. Hence, this paper identifies AA's principal customers as airport passengers who depart form and arrive at HKIA.

Since HKIA is an international airport handling passengers a complex and diverse group of customers, it is crucial to first identify the core segments that AA ought to pay particular attention to. Finding an effective way to profile and segment the clientele could put the airport ahead of today's competitive industry landscape.

4.2.1 Segmentation by age group

Different groups of passengers require different facilitation and carry different travel behaviour, and their demographics and traits have an impact on their expectations and subsequent satisfaction level at the airport (Bezerra and Gomes, 2015). In this respect, age is an important means of analysis given the disparity in commonplace differences as well as specific travel preferences between generation cohorts. With regard to the demarcation of generations, various research has developed a general consensus on the definition and age range, typically referring to five generations as illustrated in Figure 3 (Dimock, 2019): the Silent Generation (1928-1945), Baby Boomers (1946-1964), Generation X (1965-1980), Millennials (1981-1997) and Generation Z or the post-Millennials (1998-present) (Dimock, 2019; Fry, 2016; Stein, 2013). According to AA's quarterly passenger survey (2018), millennials and post-millennials represent over half of HKIA's passengers, with the overall average age of HKIA's passengers being 30 years old.

Figure 3 – Definition of generations (Dimocks, 2019)



4.2.2 Segmentation by travel purposes

Understanding the passengers' travel purposes is also important for airport operators in providing the right kind of service for each travel segment. At HKIA, the predominant group of passengers travel for leisure purposes, constituting 70% of the overall passenger number, according to AA's quarterly passenger survey (2018). Furthermore, approximately 25% of the passengers travel for business purposes. Naturally, therefore, AA must ensure that the airport's facilities and services correspond to these core segments.

4.2.3 Segmentation by dwell time

In a Smart City Datathon co-hosted by The Chinese University of Hong Kong and the HK Cyberport Management Company in 2018 (Hong Kong Economic Times, 2018), a group of university students proposed an innovative passenger profiling method that involved categorising passengers by dwell

time. Data analysis shows that half of the passengers departing from HKIA arrive at least 2 hours in advance of the scheduled departures time. However, findings also reveal that over 30% of them spend 1 hour waiting at the boarding gates. Having acquired information about the amount of time that the passengers spend at the airport, AA could then develop strategies with a more holistic view of the passengers' overall airport journey.

4.3 Identifying customers' needs

4.3.1 Importance of identifying customers' needs

Steve Jobs once remarked, "You've got to start with the customer experience and work backwards to the technology. You cannot start with the technology and try to figure out where you are going to sell it" (Hansen, 2013). Put in other words, good products cater to the customers' needs, which requires a detailed understanding of the product users. This echoes with Abell's framework which proposes a step-by-step approach in developing the appropriate business strategies. By the same token, airport operators must strive to step into their customers' shoes as they cannot provide services and facilities that satisfy airport users or the commercial logistics trade unless they have a thorough understanding of these customers need.

In this respect, Kirk (2013) summarised the main three reasons that airports, as with any other company, must strive to understand their customers and ensure good customer experience:

(i) Win and maintain customer loyalty in a competitive environment

At first sight, customer loyalty might not strike us as the most important target for an airport as it might appear that passengers do not generally have a lot of choices on which airport to fly at. However, through time, more airports have developed better downtown connectivity, more partnering airlines and more flight routes, continuously expanding the choice of airports for passengers. In this increasingly competitive environment, developing customer loyalty could enable airports to effectively retain and attract more passengers.

(ii) Provide a differentiator to set them apart from their competitors

Since the airport industry is growing more competitive, only airports that could offer great value propositions would be able to stand out. The fact that passenger satisfaction is integral to an airport's success is also reflected in a number of international awards and recognitions which are founded upon passengers' opinions and experience. No doubt, passenger satisfaction is not the only component of a good airport, but it is indisputably an important factor that could set you apart from your competitors.

(iii) Increase profits and provide greater shareholder value

Retaining and attracting more passengers could increase an airport's aeronautical revenue, but it could also have a significant impact on non-aeronautical revenue and increase the airport's profits. Airport Council International's report (ACI, 2016b) finds not only a positive relationship but also a strong one between passenger satisfaction and an airport's revenue, showing that "an increase of 1% in the global passenger satisfaction generates an average

growth of 1.5% in non-aeronautical revenue", which significantly out-performs the impact achieved through passenger traffic increase and expansion of retail space.

4.3.2 Types of customer needs

Kano's (1984) seminal work on categorising customer needs divides a product or service into three distinctive features, while Thompson (1998) similarly posits that it is crucial to stratify customers' needs into a hierarchical model in order to allow organisations to develop strategies specific to a single group of customers. Essentially, the three layers in the hierarchy are: (i) ***must-be attributes*** which customers treat as basics and take for granted such that these attributes would lead to customer attrition if not met; (ii) ***one-dimensional*** *attributes* which positively influences customer satisfaction when fulfilled but adversely when not fulfilled; and (iii) ***attractive attributes*** which could increase satisfaction and attract a certain customer group if provided but which absence would not cause dissatisfaction.

In an airport's scenario, this hierarchy reflects the paradigm and evolution of the role of an airport mentioned in the previous section. Traditionally, airports used to be public utilities that focus on basic, must-have needs, including attributes such as aviation safety, aeronautical business, security measures, etc. Nowadays, airports have developed into multifaceted businesses in a competitive environment, hence investing more resources in one-dimensional attributes, for example by liaising specific flight routes, establishing land-to-air or sea-to-air connections, and the provision of specialised cargo facilities that are essential to transporting certain types of goods. Last but not least, attractor attributes are especially important to airports. Unlike other industries, it is difficult to compare airports apple-to-apple using financial performances because of the different geographic constraints as well as the vastly different governmental regulations and support in every country. Instead, customer satisfaction is often used to measure airport performances and as such, even though attractive attributes might not increase the airport's market share, they could have a substantial impact on the airport's ultimate international standing.

4.3.3 Millennials

Millennials (born between 1981-1996) grew up in a world saturated with technologies and are thus often referred to as "digital natives", namely "native speakers of the digital language" (Prensky, 2001, cited in Obal and Kunz, 2013, pp.49). Their impact on the aviation industry and the world's economy at large cannot be underestimated given that the concurrent drive in global technological advancements. In Hong Kong, 27.8% of the population are aged between 20 to 39 in 2018 (Census and Statistics Department, 2018) and Bloomberg (2018) predicted that Millennials would account for 31.5% of the world's population in 2019. Millennials are emerging as a key driver of the travel industry, travelling frequently from an early age (Gardiner et al., 2014), and are expected to spend an

estimated amount of US$340 million by 2020 (Oxford Economics, 2010, cited in Bernardi, 2018). Thus, a generational perspective becomes all the more important for airports in identifying future demands.

These tech-savvy travellers are changing the aviation industry in that they have profoundly different consumer behaviour largely due to having grown up with digital technologies (Moscardo and Beckendorff, 2007), causing the "greatest disruption" so far (Veiga et al. 2017). Travel tendencies are markedly different in that Millennials are hyper-connected (Schewe and Meredith, 2004; Taylor and Keeter, 2014) and highly informed. For example in planning a trip, Millennials use an average of nine different sources to obtain and compare information (Șchiopu et al. 2016). Moreover, Millennials prefer a higher degree of freedom and empowerment which gives them a sense of autonomy (Beekman, 2011), and are often more demanding in processing speed as they are used to digital rather than manual processes. The latest Global Passenger Survey conducted by the International Air Transport Association (2018) identifies various preferences of Millennial passengers, such as:

- Using e-boarding pass
- Using e-check-in
- Having notifications pushed through an app
- Scanning my own boarding pass when boarding
- Having biometric identification replacing my passport
- Less than 5 minutes to wait for my baggage at arrival
- Less than 30 seconds to drop off my baggage at departure

All in all, Millennial travellers are accustomed to digital, innovative solutions and demand a stronger sense of control over their travel.

4.3.4 Leisure and business travellers

Based on data gathered from over 550,000 travellers and 300 airports worldwide, ACI (2016a) categorised passenger personas into six key profile groups that reflect in-depth passenger behaviour. This segmentation allows airports to strategically create different customer experiences to meet the needs of different passenger types. Typically, leisure travellers consist of Friendly Vacationers, Soulounge Tourists, Airport Enthusiasts and Value Seekers; whereas business travellers are often Timekeepers and Workmen, characteristics of whom are illustrated in Figure 4.

Figure 4 – Passenger Personas (ACI, 2016a)

Friendly Vacationer

The friendly vacationer is organised, looks for efficiency in airport processes and places importance on traditional customer service. This passenger persona has clear core needs and is highly responsive to airports that get it right with consistently clear wayfinding and a friendly staff.

Although the sunlounge tourist is not a seasoned airport traveller, they are an experienced consumer eager to enjoy an entertaining experience at the airport.

Sunlounge Tourist

Airport Enthusiast

The airport enthusiast has a very positive attitude to airports and wants to enjoy the experience. This persona understands the airport passenger process and, while keen to gain discretionary time in the lounge, is accommodating to occasional delays.

Although the value seeker does not fly frequently, this persona is confident in their expectations of the airport experience. The value seeker is highly demanding, not easily satisfied and has clear expectations of both the efficiency of processes and the quality of the retail and food and beverage experience. This persona is the highest spender but expects value for money.

Value Seeker

Workman

The workman is an experienced and demanding passenger with specific needs and high expectations.

The timekeeper is not a frequent flyer but is confident in using airports. This persona has clear and specific priorities and is likely to be satisfied by the airport experience if their needs are met.

Time Keeper

4.3.5 Passengers with different dwell time

Apart from in-terminal movement and processing activities, the in-between time and discretionary time are of equal importance to passengers, especially to business travellers (Darko, 1999, cited in Fodness and Murray, 2007) and transit passengers who comparatively spend more time waiting in the terminal (often called “dwell time”). However, as mentioned in the previous section, AA’s data also shows that a large proportion of ordinary departing passengers spend considerable time waiting at the boarding gates. These passengers are reluctant to leave the gate area probably for the fear of missing their flight, thus often referred to as “Gate Huggers”. Therefore, airport operators shall look to provide different amenities and services to help passengers with different lengths of dwell time to fully exploit the airport’s offerings during their stay in the terminal.

Furthermore, since passengers are often stressed during processing activities, it is important that the service provider manage passengers’ discretionary time in a way that alleviates anxiety and brings positive experiences to the travellers (Livingstone et al. 2012). Popovic, Kraal and Kirk (2009)

identify two main types of activities on which travellers spend their discretionary time, namely the "necessary activities" that are travel-related and "informal activities" such as shopping and dining. Thus, airports must be able to divert passengers' attention from the often frustrating "processing activities" to an environment that offers "aesthetic, cognitive and sensory satisfaction" (Fodness and Murray, 2007, p.501). All in all, the extent to which an airport can facilitate passengers in spending their dwell time could have a significant impact on its service quality.

4.4 Meeting the customers' needs

As illustrated in the last sections, the customer base and hence the customer needs in an airport environment are intrinsically diverse and complex. As a public utility service provider, AA ought to cater to as wide a range of customers as possible. However, given the inevitable constraints in time and resources, it is necessary to categorise and prioritise those needs in order to maximise efficiency in formulating the most effective strategies. In this chapter, three different models related to service quality are explored, through which strategies or "technologies" are developed and discussed so as to meet the customers' needs.

4.4.1 "Quality Function Deployment" – addressing each type of customer needs

In this respect, Matzler and Hinterhuber (1998) laid down the ground work of integrating Kano's model of customer satisfaction into Quality Function Deployment ("QFD"). Similar to Kano's three-dimensional hierarchy, the crux of QFD also lies in its emphasis on customer orientation, thereby providing a practical and structural approach for managers to develop a product or service through a thorough assessment of the customers' needs. The development process can often be outlined in a seven-step approach (Hauser and Clausing, 1988; Hauser, 1993, cited in Matzler and Hinterhuber, 1998):

(i) Identifying customer needs
(ii) Structuring the needs and prioritising them
(iii) Comparing customers' perceptions (comparison with competitors)
(iv) Identifying product/service attributes
(v) Developing the relationship matrix
(vi) Developing the roof matrix
(vii) Estimation of costs, feasibility and technical difficulties

In the context of evaluating AA's service, steps (i), (ii), (iv) and (vii) are the more important parts on the ground that unlike many other industries, every airport is rather unique given their intrinsic characteristics endowed by geographic location, each country's air traffic rights and other variables which are hard to control. Thus, an apple-to-apple comparison with other airports would have limited value in developing the airport's own services. Rather, a focus on identifying the airport's attributes and developing strategies that correspond to the various categories of customers' needs would be more relevant in this context. Since step (i) has been done in the previous chapter, the following section aims to structure the identified needs according to Kano's model with a view to prioritising them, and the corresponding strategies shall be examined.

Table A – AA's customer needs and corresponding technologies

Type of needs		"Technology" used to meet customer needs	Major types of customer addressed
Must-have	Safety and security	Automated inspection systems	All types of customer
One-dimensional	Fast processing speed; convenience	Mobile app facilitation	Business travellers, passengers with short dwell time, Millennials
Attractor	Customer empowerment; Digital engagement	Self-service facilities Omni-channel retail strategy	Millennials
	Local culture elements	Suggested in-terminal routes	Leisure passengers; Passengers with longer dwell time

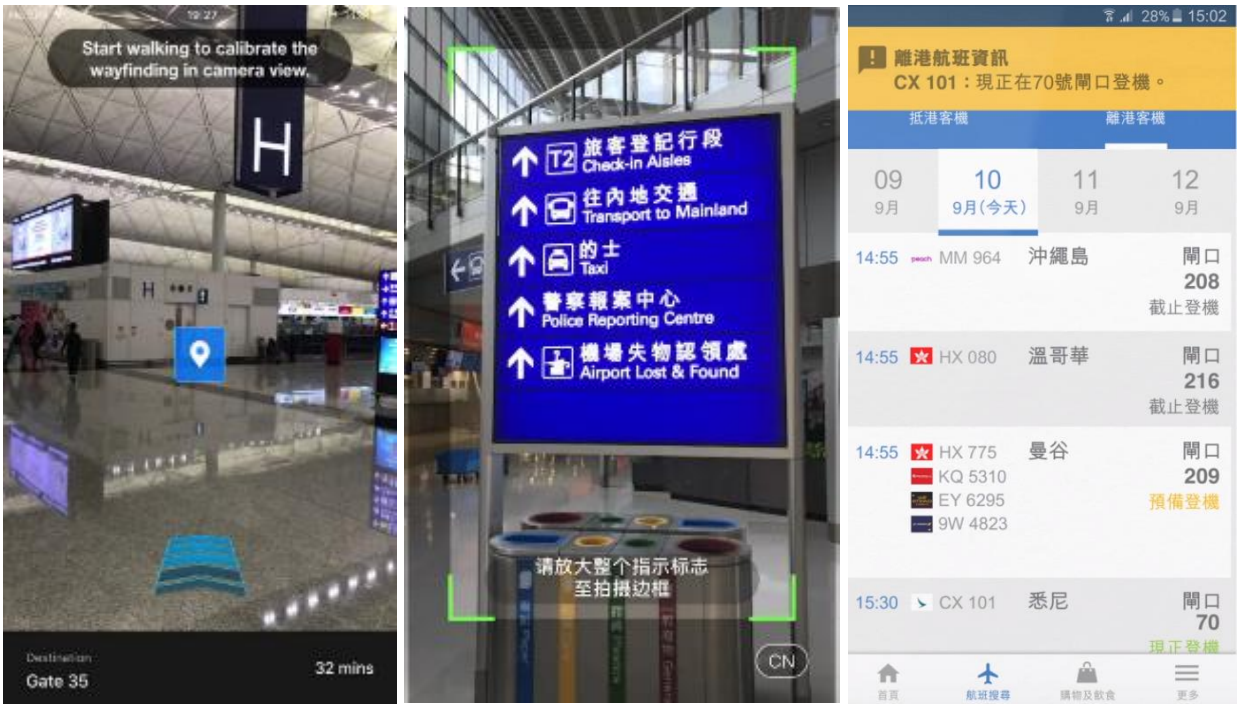
Must-have needs

Safety and security is always of paramount importance to an airport's operations to all kinds of customers. Although these are often unspoken expectations, an airport that fails to safeguard these basic requirements will severely deter its customers, be it passengers or the cargo trades. Apart from establishing a wholly-owned subsidiary, AVSECO, to manage day-to-day airport security, AA has also been proactively seeking innovative ways to further elevate the safety standards, especially regarding runway safety. For example, AA developed the world's first automated system to scan and inspect the airfield's ground lighting under high speed and high precision to replace manual inspection of the 13,000 number of lights, critical to runway safe operations. Furthermore, AA introduced a pioneering automated foreign debris detection system on the runways that could ensure aircraft safety during landing and take-off in a real-time manner. Overall, a total of 14 audits and 130 inspections were carried out by the government's Civil Aviation Department (2018) in FY2017/18 before AA was granted the renewal of the aerodrome licence to continue operating HKIA.

One-dimensional needs

An airport's services involve numerous processes that a passenger must go through and as such, the total length of processing time is an important aspect that determines a passengers' overall experience. Based on the analysis of different types of passengers in the previous section, it would appear that timekeeping and short processing time are of particular importance to frequent business travellers, passengers who have short dwell time at the airport, as well as Millennials who often demand high processing speed. In order to facilitate time-pressed passengers, AA launched an HKIA mobile app "HKG MyFlight", in which core functions include real-time flight status updates, instant signage translation to 9 languages, indoor map, and even augmented reality wayfinding [Figure 5].

Figure 5 – Mobile app facilitation



Attractor needs

Millennial travellers are tech-savvy and show clear interest in using self-service facilities. In fact, the implementation of self-service facilities is endorsed by various international organisations, such as IATA who grants certification to airports for their provision of such facilities to encourage fast travel. However, facilitations such as mobile boarding pass are turning from attractive attributes to basic expectations. Hence, airports must now look at the whole airport journey and extend such self-service facilities to provide an overall coherent process. For instance, the departures self-service scope could be extended from self check-in to other processes such as self bag-drop, e-channels and e-boarding gates to offer a fully automated and seamless experience.

Furthermore, it is important to recognise that the attractiveness of self-service facilities does not only lie in faster processing, but also in sense of control and empowerment that is valued by contemporary customers, particularly Millennials. Recent research by Bogicevic et al. (2017) shows that self-service and supporting technologies at airports have a positive effect on passengers' confidence and enjoyment, ultimately leading to higher passenger satisfaction. Thus customer empowerment could be a powerful attractive attribute is worth paying attention to by airports.

Technological initiatives and customer empowerment are not only limited to core operations, but could also be extended to other non-aeronautical business, such as retail and advertising. In light of the robust growth in e-commerce, airports such as HKIA, London Heathrow and Singapore Changi are looking to bring their retail business online by creating their own online shop brands, namely

HKAirportShop, Heathrow Boutique and iShopChangi. HKAirportShop offers pre-order and airport pick-up with a 90-minute lead time, the shortest amongst airports worldwide, and the online shop is even complemented by a free delivery service to 15 countries or regions in the world. The adaptation of omni-channel retail strategy emerges as the way forward for airport retail. By developing stronger connections between online and physical platforms, airport passengers could enjoy a shopping experience that is just as exciting as in downtown shopping malls.

Last but not least, creating an aesthetically attractive environment could surprise passengers and have a positive effect on passenger satisfaction. This is especially the case for leisure travellers and passengers who have long dwell time in the terminal, for example transfer and transit passengers. Various art displays, exhibitions and cultural events are already in place to promote Hong Kong's local culture. To further enhance the terminal ambience and allow more passengers to enjoy these exhibitions and events, AA could ride on the existing HKG MyFlight app to prompt messages and routing to passengers. Once a passenger enters the flight number, the app could automatically generate a best-fit terminal tour or routing depending on the passenger's location, time until flight departures, and even the number of travel companions. This way, passengers can fully explore the airport regardless of their dwell time.

4.4.2 "Human Activity Modelling" – creating a holistic customer experience

Human Activity Modelling ("HAM") (Constantine, 2009) is grounded on the application of activity theory in practice. Having its crux based on Russian psychologists Vygotsky and Leontiev in the early 20th century, activity theory gained significant momentum in the recent decades and attracted increasing attention with a view to operationalise this theory, for example the "activity interview" postulated by Duignan, Noble and Biddle (2006, cited in Teixeira et al. 2012) and "user-centric design" by Norman (2013). At its core, activity theory is about "who is doing what, why and how" (Hasan and Kazlauskas, 2014).

As an extension of the activity theory, Constantine's HAM provides a practical framework in analysing and designing work through the study of the customers' activities as well as the context in which the activities are carried out (Teixeira et al. 2012). In other words, it is crucial for the service provider to understand the blueprint of a customer's journey rather than to simply focus on the customer's opinions on separate points of the service (Bettencourt, 2010; Dahlsten, 2003). Thus, service providers must embrace the holistic nature of customer experience in order to accurately address the customers' needs.

In an attempt to collecting passenger insights, AA has in place various channels such as a Customer Enquiry Feedback System, which comprises a telephone response centre, online and written feedback;

social media listening, which discovers valuable real-time insights from a large pool of airport users; and regular service quality surveys, which aim to monitor customer satisfaction and identify any shortfalls in a particular point of service. Nevertheless, it is observed that these existing approaches are not comprehensive enough to depict a passengers' entire airport journey. Therefore, AA commissioned a "customer journey mapping" ("CJM") in order to cover the current blind spots in the airport journey.

CJM emphasises on an "end-to-end" journey and recognises that the journey pre and post the passengers' actual stay at the airport also has an impact on their satisfaction level with the airport. For example, the study revealed that many departing passengers are bothered by the pre-airport journey caused by having to carry their luggage around, or having to keep an eye on their luggage during transportation time, such that by the time they arrive at the airport, the passengers are exhausted and cannot relax until they complete the check-in process. With a view to create a hassle-free journey, therefore, AA has developed an "off-airport check-in" service, which is being launched by phase. Departing passengers would be able to check-in their luggage from home and have their luggage delivered straight to the aircraft, such that they need not worry about travelling with bags or queuing up for bag-drop upon arrivals at the airport.

Furthermore, CJM also takes into account the emotional level of the airport users at different stages of their journey, which in turn helps AA to implement relevant measures. For instance, it is found that passengers often feel more anxious upon arrivals, hoping to get to their next destination as soon as possible. However, due to a saturation of space and high passenger volume, baggage reclaim is often identified as a pain point for arrivals passengers. While long-term measures are gradually being implemented to speed up the baggage reclaim process, the CJM's emotions indicators brought to light that interim measures that could soothe the passengers' emotions and divert their attention could also effective. Consequently, a range of corresponding measures have been planned and are being implemented, such as the addition of mood music, themed seating, and enrichment of tourist information and services in the baggage reclaim area.

Hence, through mapping out the passengers' entire airport journey and emphasising on the string of passengers activities, an airport operator effectively offer passengers a comprehensive and coherent overall service.

4.4.3 "Customer Relationship Management" – customising each airport experience

Although a holistic service could ensure that passengers' overall needs are attended to, a *customised* experience, on the other hand, would allow the airport to leave an impactful impression on the individual passenger. In order to capitalise on passengers' needs, therefore, the airport must establish

a sustainable system that allows the operator to manage, process and analyse the vast flows of information. In this respect, developing a Customer Relationship Management system ("CRM") could help an airport manage its interactions with the passengers more effectively and, in turn, strengthen the relationship and enhance customer satisfaction.

How CRM can help the airport to meet customers' needs

Data analysis

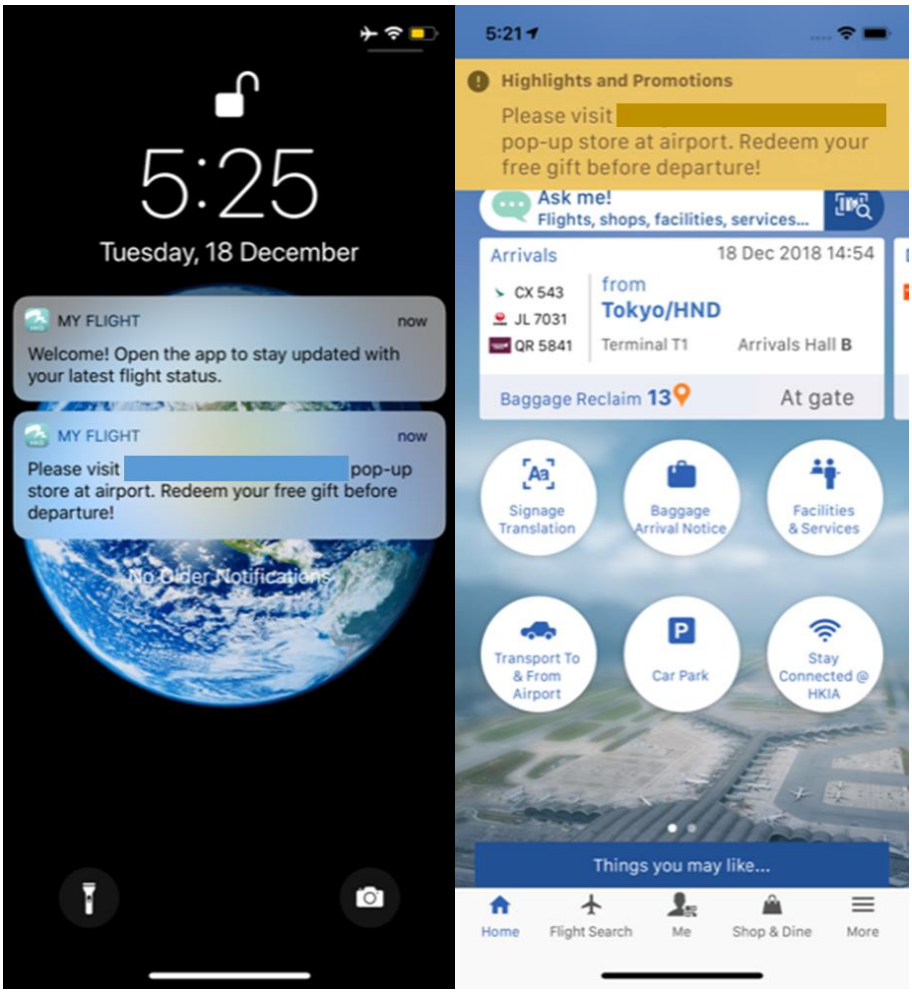
The amount of passenger information and customer feedback can be overwhelming and airports will find themselves drowning in a sea of information if there is no systematic way to organise the data. Having in place a modern CRM system, which often employs technological solutions, could enable airports to store, process and also analyse the passengers' data. Airport managers will then be able to extract insightful analysis on passenger segmentation, preferences and predictive modelling, from flight information, in-terminal wayfinding and navigation, shopping and dining behaviour to use of other airport facilities, etc.

Customised relationship

Having obtained useful information about the passengers through data analysis, airports could then customise their interactions with the passengers. Airports must be made aware of the wealth of possibilities brought about by establishing a robust CRM, which could help them provide passengers with the right kind of information, increase passenger engagement, establish loyalty and increase customer satisfaction. After all, a passenger who feels like they are being treated diligently as individuals is more likely to establish loyalty towards the airport than a counterpart who feels like they are just 'any other traveller' who is being processed, not engaged.

As a measure to establish customised relationship, AA has installed over 10,000 location iBeacons around the terminal buildings, so that the airport could prompt personalised proximity messages with high relevance to the passengers. For example, passengers could receive geo-specific information about a pop-up promotion at a nearby retail shop, as shown in Figure 6. In the future, these push messages could be extended to cover ad-hoc special occasion, for example in anticipation of congestion in the foodcourt due to mass flight delays, the mobile app could prompt passengers to other areas with suggested dining and shopping alternatives. These suggestions could even be made based on the individual passenger's previous behaviour and location of their boarding gates.

Figure 6 – Proximity messages



Integrated platform

By creating a central pool of data, CRM could act as a foundation that facilitates and streamlines many processes and campaigns. It could also be integrated with other platforms such as mobile applications, loyalty programmes and artificial intelligence marketing. As a result, operations and services such as disseminating customised information, handling customer feedback and targeted marketing campaigns could all ride on the same pool of data. This could give airport managers a more holistic view of an 'end-to-end' passenger experience.

Overall, since CRM enables airports to handle a vast amount of data simultaneously and systematically, it gives rise to more flexible and innovative ways of profiling customers that can bring a more personalised experience to airport passengers. In AA's context, CRM can be a very effective tool in managing customer relationship and creating a personalised experience for HKIA's airport users. However, it would appear that many of these initiatives are still underway and yet to be developed. Thus, customisation of airport experience ought to be a focus area in the near future if AA were to raise the service quality to an even higher standard.

5. Missions accomplished?

5.1 To what extent has AA fulfilled its customers' needs?

Addressing each type of customer needs

Having categorised and prioritised the different types of customer needs, it appears that the characteristics of AA's core customer groups give rise to not only must-have needs and one-dimensional needs, but also a number of attractive attributes.

Firstly, in term of must-have needs, safety and security are undoubtedly the major attributes demanded by all types of customers. In this regard, AA consistently fulfils the international and governmental regulatory standards, evidenced by the annual Aerodrome Licence granted by the Civil Aviation Department upon satisfactory assessment of the AA's competence in operating a safe aerodrome. In addition, various initiatives have been implemented by AA in further increasing the safety level on runways, such as the automation in airfield ground lighting inspection system and automated foreign object debris detection system.

Secondly, with regard to one-dimensional qualities, considerable resources have been used for process enhancements. Particularly, by developing a "single-token" through the use of biometrics identification and automated departures facilities, processing time could be further shortened, thereby fulfilling passengers' demand in this aspect. The use of the airport mobile app also enhances wayfinding and caters to the often time-pressed passengers.

Thirdly, it would appear that AA excels in providing innovative attractive attributes that exceed the customers' expectations. The provision of self-service facilities, development of suggested in-terminal routes to fully exploit passengers' dwell time and the omni-channel retail strategy altogether create excitement in the customer experience. Such continuous effort in innovation could surprise the customer and yield paramount satisfaction.

Creating a holistic customer experience

The importance of treating the customer experience as a holistic picture is emphasised by various theories and framework that emphasise on understanding a customer's activities as a whole rather than on a single point of service. In the context of HKIA, it would appear that AA deploys abundant resources in researching passengers' different needs at various stages of their airport journey. It is clear that Customer Journey Mapping research that accentuates the concept of an "end-to-end" journey supplements other existing research and surveys, thereby constructing a fuller picture of the customers' journey. This has in turn prompted various project development that extends the airport service to the city, as well as service enhancement that addresses passengers' emotions during different stages of their airport journey.

Hence, through mapping out the passengers' entire airport journey and emphasising on the activities carried out by the passengers, it appears that AA is able to cater to its customers' needs comprehensively and holistically.

Customising each airport experience

As discussed above, a CRM system could be applied to a wide array of airport activities to offer a personalised experience to passengers. The most prominent tool used by AA in this aspect is the installation of over 10,000 iBeacons around the terminal to prompt personalised messages and routing depending on each passenger's circumstances. However, it would appear that many of these initiatives are still underway and yet to be developed, especially in terms of establishing a mature loyalty programme. Such a loyalty programme could provide a number of value-added services and promotions that would not only attract business flyers, but also many frequent leisure travellers.

Furthermore, even though AA is already making good use of the iBeacons to customise real-time experience, more emphasis now needs to be placed on the collection and analysis of these data in order to extract valuable information for onward development. By strengthening data collection and creating a data pool coupled with AI technology, passengers would be able to experience a truly customised airport journey. Thus, customisation of airport experience ought to be a focus area in the near future if AA were to raise the service quality to an even higher standard.

5.2 To what extent does AA's mission statement align with its customers' needs?

With reference to AA's vision and mission statements (Figure 2 in section 3.2) and Table A in section 4.4.1, it can be derived that AA's mission statement sufficiently addresses the customer needs identified and categorised according to Kano's hierarchy. The "must-have needs" in airport safety and security are clearly stated as a fundamental goal; while the "one-dimensional" and "attractor" needs require AA to exceed customer expectations, foster an innovation culture, apply prudent commercial principles and value the organisation's talents. Even though the core customer groups do not appear to have particularly high demand in environmental initiatives taken by AA, it is prudent to include environmental sustainability in the mission statement, given the strong contemporary public sentiment and consciousness in sustainability and corporate social responsibility. Therefore, it could be concluded that in spite of the growing complexity in airport passengers' needs and expectations, AA's mission statement nevertheless aligns with its customers' needs to a large extent, allowing the organisation to not only fulfil the basic needs, but also to develop more attractive attributes that could strengthen HKIA's international status as an aviation hub.

6. Conclusion

The role of airports continues to evolve from transportation nodes to increasingly complex business entities. As air travel becomes more prevalent, the variety of amenities and operations standards also need to live up to the customers' expectations. However, the surging traffic volume poses immense challenges on airports not only in maximising capacity and raising operations efficiency, but also in catering to an enormous group of customers who vary significantly in travel characteristics and needs. Being one of the busiest airports in the world, HKIA inevitably encounter the same challenges and must strive to promptly respond to the changing landscape in order to maintain its status as a world's leading international aviation hub. For this reason, this paper uses Abell's 3-D framework to analyse the extent to which HKIA's operator, AA, understands and addresses the needs of its contemporary customers.

Although it is apparent that AA's most fundamental customer group is airport passengers, the fact that HKIA handles 75 million passengers annually speaks to the complexity of the customer profiles. Through segmenting the passengers by their age group, travel purpose and dwell time at the airport, it is found that extra attention ought to be directed to core passenger groups such as Millennials, leisure travellers and business frequent flyers. Kano's hierarchy was then used to categories these needs into three tiers, namely must-be, one-dimensional and attractive attributes, so that different 'technologies' could be used to address each type of needs. Furthermore, apart from address different types of needs, it is equally important to embrace customer experience in a holistic approach so as to provide a seamless end-to-end journey, as well as to customise each experience.

Despite the growing complexity of passenger profile, AA's mission statement is to a great extent in line with the needs of its contemporary customers. Furthermore, AA employs adequate 'technologies' to address different types of customer needs and sufficient attention is also paid to establish a complete, end-to-end airport experience for passengers. By strengthening the collection of big data through a CRM system, AA would be able to further enhance its airport services to offer an aesthetic, personalised experience to its passengers. Overall, while AA's existing measures and strategic directions adequately responds to the current market, continuous effort must be put into constant performance review so as to stay on top of the rapidly changing landscape and to not only meet, but to exceed its customers' expectations.

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