



Utilizing Web activities to generate revenue for Airports - with focus on Social Media

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Declaration

I declare that this dissertation was composed by myself, that the work contained herein is my own except where explicitly stated otherwise in the text, and that this work has not been submitted for any other degree or professional qualification except as specified.

(Mohamad S. Al Agha)

Abstract

Airports are being nowadays considered as Commercial profit centers rather than public cost centers. The nature of the airports being entities that offer a range of service for its customers and tenants such as travel, tourism, accommodation, shopping, parking and many more; makes it a huge potential for commercial revenue. Until today, web technologies were never used to its maximum potential in this industry, where there lies a huge potential for enhanced customer service as well as revenue sources. Moreover, while the web is being used effectively in many industries, very little research has been done on how to use the various web technologies specifically for the airport industry.

This dissertation provides an in depth case study on utilizing Web technologies – Social Media specifically – for revenue generation opportunities in the Airport industry. The analysis carried out in this dissertation on Abu Dhabi International Airport, lays out a well-structured methodology for analyzing the level of web utilization of an airport on the net, identifying opportunities for increasing such presence, and assessing the potential impact of such opportunities. A thorough analysis was done to identify how the various forms of web activities can be best utilized for airports. A number of web activities were identified as potential revenue source and were explored for monetization strategies. A set of recommendation are offered to airports management to maximize their benefit of their web presence and to open new forms of revenue and unique customer service. A first in the world implementation of an innovative service using the Social Media platform twitter and integrating it with the airports Flight Information Display system was introduced in this dissertation and holds a huge potential for revenue using the advertising business model proposed and built behind it. The findings of the analysis and the implementation of the mentioned Social media application, lays the groundwork for further research on implementing and measuring the ROI on the various monetization strategies.

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Chapter 1

1 Overview

This chapter introduces the academic context of this dissertation it starts with an Introduction about the dissertation and what is to be achieved in section 1.1. Section 1.2 presents the research questions of this dissertation. Section 1.3 explains the methodology adapted in carrying out this dissertation. While section 1.4 lists the contributions this dissertation is bringing to the academic scene. The chapter concludes with explaining the organization of the next chapters of this dissertation.

1.1 Introduction

The Internet has always been foreseen as a whole new world of business arena. In the past two decades, the internet has changed the way people live, work, learn, communicate, shop and even socialize. It also had a noticeable effect on how companies operate, communicate, market and sell their products. In many cases, the internet was the core of huge success for a number of businesses.

This dissertation provides an in depth case study on utilizing Web technologies – Social Media specifically – for revenue generation opportunities in the Airport industry. The Abu Dhabi Airports Company and its largest airport Abu Dhabi International Airport (ADIA) is the focus of this research, and these technologies will be studied to work with ADAC current business environment. The current status of Web utilization in ADAC will be assessed, as well as the different factors affecting such a move to adapting Web technologies more intensively.

Airports are being nowadays considered as Commercial profit centers rather than public cost centers. The web was never used to its maximum potential in this industry, where there is a huge potential for enhanced customer service as well as revenue sources.

In my research, I will study the different forms of Web activities, Web marketing techniques and Web Strategies; evaluate them and recommend the best solutions for ADAC. After analyzing those strategies, well move into researching what types of Web monetization strategies suites ADAC.

As a proof of concept - One implementation of these techniques will be using the Social Micro-blogging service – twitter - and integrating it with the Abu Dhabi Airports flight information Database for public use. At the same time I will be looking at the monetization of this service.

The research will conclude to a list of recommendations for the Airport Management to proceed with monetizing the Airport's web presence. Although these conclusions were formulated taking ADAC as the case study, these recommendation are applicable for any company in the world that operates or manages airports.

1.2 Research Questions

This research sheds the light on utilizing Web technology (tools and activities) - mainly Social Media in the Airports industry. The main questions this research is trying to answer are:

- What are the suitable Web activities/tools for Airports?
- How can we generate revenue (monetize) the web presence of Airports?
- How can we utilize Social Media to generate revenue for airports?

1.3 Methodology

Abu Dhabi Airports Company (ADAC) and mainly Abu Dhabi International Airport (ADIA) will be the case study of this dissertation. The current status of the Airport web presence will be evaluated; Internal and external factors affecting its web presence will be identified and discussed.

The methodology of this research starts with researching the many forms of web activities and tools available today. After identifying these activities, we look at how each of these activities can be best utilized for an airport web presence keeping ADIA in mind. After researching all web activities for airports, we

identify potential activities that can be monetized or has a potential of revenue generation. Each one of the potential monetization strategies will be studied and a set of recommendation on how to monetize these activities can be carried out will be provided.

One innovative idea to monetize the airport was identified and was included as part of the recommendation. This idea is using the Famous Social Micro-blogging website twitter to provide a flight information enquiry service for Abu Dhabi International Airport passengers. An implementation of this service and identifying a monetization strategy for it will be part of this dissertation as a proof of concept of the research findings.

1.4 Contribution

- A thorough survey of different web activities an airport company can utilize and potential application and ROI. The dissertation identifies potential web activities that prove to be of revenue potential for airports and its potential application. The importance of this contribution comes from the lack of available in-depth study of how to utilize web activities and technologies specifically for the airport industry.
- The dissertation lays out a well-structured methodology for: analyzing the level of web utilization of an airport on the net, identifying opportunities for increasing such presence, and assessing the potential impact of such opportunities. A combination of the external factors analysis using PESTEL technique and in internal factors using SWOT analysis was introduced.
- As a proof of concept, the dissertation presents an in-depth case study of Abu Dhabi Airports Company.
- A set of recommendations are provided for Airport Managements, Decision makers, Web strategists and Web Managers on how Web technologies can be best utilized to serve the Airports business.
- This dissertation introduces an innovative way to use the Social Media micro-blogging site twitter to provide a free flight information enquiry

service that can be monetized to generate revenue for the airports. The service is the first of its kind in the world, as no one has utilized social media the same way this dissertation does.

1.5 Organization

The next chapter of this dissertation explains the background of the topic. It starts with discussing the many forms of web activities available for business today. The second section then moves to defining Social Media and discussing it in more details. The section starts with answering the question “what is Social Media?” and moves to discussing a number of popular Social Media Platforms. Among those popular platforms is twitter which I discuss in further depth, a twitter application is presented as a contribution of this dissertation. From there I move to discussing how Social Media is used in business and I showcase some local and international case studies of using Social Media for business. After that I talk about how to measure the ROI on Social Media, current metrics and measures and the effectiveness of it. I also talk about e-commerce and its relation with social media, and conclude the chapter with a view on Social Media Risks and trends.

The third chapter analyzes the focus case study of this dissertation ADAC (Abu Dhabi Airports Company), and discusses the factors affecting ADAC’s web presence both internal and external. Then I describe the many forms of web activities and how each of them can be utilized in airports, specifically in ADAC. After that I identify the candidate web activities discussed in this chapter that has a revenue generation potential for the airport. Each one of those activities is explored for monetization. The chapter concludes with providing a set of recommendation for Airport management on how to utilize and monetize its web presence.

Chapter five details the proof of concept of the dissertation findings, the implementation of a social media application: Twitter flight information enquiry service. Future work and conclusion is what chapter six brings to this dissertation.

Chapter 2

2 Background

This Chapter includes a background discussion about the dissertation topic and its related areas. It also includes the literature survey of previous work done on similar areas. Section 2.1 talks about the many forms of web activities for the businesses and their customers. In section 2.2 I move to discussing Social Media in a detailed manner, by defining Social Media, popular social media platforms and more about twitter in specific. I then move to talk about how Social Media has been used in business and showcase some local and international case studies in that area. From there I talk about measuring Social Media ROI and its effectiveness. I also talk about Social Media in relation to e-commerce and finally conclude with Social Media risks and trend.

2.1 The Many forms of Web Activities

Since Tim Berners Lee invented the World Wide Web in 1990, the way we interact and go about our daily tasks has been transformed. Many businesses were realized due to the web, thousands of jobs created, and innovative products and services came to life. Moreover, it was a new channel for businesses to market their products and services, reaching out to the millions of potential customers online.

Balwani (2010) mentions four elements that are essential to the success of any business' web presence: The Website, The Blog, The Newsletter, and Social Media Accounts:

- **Website-** the website should be able to answer consumer's basic questions of what the company is about, what it is that they are offering, how they can benefit the consumer, and how to contact them for feedback and enquiries.

- **Blog-** Companies that communicate to their target market through a blog could enhance their brand image or add value to their product/service by offering explanations and additional information to consumers.
- **Newsletter-** this included electronic mail (or e-mail) shots, in the form of newsletters or product/special offer announcements. A newsletter is a good way for a business to generate sales leads from people visiting the website.
- **Social Media Accounts-** Web users are increasingly using the web to meet new people and expand their social circles to find new opportunities professionally or make new friends. Businesses should also be taking advantage of this by interacting with people within these social networks to gain insights into what they like and think of their products and services, as well as monitoring consumer behavior trends.

In addition to the above, the following online consumer activities can also be tapped into by businesses to market or generate revenue:

- **Online stores-** businesses like Amazon were formed and partnered up with publishers, electronic companies, retail stores and so on to allow users to buy a variety of items from the comfort of their own homes. People can also bid for items through online auctions, like eBay.
- **Banking-** because users can now conduct bank transactions online, like money transfers and online bill payments, businesses can make it easier for their customers to make purchases with them by offering secure online transaction facilities.
- **Gaming-** marketers can benefit from product placement and advertising within games themselves. Football video games are a common place, for example, for sports brands and airlines to advertise in.

- **Viral Videos-** companies can create and post compelling videos online, and then work towards getting them to go viral in order to gain popularity and garner the attention of their target audience.
- **Search-** users can now look for information on any topic online through a search engine, like Google. Businesses that want to appear in the top results will use paid (SEM) and unpaid (SEO) methods to ensure this.

The above mentioned web activities represent the main high level groups of web activities that businesses can utilize. I will now delve deeper into the Social Media area, followed by a discussion on the variety of web and social media activities that can be best utilized for airports.

2.2 Social Media

2.2.1 What is Social Media?

Social Media is not a new concept; as Kaplan and Haelein (2010) point out, the rising popularity of social media amongst users is merely going back to what the Internet and the World Wide Web was created for- the sharing of information between people.

During the time of Web 1.0, the web was generally websites with published content that users could browse through. People then started to create their own personal websites and have them publish them through then-popular hosting services like Geocities and Angelfire. It was the users' way of communicating with the rest of the world online, which resembled more of a monologue. The only instance of dialogue, or some sort of feedback, were guest books or feedback forms created on these sites. One of the early platforms of social media that came to fruition then was forums. Users could start discussions, known as threads, and comment on a topic.

The web's technology also evolved, and gave way to Web 2.0, which gave all users the ability to collaborate and participate on various projects and enabled the development of User Generated Content (UGC). Combining Web 2.0 and UGC, Social Media can be defined as the technological channels that allow users to create and share content online. In simpler terms-

“Social Media are primarily Internet-based tools for sharing and discussing information with other people. The term most often refers to activities that integrate technology, social interaction, and the construction of words, pictures, videos and audio.”

Cavanaugh (2009)

Social Media channels include:

- **Wikis-** these are sites with content that anyone can edit. So instead of the static websites we saw with Web 1.0, Wikis allow users to collaborate on different projects. The most popular wiki today is Wikipedia, which has experts from a wide array of fields volunteering their time to add and modify content on any topic imaginable, and is touted more accurate than traditional encyclopedias since Wikipedia is constantly updated. Many companies ensure that they have a Wikipedia entry as it has become a primary source of information on The Web.
- **Blogs-** or web logs- give users the space to write and share their ideas, opinions and thoughts for other users to read and comment on. Popular platforms include Blogger, Wordpress, Typepad, and more recently Tumblr and Posterous. Many companies have corporate blogs where they talk about new projects they are working on or even just sharing their thoughts about topics they find relevant to their target audience.

- **Podcasts-** are user-generated video or radio shows which people can subscribe to and download to their iPods to listen to. Some podcasts are free, whilst others- usually those which provide valuable information- are paid subscriptions. Some companies use Podcasts to talk about their industry and the changes that are happening as a way of projecting thought-leadership.
- **Video-sharing-** sites like YouTube allow users to upload videos they have created and share them with friends. Users can create a channel- like those we are accustomed to our televisions- for their videos and let people comment, favorite and rate videos, as well as add them to their playlists, post video responses and subscribe to their channel. Business use YouTube to spread viral videos as a marketing tactic, as well as post interviews, tutorials and other content that their target audience would be interested in watching.
- **Social bookmarks-** when browsing the web, users are likely to come across sites they find interesting, and would probably bookmark it in their browser. Social bookmarks extend this concept by allowing users to discover and share their favorite sites with other users on a common platform. Users can subscribe to another user's bookmarks to receive the latest favored sites from that user. Popular social bookmarking services include Deli.cio.us and StumbleUpon.
- **Social Networks-** these allow users to connect with each other and share information, stay in touch and expand their social circles. There are different social network platforms available, such as LinkedIn and Ning for professionals, and Facebook and MySpace for staying in touch with friends.

- **Micro-blogging-** the most popular service is Twitter, which allows users to post messages of 140 characters- known as 'tweets'- on the web for others to read. Users can search for other users in their locale or with similar interests and subscribe to their tweets, also known as 'following', and vice versa. Micro-blogging is essentially a cross between blog and social networking, and will be discussed in more detail in subsequent sections.
- **Virtual Worlds-** such as Second Life is a 3-dimensional online world where users can literally create a second life; with its own currency, users can shop, play, interact with other users, buy land and build, and so on. Companies like Intel have held virtual press conferences on Second Life, where journalists and other media people from around the world logged in to attend.
- **Location-sharing-** the sharp growth of the smart phone market is an indication that people are increasingly accessing the web on the go. Location-sharing services like Foursquare and Gowalla allow users to publicly share their current location; other users can see this and recommend places to visit in that area, or meet up with a friend in a nearby location. Business can use such services to monitor most popular areas, as well as users' retail preferences and other behaviors.
- **Augmented Reality-** is a very recent addition to the social media mix that uses a combination of real-world surroundings with online UGC to provide users with a new way to interact and more contextual way of presenting information. Coupled with location-sharing and a camera-enabled smart phone, an augmented reality application can show, for example, ratings, reviews and other information of restaurants and shops around the user.

Naturally, some social media platforms have had a faster adoption rate than others. I will now look at the popularity of these media.

2.2.2 Popular Social Media Platforms

Looking at Alexa's website rankings, we can see that social media platforms make up for nearly half of the world's top 20 browsing ranks. The most popular Social Media platforms globally are blogs (Blogger, Wordpress), social networks (Facebook, MySpace), video sharing (YouTube), and wikis (Wikipedia). The micro-blogging platform, Twitter, is not in the global top 20 sites, but this could be attributed to the increase in use of Twitter clients to access the service rather than going through the site itself to tweet.

For businesses, a study conducted by PR firm Burson-Marsteller showed that "54 percent of the Fortune 100 has a Twitter presence, 32 percent have a blog, and 29 percent have an active Facebook Page" (Ostrow, 2009). The study also revealed that 76 percent of these companies prefer to use Twitter, making it the most popular social media platform.

Globally, Twitter saw more than 1.2 billion tweets in January 2010. According to Royal Pingdom (2010), Twitter has grown by 17% in the last month alone and is expected to doing so (Figure 1). The majority of tweets come from the United States (Pingdom 2009).

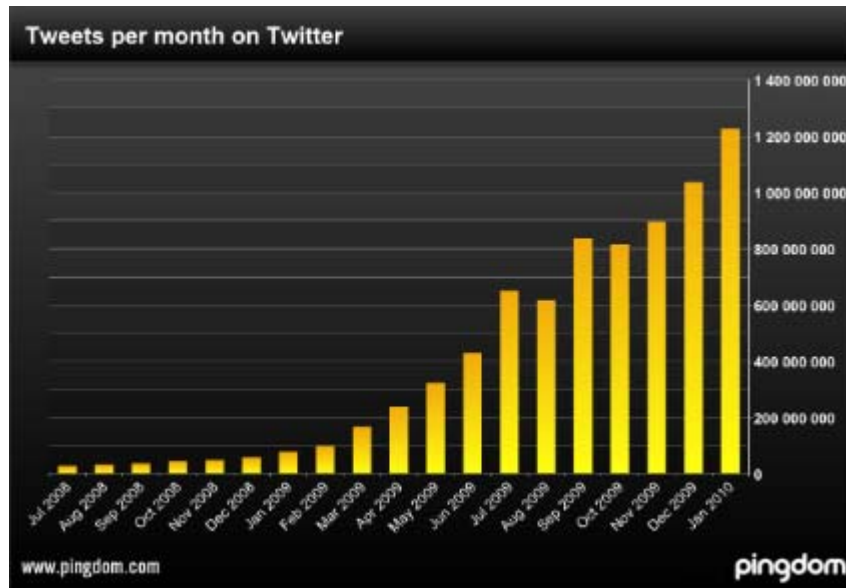


Figure (1) Tweets per month on twitter (Pingdom 2009)

On a regional level, the Twitter community in Middle East and North Africa (MENA) grew by 300% in the first half of 2009 (Spot On PR 2009). Moreover, the two other popular social networking platforms amongst Twitter users are Facebook and LinkedIn (Figure 2) and it is expected that nearly 50% will use Twitter more than Facebook in the future (Figure 3) (Spot On PR 2009).

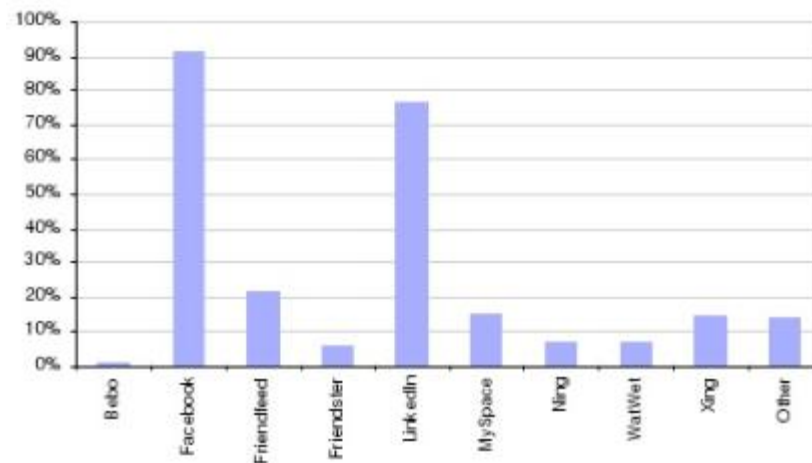


Figure (2) other social networks twitter users use (Spot On PR, 2009)

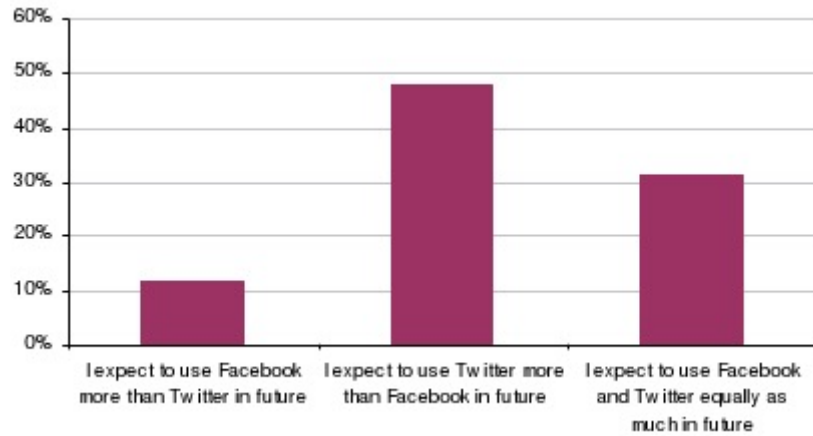


Figure (3) Twitter vs. Facebook usage (Spot On PR, 2009)

Since this dissertation's social media application relies heavily on Twitter, I will now discuss this popular social media platform to give a better understanding about it and its rising popularity.

2.2.3 Social Media Focus: Twitter

Twitter is a free social networking and micro blogging tool on the Web (Dunlap and Lowenthal 2009 citing Stevens 2008). The idea behind Twitter is for friends, family, and co-workers to communicate with each other by responding to the question of: What is happening? (Twitter 2009) However, in reality, the people who participate in the Twitter community - people all over the world (Dunlap and Lowenthal 2009 citing Java et al., 2007) - use it for to share ideas, link to interesting stories, start discussions, and more, with no more than 140 characters:

In a recent study, researchers found that the main communication intentions of people participating in Twitter could be categorized as daily chatter, conversations, sharing resources/URLs, and reporting news (Java et al., 2007).

(Dunlap and Lowenthal 2009)

How Twitter Works

Twitter users can send their Twitter messages, or ‘tweets’, through the Twitter website, desktop application, mobile phone, email or even instant messaging; this makes Twitter not only a convenient way to share and communicate, but also a way to create a “community-controlled micro sharing environment” (Brapeau 2009 cited by Dunlap and Lowenthal 2009).

Benefits of Twitter

Twitter users can be followed by other users and choose to follow those they might find interesting. Twitter can be effectively used for professional and social networking (Brapeau, 2009; Thompson, 2007) because it can connect people with like interests (Lucky, 2009). And all of this communication happens in real-time, so the exchange of information is immediate (Parry, 2008a; Young, 2008).

(Dunlap and Lowenthal 2009)

Current and Future Trends

According to Pingdom Research (2009), Twitter has seen almost 17% growth every month for the past three months. It is estimated that should this trend continue, Twitter will see 1.4 billion tweets next month.

One can now see the importance of Twitter and other social media platforms to businesses in marketing to promote their unique selling points (USPs) and reaching out to customers. But how can it be applied successfully? I answer this question in the next section.

2.2.4 Social Media for Business

Social Media provides insights into what consumers are talking about, what their preferences are, and what they are saying about your business. This can prove to be valuable information for businesses as they can use it to improve product offerings and customer service, address customer concerns and complaints, identify new trends and wants, and keep track of what competitors are doing. The

beauty of Social Media is that it gives companies the opportunity to interact directly with consumers in real-time at minimal cost.

2009 saw exponential growth of social networks' user-base. Factoring that with the dawn of the economic crisis, it makes sense that a lot of companies have started looking towards Social Media as a more cost-effective way to not only market their products and service, but also improve their brand image and customer loyalty (note: find percentages for Facebook and Twitter).

Marketing through social media should not attempt to sell anything; but rather make use of the social interactions between users to get the word out about products and have people recommend them should they find the product/service useful or relevant, as Social Media channels are not designed for the more traditional ways of marketing (Clemons, 2009).

Moreover, Kaplan and Haenlein (2010, citing Goffman 1959) find that the concept of self-presentation states that in any type of social interaction people have the desire to control the impressions other people form of them". Applying this to the context of Social Media, Kaplan and Haenlein (2010) add a second tier-social presence or media richness- to the concept self-presentation, resulting in a classification of social media in Table 1:

Table 1. Classification of Social Media by social presence/media richness and self-presentation/self-disclosure

		Social presence/ Media richness		
		Low	Medium	High
Self-presentation/ Self-disclosure	High	Blogs	Social networking sites (e.g., Facebook)	Virtual social worlds (e.g., Second Life)
	Low	Collaborative projects (e.g., Wikipedia)	Content communities (e.g., YouTube)	Virtual game worlds (e.g., World of Warcraft)

Figure (4) Classification of Social Media by Social presence/media richness and self presentation (Kaplan and Haenlein, 2010)

To illustrate how social media can work for a business, I will discuss a few examples of practical applications of social media in the form of case studies.

2.2.5 Social Media Case Studies

One company which has been successful at using social media to improve their brand image is Du, the UAE's second telecom operator. People generally viewed Du as a cheap provider that has poor coverage in the UAE. To turn this perception around, Du turned to Twitter. Most of the UAE's core Twitter user-base worked in the media industry- journalists, advertisers, PR people, bloggers- and so they are naturally outspoken about their opinions, and hence influential. Amongst those was some of Du's marketing team, each of which had gained a decent following. This helped launch @dutweets- Du's official Twitter account- as people already felt connected to the employees and so was able to trust Du on Twitter. Du then launched the iPhone 3G S exclusively to those on Twitter in the UAE first, giving them the chance to order online before stocks ran out. This garnered them a lot of positive praise online and as a result, many people were willing to switch to Du from their previous provider and ordered the iPhone 3G S the night of the Twitter launch. Since then, Du's Twitter account has evolved from simple product announcements to a full-fledged customer service centre; people could just send a direct message or a public reply with their question to @dutweets, and they would get an almost immediate response. This has caused people's perception of Du to change- it was no longer viewed as 'cheap' but more as 'value for money', and people were willing to switch to Du despite the poor coverage (which was slowly improving) simply because their complaints and suggestions were being heard and genuinely taken into consideration. Twitterers became brand advocates and talk about how great Du is to their friends, on their blogs and on Twitter.

In the airport industry, McAllister (2010) discusses San Diego International Airport's social media initiative that began in 2008; they were one of the first

major airports in the United States to start a blog to keep both employees and external visitors informed about the airport. The blog “gets a healthy number of visitors; approaching 18,000 since it went live” and has won an excellence award as well (McAllister 2010). Since then, the Airport has added other tools to their social media mix, including a YouTube channel and a Facebook fan page, as well as a Twitter account that has around 750 followers and is more popular than the fan page (McAllister 2010). The airport deputy director of public and community relations, Steven Shultz says that they “have found Twitter extremely useful for fast-moving events...With Twitter, we simply put up a quick post suggesting drivers to take an alternate route to the airport; it is a very effective customer service tool” (McAllister 2010).

Akron-Canton Airport is also taking advantage of popular social media platforms like YouTube, Facebook and Twitter, to “keep customers informed while also monitoring public interest in the airport” (McAllister 2009). This airport also entered social media via blogging, then expanded their social media reach through YouTube and Flickr by posting videos and photos related to the airport regularly; followed by a Facebook page- which they use to inform fans about the airport and a way to find out people’s travel routes and future travel plans, as well as providing incentives like sending free T-shirts or giving away free parking- that has 1,300 members (McAllister 2009). The Airport’s most recent social media undertaking is Twitter; Kristi VanAuken, the senior vice-president and chief marketing and communications officer of Akron-Canton Airport, says that they use it mainly to “promote our airline partners by sending Tweets out when there are fare sales...What we really use it for is monitoring” (McAllister 2009).

On the global front, Singapore's Changi Airport is another notable example of how social media is being used to improve their business. Using the combination of a Facebook page and Twitter, they are interacting with their fans and followers

to try and find out what their travel preferences are, their feedback on the services at Changi Airport and what they would like to see in the future.

Dell used a different approach than Du and Changi Airport; Dell set up many Twitter account and started tweeting about special deals and discounts. At a time where people were looking to make purchases that are value for money, this was the perfect time and place for Dell to market such offerings. As a result, Dell had successfully sold almost \$3 million worth of computers solely on Twitter.

The above examples are just few of many of how Social Media can be used to a business's advantage. This makes Social Media an important part of any future business plans, and even more so for airports.

While many airports have been using Social Media and specifically twitter to provide information or content to the public, in this dissertation we take this Social Media Utilization to the next level. While the basic use of Social media for presence or sharing content will be utilized, the contribution we add here is integrating Social Media platforms with airport systems represented by “FIDS” Flight Information Display System. This integration provides an automated way of retrieving flight info, and is an on demand service for the passengers which they can use at any point of time. The interactivity in the solution this dissertation offers is a key advantage over the previous attempts of utilizing Social Media for airports, or businesses in general.

2.2.6 Measuring Social Media ROI

Most companies are getting on board on the “online community” trend (Conner 2010). However, quantifying the value of such a trend is bound to be difficult:

What exactly is an online community worth? And how do you measure its effectiveness or know for certain that you are getting a return on your investment when you allocate resources for this purpose?

(Connor 2010)

Because the mainstream use of Social Media by businesses is a very recent trend- not older than 6 years old- the question of whether or not Social Media has a Return on Investment (ROI) has been an ongoing debate; with some believing there is no ROI for social media, some feel they cannot measure social media's ROI and others saying that the returns are in other forms, such as influence and engagement (Fisher 2009, Connor 2010).

Community expert Dawn Foster of Fast Wonder Consulting is cited by Conner (2010), saying that the value lies in the interactions and connections being made through social networks. "Think about the brand loyalty for the people who engage regularly in your online community," she advises. "Maybe you cannot put a dollar amount on brand loyalty, but it is worth its weight in gold." Foster believes that these interactions can help companies improve their products and services as they gain insight into what people think of them.

Connor (2010) discusses social media effectiveness with Scott Dodds, client services engagement manager at Lithium Technologies, as he sees that a true measurement of success is twofold. Dodds believes that it is essential to measure progress toward business goals as much as it is to measure community health and interactions (Connor 2010). Dodds elaborates:

"Inability to track the former means the community could be thriving, but the business pulls out because it cannot see the value. Inability to track the latter will lead to an unhealthy community that fails to retain the most productive

super users or [that] simply never gains enough traction with members to reach critical mass.”

(Connor, 2010)

Frank of Gartner Research points out that a marketer can choose to measure the effectiveness of their social media campaigns in a general manner or take a more focused approach (Hosford 2008). A general metric, for example, would be a combination of automated text analytics and human analysis to interpret customer behavior (Hosford 2008). More finely tuned measurements of social attitudes might include keyword analysis and trackbacks to online comments to see how customers view the campaign (Hosford 2008).

Because Social Media is different in nature than traditional marketing channels- be it online or offline- qualitative measurements are more relevant and effective metrics, rather than quantitative metrics like (Cost-per-Click) CPC and (Cost per thousand impressions) CPM. This is because a customer is worth more than just their initial spend on your product or service; future purchases and brand loyalty, as well as their social media presence also need to be taken into consideration (Fisher 2009, PR News 2009).

The Interactive Advertising Bureau (IAB, 2008) specified standard definitions for Social Media Metrics, broken down into three categories- Social Media Sites (such as Facebook and Twitter), blogs, and widgets and social media application, which Fisher (2009) summarizes:

- **Social media sites :** Unique Visitors, Cost per unique visitor, Page views, Visits, Return Visits, Interaction rate, Time spent, Video installs, Relevant actions taken.
- **Blogs:** Conversation size (number of sites, links and reach of a conversation whose content includes conversation phrases relevant

to the client), Site relevance (Conversation density, Author credibility, Content freshness and relevance).

· **Widgets and Social Media Applications:** Installs (number of applications), Active Users, Audience Profile, Unique User Reach, Growth, Influence, Installs (number installed per user).

(Fisher 2009:191)

For social media sites, relevant actions for Facebook could be, for example the number of application installations; on Twitter this could be the number of times a message got retweeted and by whom (i.e. to estimate the number of possible people who saw the message).

Looking at the IAB metrics, one can see that they were designed for marketers who still rely heavily on traditional marketing metrics in order to help them in the adoption of Social Media.

Another way to quantitatively measure ROI is through tracking the link referrals. So if, for example, you post a special product offer on Twitter with a link to your site, you can track how many clicks the link received, and how many ended up making a purchase from your site as a result of that tweet. This is easier said than done; this method, whilst possible, requires a lot of time and dedication to gather the information and analyze it. Having said that, I would assume that is what Dell did to find out how much they made in Twitter sales, with much success.

Qualitative metrics may be easier to put in place for social media, but harder to correlate the results of those metrics with sales figures, yet give a better idea of consumer perception of the brand in real-time. For example, one can monitor things like the tone of comments or messages sent, what they said and what they meant,

the author of the comments and the type of influence he/she has in their network or amongst their peers.

Shel Israel is cited by Fisher, suggesting other measurements like:

- Activity (web analytics of blog or site)
- Tone (sentiment)
- Velocity (spread over time, URLs, trackbacks)
- Attention (duration on site)
- Participation (comments, trackbacks)
- Many qualitative attributes (comments, what did they say, what did they mean)

(Fisher 2009:193)

From a PR standpoint, measuring social media effectiveness would require a new measurement standard that crosses between things like “article counts, share of voice and message pull-through” (PR News 2009), and traditional marketing metrics like customer satisfaction; traditional online marketing web traffic and search trends; and new social metrics like influence, sentiment and engagement (PR News 2009).

Social media ROI measurement is still in its infancy if compared to traditional marketing metrics, which have been developed and used for decades. Traditional marketing ROI methods include detailed market research to measure how consumers perceive a product or brand and how this impacts their choice in purchase; historical analyses to identify patterns and develop statistical models in what has worked in the past; and in-market experiments to test out different scenarios for a new idea or investment and see whether it would be worthwhile (Strategic Direction 2007). Whilst these techniques may not provide the type of ‘why’ insight social media could provide, the combination of these techniques give

traditional marketers an advantage into ‘what’ does work, enabling them to directly attribute marketing investments to customer perceptions and identify trends in consumer behavior (Strategic Direction 2007).

However, new tools to measure social media are increasingly becoming available, like Google Analytics can help in measuring the number of hits a site receives, as well as analyzing visitor information and site referrals. Software like Alterian SM2 and Attentio are two of many solutions available to monitor social media activity and measure brand presence, perception, opinions and sentiment. This will complement traditional marketing measurements by answering the ‘why’ part of what makes a marketing campaign successful and effective.

Now that I have covered the metrics involved in measuring social media, I will now discuss how these metrics can determine the extent of success- the effectiveness- of social media efforts in the form of real-life examples of what could be considered successful social media campaigns.

2.2.7 Social Media effectiveness

Fisher (2009) cites Owyang (2006) on how to measure the effectiveness of a social media program: “if you have not got a goal, then you cannot measure against it”. Owyang (2006, cited by Fisher 2009) suggests that prior to working on a social media strategy to, a business needs to decide on what they want to achieve with it. Fisher (2009) adds that “benchmarks” would need to be put in place to determine the extent of the success of a social media program.

According to Connor (2010), Bayer has experienced success with “its online community and its blood glucose monitoring tool for young people living with diabetes in the U.K.”

Capitalizing on the popularity of the Nintendo DS, the company provides a tool that connects to the device and rewards the user for building consistent blood glucose testing habits and meeting glucose targets.

(Connor 2010)

One example of an effective social media strategy is that of Tonium- a Swiss company that “developed a portable DJ system, created an online music community to attract DJs and music lovers through new music mixes shared by members” (Connor 2010). Tonium’s community created a channel for low-cost viral marketing, music track shopping, customer service and support, as well as communication with current and prospective customers (Connor 2010). Tonium’s online community attracted more than 40,000 members globally, and over 4,000 uploaded music mixes- all within a year since it began (Connor 2010).

In terms of effectiveness relating to sales revenues, Dell announced that it could correlate \$3 million in sales to its activities solely on Twitter (Connor 2010). However, as Connor (2010) points out, whilst these are individual cases, it is possible to achieve success online through social media.

While many metrics and ways to measure the Social Media success or effectiveness were identified in previous work, I see that a combination of some of the metrics in relation to the Social Media Task/campaign/activity is the best way to for measuring Social Media ROI. If we try to measure the effectiveness or the success criteria of the Social Media Implementation for the dissertation, the twitter flight information service, we would come up with the following measures:

- Number of the Twitter account followers
- Number of flight information requests made over a period of time (service usage).

- Percentage of Positive vs. Negative mentions of our twitter account online
- Statistics on the referrals to our websites from twitter. (Tagged URL's could be used when posting links on twitter so they can be tracked and measured).
- Number of advertising campaigns carried out from the service, which is already tagged with a dollar value.
- Number of retweets the twitter account gets from users.

Now I will discuss how social media can tie into e-commerce offerings by businesses.

2.2.8 Social Media and E-Commerce

Badawy (2009) cites the Cambridge dictionaries defining e-commerce as “the business of buying and selling goods and service on the Internet”. The number of consumers shopping online has grown significantly, due to social networking sites and Smartphone adoption (Dealerscop e2010). Because of this accelerated growth, businesses face several challenges, namely facilitating consumer engagement, keeping up with consumer behavior trends and growing sales revenues (Dealerscope 2010).

Whilst there is no standard form of measuring Social Media ROI, that has not stopped businesses for using social media to try and drive online sales, like Dell. Their strategy was "offering a mix of Twitter-exclusive offers, Dell Outlet deals and Outlet-specific updates and information” (Abell 2009).

When it comes to the airport industry, e-commerce aspects naturally tie into the tourism, hospitality, and leisure industries as well. As mentioned earlier, users now search for all kinds of information online, and buy things from the comfort of their own homes. This includes searching for and booking accommodation, airline tickets, holiday packages, car rentals and so on.

For airports that operate mostly as flight connections, the above is especially important since what users decide on in terms of destinations and flight routes has a direct impact on their operations and revenue generation. This has resulted in many airports around the world, like Sydney and London Heathrow airports, to provide value-added services so that travelers can choose their routes to fly to their cities as final destinations or at least via their airports as connections. Online services to travelers include airport parking booking, duty free pre-ordering, obtaining internet access, arranging for visas or quick tours around the city while in transit, renting a car from the airport directly, or even booking a night's stay at the airport's hotel before continuing on with their trip.

Singapore's Changi Airport, took it one step further: by setting up a Facebook Fan Page, a YouTube channel, a Flickr account and a Twitter account, they are using social media to communicate with people who have passed through their airport as well as potential travelers. According to Ihlwan (2009), four of the world's top five airports are in Asia- one of which is Singapore's Changi Airport. Whilst there is no direct proof that social media had some impact on the perception of their services, but with over 7,200 Facebook fans and over 25,000 total YouTube video views, there must be some correlation between the two.

2.2.9 Social Media Risks and Trends

There are obvious risks involved when introducing a social media campaign, since a company does not have complete control how viewers talk about its brand or product (Hosford, 2008).

"And once you start down this road, even if you do not publish the feedback you get, the audience can share everything on YouTube and elsewhere," said Andrew Frank, who covers marketing technology as VP research at Gartner Research.

(Hosford, 2008)

One new trend that businesses need to watch out for is Mobile Social Media (Kaplan and Haelein 2010). Since the iPhone emerged in 2007, the entire mobile phone industry has been transformed. A survey conducted by Net Applications found that the iPhone makes up for nearly 70% of all mobile browsing (Chartier 2009).

“According to Jupiter Research, the market for Mobile Web 2.0 evolutions will grow from a mere \$5.5 billion today to an impressive \$22.4 billion by 2013. Mobile Social Media applications are expected to be the main driver of this evolution, soon accounting for over 50% of the market”

(Kaplan and Haenlein 2010)

In the next chapters of this dissertation, a contribution of finding new ways of utilizing the Mobile web for sharing information and for mobile services is discussed. The Twitter flight information service implementation, also builds up on the strength of twitter being available on major mobile platforms, hence a higher reach for mobile users.

Chapter 3

3 Utilizing the Web for revenue generation in Airports

In this chapter I discuss how to utilize the web to generate revenue in airports. The case study of this dissertation is Abu Dhabi Airports Company. In section 3.1 I start with analyzing the current status of the web utilization in the organization, then move to discussing the many factors affecting the organization's web presence in section 3.2. After that, in section 3.3 I proceed to discussing the many forms of web activities and what forms suits Airports in general and ADAC in particular. After analyzing these activities and how they can be utilized for the airports benefits, I discuss in details the web activities that have a revenue potential and suggest methods and strategies for monetizing it in section 3.4. A set of recommendations as an outcome of the analysis is provided in section 3.5.

3.1 Analysis of dissertation organization – ADAC

Before we proceed to analyzing and recommending web activities and strategies for ADAC, we have to look at the current situation of ADAC's Web presence. This will help us identify where we are at the moment, as well as understanding the current state of utilizing web technologies in ADAC. Having a good understanding of the current state will help us recommend and find more applicable and relevant technologies and strategies for ADAC.

About ADAC

The focus of this case study will be on ADAC- Abu Dhabi Airports Company. ADAC is a public joint-stock company incorporated by Emir Decree number 5, of March 4, 2006, to forefront the development of the aviation industry in Abu Dhabi. ADAC's has a mandate of operating and maintaining Abu Dhabi's airports infrastructure and facilities to a world-class standards. It also oversees airport services rendered by private firms and other stakeholders in its Airports. ADAC also offers the required international standards management and technical

services to Abu Dhabi Airports, in addition to establishing airport free zones and running them.

ADAC currently runs a portfolio of six airports, namely Abu Dhabi International Airport, Al Ain International Airport, Al Bateen Executive Jet, Sir Bani Yas Island, Delma Airport and Western Region Airport.

ADAC also owns and operates a number of subsidiaries, namely:

- ADAS - Ground handling and Airport services Arm
- ADCC – Cargo Arm
- ADIFC – In-flight catering Arm
- ADDF - Duty free Shopping, retail and Food & beverage Arm.
- Sky City - Business and logistics Park Arm.
- GCAS – Gulf Centre for Aviation Studies the professional training Arm.

Currently ADAC is undergoing the development of a new Terminal called The Midfield Terminal Complex or Shiekh Zeyed Airport. The project is due to completion in 2015 and will raise the capacity of the airport to more than 40 million passengers per year.

In the next few pages, the current state of ADAC utilization of the web is evaluated from a Branding, Technical, Planning & Process and current portfolio aspects.

3.1.1 Branding

ADAC has recently rolled out a new branding exercise for the mother company and the Subsidiaries. Before that, the branding was centered on the blue logo for the Corporate Company, and a branding similar to the Tourism Development Authority for the Airport. The subsidiaries either had their own logos which differ from the ADAC and the ADIA logos, or they have no logo in place. This has resulted in an inconsistent online brand for the group. In many cases, the relationship between these online brands has not been built. In which resulted in a number of isolated websites that has no consistent brand or look and feel among them.

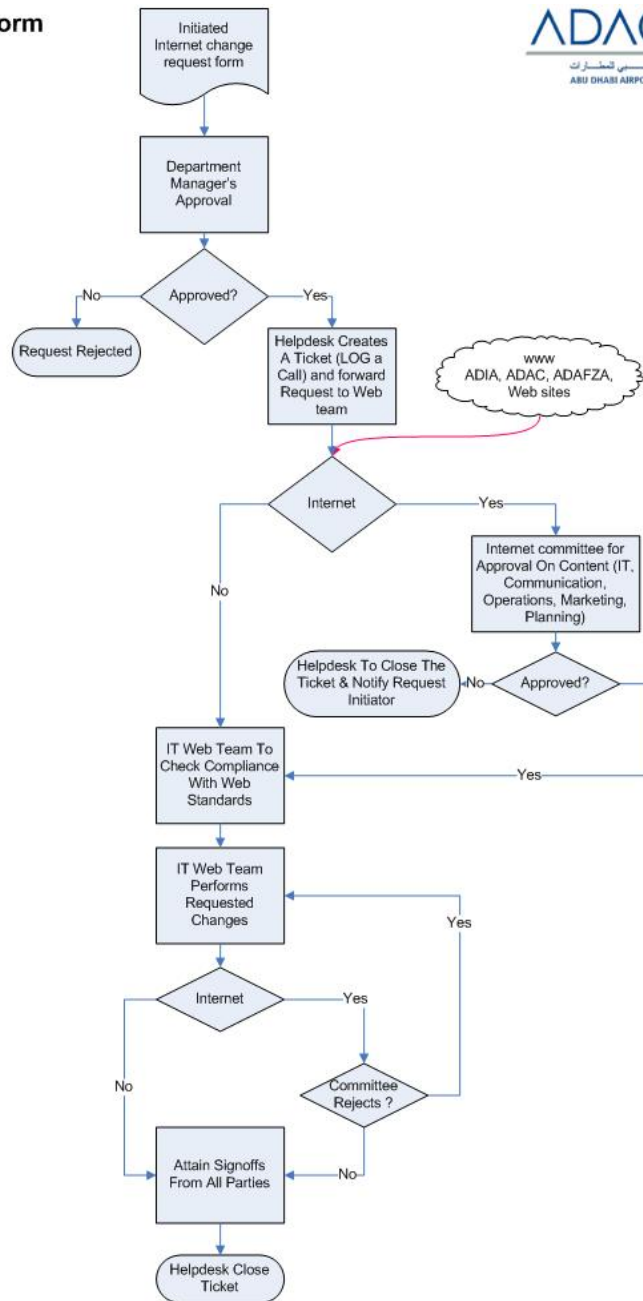
3.1.2 Technology

It is noticed that most of current ADAC websites were developed by different teams and often on an Ad-hoc basis. So there was never a single platform that catered for all of these websites. In addition, most of them are Static HTML pages that are manually updated by the programmers or by the Web Team in the case of the most recent websites. Some websites are managed by the Web Team, while others are still managed by the programmers in the subsidiaries. A management decision was taken recently to utilize SharePoint as a platform for developing the Intranet portal and other external websites.

3.1.3 Planning & Process

Despite the fact that there is a clear lack of a long term plan or strategy, the Web team in ADAC has developed a process to control any Web Change requests coming from the business units. An internet committee was also formed to sign off any change request before it was developed and published. This has helped in streamlining the process, and adding a level of control on the web presence. Below is a chart of the current web change request process.

Web Change Request Form



Web Change Request Process.vsd

Figure (5) Web Change request Process (ADAC, 2009)

3.1.4 Current Portfolio

below is a table of all the current websites for ADAC and its subsidiaries with relevant information about the URL, business owner, Developer, and Status.

Website	Business Owner	URL	Backend	Status	Comments
ADAC	ADAC	www.adac.ae www.adac.com	Static HTML	Redesign Initiated	- Static - No CMS - Poor Design
ADIA	ADAC	www.abudhabiairport.com	ASP Static pages	Redesign Initiated	-Simple -Little content -Not interactive
Duty Free	ADDF	www.addf.ae www.abudhabidutyfree.ae	Flash/ HTML -CGI	Live but Outdated	-Flash HTML hybrid
Golden Class	ADHC	www.goldenclassservice.ae	Static HTML	Live but outdated	Requires redesign
SCADIA	SCADIA	www.scadia.ae www.scadia.com	.Net Custom made CMS	Live	-Arabic version in progress
ADAS	ADAS	www.adas.ae www.abudhabiairports.vcs.com		Not working	
ADAFZ	Sky City	www.adafz.ae	Static HTML	Live	-Basic Design -A redesign is required
Al Ghazal Golf Club	ADHC	www.alghazalgolf.ae	Static HTML	Live but Outdated	-Needs redesign
Web FIDS	ADAC	http://wifi.abudhabiairport.ae	.Net - TBC	Live – In progress	-Need to identify the product and monetize

Table (1) Current ADAC web portfolio

3.2 Factors affecting ADAC's Web Presence

3.2.1 PESTEL Analysis (External)

A PESTEL Analysis of the Political, economical, Social, Technological, Environmental and legal factors affecting the ADAC web strategy was carried out.

A summary of the analysis is represented in the below figure.

POLITICAL	ECONOMIC	SOCIAL	TECHNOLOGICAL	Environmental	Legal
<ul style="list-style-type: none"> ● Stable political situation ● Risk of Regulatory Changes ● Minimal political Impact on web presence 	<ul style="list-style-type: none"> ● Aviation industry is slowing down ● World economy is facing recession ● Increasing cost of living ● Slowing growth globally ● Increasing online expenditure of individuals ● Increasing online advertising spend 	<ul style="list-style-type: none"> ● Internet becoming a lifestyle ● Increasing number of Internet users in UAE/Region/Globally ● Popularity of Social networking & Micro blogging ● Increased confidence in online shopping/ payments ● Increased demand of online products & services 	<ul style="list-style-type: none"> ● Fast changing Internet/Web technologies ● Availability of fast Internet connections ● Mobile Internet becoming popular ● Global trends of Web 2.0 and 3.0 concepts ● Search engines changing indexing techniques 	<ul style="list-style-type: none"> ● An environment friendly business - we are not cutting down trees ● Opportunity for Corporate Social Responsibility leading role using online experiences 	<ul style="list-style-type: none"> ● Intellectual property of innovations ● Increasing threat of privacy ● Content copy rights issues ● Domain name ownership issues

Figure (6) Summary of PESTEL Analysis for Abu Dhabi Airport

3.2.2 SWOT Analysis (Internal)

3.2.2.1 Strength

- A fast growing company and airport
- Resides in a well Internet/ Mobile connected region
- No major setup of web infrastructure is in place, so websites can build from Scratch.
- An Award winning Airport in some areas
- Existing solid reporting tool on some websites – Google Analytics

3.2.2.2 Weaknesses

- IT department was not centralized in ADAC until recently, each subsidiary used to have its own IT department. So different technologies, methods, layouts where used to create the existing websites.

- No Standard platform for the web Portfolio. Different Websites are developed using different technologies.
- Lack of a Content Management System. Most of the updates are done manually.
- Small Web Team – not enough resources
- Lack of a consistent brand on the websites.
- Poor and outdated design and finishing
- Minimal user interaction and poor user experience across the websites
- Weak and boring content
- Lack of a monetization strategy or any commercial aspect of the websites

3.2.2.3 Opportunities

- A green field to build a strong platform from scratch, as the current developed websites are either obsolete or not worth maintaining.
- A huge untapped potential for revenue generation, from Online Advertising and online services.
- Opportunity to be an industry leader in online initiatives, and building a worldwide reputation, in the lack of a regional or even international strong rival in the online arena.
- Opportunity to become the first airport in the world to utilize Social Media innovatively.
- Vast opportunities for rewarding innovation

3.2.2.4 Threats

- Global recession slowing down travel and aviation industries
- Losing the first to market edge to one of the competitors on some areas
- Interactive Agencies under delivers
- Development firm limitations – Under delivers.
- Delays/limitations in development
- Budget limitations

3.3 The Many forms of Web Activities – What suits ADAC?

It is very important to identify the many forms of web marketing that ADAC or any airport can utilize. Some of these forms are relevant at this particular time; others can be relevant in the near future. However, being aware of these forms is very important for any business in the short and long term planning. It is important to mention that there is no ultimate form of web activities that fits ADAC or any airport for that matter. A combination of these forms should be utilized and optimized to best suit an airports need. While keeping a close eye on the ROI and success measures provided through Web Analytics and other success measures that should be setup for every form.

The breakdown of the many forms of Web activities that I will be discussing in this research is based on the recent research of a former Forrester analyst and a well known web strategist (Jeremiah Owyang 2008). Each form will be introduced and analyzed of how it can be utilized for ADAC and in many cases for any other airports.

3.3.1 Corporate Domain

3.3.1.1 Corporate Site

This is typically the ADAC corporate website which will feature general information about the company and its subsidiaries, the products and services. The website will allow access to all the subsidiaries and airports websites. It is also likely to have brief information about each one of them. This will also include things like the Career Center, Media Center and other common information.

3.3.1.2 Portal Strategy

This strategy could be best applied to the Airports website(s), offering a huge amount of information for the passengers as well as businesses. The Airport portal should offer a number of services for its visitors and should be designed to be an interactive website that engages the user. The Airport website should cater for the different user personas visiting the site, namely: Travelers, businesses and

corporate/general users. The website should offer all sorts of e-services for the passengers such as flight enquiry, Parking pre-booking, Duty free shopping pre-orders, etc...

3.3.1.3 Micro sites

Micro sites are usually used to introduce a new product or service, or to launch a certain campaign which focuses on a specific message or promotion. It often targets a specific market segment. In many cases, Micro-sites are used for a short term period to gain attraction for a specific topic/campaign, where the micro site is pulled offline after the campaign is over. Micro-sites usually have their own unique URL's and are most of the time part of a bigger integrated campaign. This could be applied to a major expansion projects such as the New Airport Terminal or the launch of new products/services like the meet and assist service Golden Class.

3.3.1.4 Interactive Web Marketing

The web has become more engaging and interactive recently. It is not any more just static content or images for the users to read. The web differs from other mediums that a level of user interaction and customer engagement can be achieved using the company's website. This interaction is still limited to user to computer interaction as of today. There are a number of technologies available to use from like Java Script, flash based and AJAX tools.

3.3.1.5 Intranet

Proving to be an effective communication tool, the web is not only used to communicate with the customers. In fact, the web can prove to be an effective tool of internal communication inside an organization. An ADAC intranet portal can be developed for the different subsidiaries, which ideally should cater for employee self services as well as the regular communications and announcements.

3.3.1.6 Extranet

Extranets can be useful to communicate with external partners or customers. They are basically websites that a company can grant an external user a secure access to. Extranets has features like announcements and updates, product and services information and sometime customer support. This could be utilized for ADAC's interaction with the Airlines, to keep them updated with the Terms of Service and so. Extranets could also be utilized this for an e-procurement solution to manage the vendors and suppliers in a more automated intelligent way.

3.3.1.7 Regionalization/Localization – Multiple languages

Organizations that have a global presence tend to create websites with multiple languages, formats and sometime segments. This is a response to globalization. By default, ADAC websites should be Arabic/English. ADAC or airports generally should then look into what language would best give us a ROI when implemented. Looking at the Analytics reports on the origins of Abu Dhabi Airport website visitors could give an insight. For example if it is found that %20 of the airport website visitors are from Germany, and %2 from China, then ADAC might consider translating to German not Chinese. Statistics about countries that heavily drive traveler's traffic to the airports could also give an insight on what languages to translate to.

3.3.2 Search Marketing

3.3.2.1 Search Engine Optimization (SEO)

One of the great challenges is making websites and web materials or content manageable, well indexed, easily accessible and easily found, indexed, managed and suitably served in the search results. SEO for ADAC's websites is crucial to attract more traffic to the websites, hence more revenue. The more accessible, Search engine friendly the airports websites are, the higher the ROI ADAC might get. SEO services might be outsourced at a certain time if required. However the immediate focus should be on building Search engine friendly websites.

3.3.2.2 Search Engine Marketing (SEM)

Search Engine Marketing is basically purchasing some keywords to help driving contextual links in search results. These ads are shown with search results in context to the search query or keyword. For ADAC this could be utilized to generate leads for some professional services like Cargo. So anyone who searches "Cargo UAE" or "Cargo Abu Dhabi" would find a text ad that will direct him to ADAC's Cargo Website. The challenge here is not only bringing the leads to ADAC's websites, but also making sure to have a proper "Call to Action" in place and that ADAC captures this leads details; hence maximize the conversion rates and subsequently revenue.

3.3.3 Out Bound and Syndicated Web Marketing

This is further broken down into two types:

3.3.3.1 Email Marketing/eDirect Mailers

Email marketing is an effective way of reaching customers and Keeping them informed and updated on the airports latest Products, Services, events and offerings. To be able to do this, ADAC's websites should be built in a way that engages the user, and captures his information whenever possible. A Centralized corporate DB of customers, Partners, Websites visitors, and passengers can be such a great asset for ADAC if built and utilized properly. Benefits from this could be at its basic form sending direct Emails to passengers flying through the airport telling them about the Duty free offering, places and activities they can do at the airport. In other words it is guiding travelers through the travel experience, linking them back to the airports website(s), and encouraging them to spend more money at the airport(s). This could also be utilized to reach ADAC's partners and clients, updating them on the latest, news, events or new offerings.

3.3.3.2 Syndicated Content and RSS

RSS is becoming a widely spread method that users make use of to opt-in for extra content. This could be beneficial to ADAC in many ways. One way is that Airlines, News-Media Agencies, Industry Portals, partners and even passengers can subscribe to the News/Press releases to get the latest updates on the Company(s). Passengers can also subscribe to the latest rules and regulations of traveling through the airport, or subscribe to a list of duty free special offers list. Indirectly this will increase the number of visitors to ADAC's website(s) since the links are shared, being read and republished on other websites or news portals, hence, more traffic and possible revenue through the websites.

3.3.4 Brand Extension

Brand extension is not a new concept; it has been utilized in traditional media in the forms of Outdoor ads, Print ads and so on. The same concept is simply applied to web properties.

The approach is simple: Your brand should be where your market/audience is. ADAC exists on both sides of the desk of this tool. While ADAC could utilize brand extension to market its own and subsidiaries brand, it can also sell online brand extension on its websites for revenue. This will be discussed In Section 7 with other monetization strategies.

3.3.4.1 Web Advertising

This includes tiles, banners or skyscrapers advertising using (IAB), models. The click rates on these types are usually 1% or lower. The success here is measured by either click rates or sometime number of brand impressions. These ads are considered static as they don't change with the page content. This might be useful for ADAC when advertising on the homepage of a famous Portal for a major event or launch. A more advanced form of Web advertising is Contextual Advertising, explained in the next point.

3.3.4.2 Contextual Advertising

Targeted ads are normally served on certain page based on the content of that page. It is considered as a more intelligent and suitable than web advertising which is not always targeted for specific content. Contextual advertising can be static images, text, flash or media of many forms. Such ads can be found on websites, portals, blogs and email service sites.

3.3.4.3 Sponsorship and /Cross branding

This method can be used to promote the ADAC brand for the right audience, where both websites and entities exchange advertising spaces on their websites. At it is simplest form, this is exchanging logos and links between ADAC and can occur on content sites, industry portals, industry blogs, shows, podcasts, and other websites relevant to the ADAC business.

3.3.4.4 Social Advertisements

Social Advertisements has been used for some time now on Facebook and other social networks like Netlog. Contextual information from users who become fans of specific brands on Facebook for example is utilized to serve ads to the users as an endorsement.

3.3.4.5 Affiliate Marketing

In affiliate marketing programs, websites compensate partners and alliances that drive sales, leads or referrals. This type may have some overlap with other forms of web activities. The goal here is aim here is to deliver the right content/products to the right audience. Product review sites, shopping sites, comparison and loyalty sites are examples of this type.

3.3.5 Community Marketing and Social Media Marketing

3.3.5.1 Airport Rating Sites/Industry News Portals

A number of airport rating websites are available on the internet today. These can be analyst (expert reviews) or customer/user reviews. Some of the popular sites that have done this in the airport industry are Skytrax and FlightStats where they have user ratings and opinions. Both positive and negative content about the airports is expected. Such tool has emerged with some famous news rating sites like Digg.

3.3.5.2 Social Networking, Forums, Wikis, Collaboration

The reason those two features are coupled together is that they have started to develop into multiple modern versions. This is considered as one of the early tools that allowed people with similar ideas and interests to collaborate and communicate. Around 33% of companies have forums deployments. Wikis are generally used for the same purpose. New generation marketers started to appreciate and realize the potential of focused social networks such as flickr or LinkedIn.

Social networks can be a good place to build a community around airports. A Facebook fan page for example can be setup for Abu Dhabi Airport, where Images of the airport, Duty free special offers can be published. Passengers who decide to be fans of the airport can receive such information and interact with the airport or other passengers.

3.3.5.3 Blogging

It is estimated that around 30% of businesses considered blogs as one of their business communication forms. At this point, this does not seem to be applicable for ADAC and not in line with the corporate culture. However, this is worth considering in the near future, as it is not a priority for ADAC as other web marketing forms are.

3.3.5.4 Widget Marketing

Widgets are light and small weight web applications which can be embedded in web sites, forums, blogs and social sites. Examples of companies that use this type of widgets are twitter widgets, MyBlogLog and Flickr badges. For ADAC, creating a widget that shows the Flight information, Duty free special offers and weather forecast to relevant companies (e.g. Travel agencies, Hotels, Shows & Conferences) could be rewarding. This tool is subject to further study and investigation especially in areas of market need and target customers.

3.3.5.5 Online Video and Live Streaming

Despite being available on the web for many years now, Online Video has started to get attention from the video blog. Video sharing sites like Google videos and its acquisition of YouTube has also pushed this tool further.

ADAC should start thinking about shooting Videos for its Executives and thought leaders. In addition, Airport walkthroughs, Expansion program videos, event participation coverage can all be shared with the audience. These could be published on the corporate and the airports websites as well as on YouTube and other video sharing websites. The result would be more exposure to our brand, assets, executives, more traffic to ADAC websites, hence building more value to the brand, which eventually transforms into a dollar value.

3.3.5.6 Instant Messaging, Presence

Leading companies are finding new ways to utilize real time media using various presence, messaging and status tool. Think like live chat and twitter for example are being used by businesses for many purposes that range from announcements to customer service. These tools are most if the time web and mobile enabled. Many people are using instant messaging as their main communication tool these days.

3.3.5.7 Tagging

Tagging every single piece of content on ADAC websites is a mandatory step before publishing anything online. Whether it is a press release, an image, a video or a just a content page, tagging should be embedded in the process of publishing information. This will tremendously improve the SEO results. Researching the best practices of content tagging as well carrying out proper tagging will help the users find the content more easily.

3.3.5.8 Voting Features

This tool gained hype with the website digg., where the community voted up stories that are submitted by the members. Corporate extranets have made use of such tool like what Dell's IdeaStorm has done, where customers were allowed to vote for what they want as their future products and features. Now this holds a great potential for ADAC to do some cost effective market research and gain some market intelligence. It can answer questions on where to invest our money: What new facilities to release in the airport? What service to expand for passengers, Wi-Fi or TV screens? and so on.

3.3.5.9 Micro Media

Micro blogging tools enable users to publish small size information and share it with their social network either through web, mobile or desktop applications. , The launch of twitter in 2007 micro blogging started getting hype and becoming main stream. Other players are Pownce and Jaiku. This was a major form of communication for 2009 as expected, as it starts to gain hold and grow even more in 2010. A great opportunity awaits ADAC be the pioneers in utilizing such tool and monetizing them. Twitter so far looks the best candidate for such a strategy. Twitter integration will be discussed in details later in the monetizing and implementation section of this dissertation.

3.3.6 Online Games

Online Gaming networks like mini-clips and yahoo games have began to create mini-flash games. These games could be spread and embedded to multiple websites supported with sponsored or targeted advertising. Passengers spending time at the airports for connecting flights, transit, or even normal boarding waiting time can make use of these online games to kill time. As passengers are using the free Wi-Fi in the airports, ADAC can easily direct the users to available products and services. Online games can be one of these proposed links. While playing those games, ADAC can offer the passengers the opportunity to play against other passengers in the airport, while advertising the different shopping and dining offerings of the airport.

3.3.7 Mobile Content

Many people nowadays browse the internet through their mobile devices., whether it is full browsers, or swift loading browsers. Hence a proper strategy to deliver mobile content is vital. This can be used to provide users with the relevant information about the airport, as well sell them the airport offerings.

3.3.8 Vendor Relationship Management

Vendor relationship management systems build on the interest of buyers and sellers to do business. The system will notify the vendors to bid for the customer's requirements. The benefit is from corporate wide Business intelligence as well as possible revenue or at least cost recovery from Vendor/Supplier registration fees.

In Summary

Those are the major forms of Web Marketing & how each of them can be utilized for the airports benefit. It is important to highlight that all these forms might not all work for ADAC at this current point of time, the opportunity for real value is achieved when they are combined and used strategically.

3.4 Monetizing an Airport's Web Presence – How do we generate revenue?

One of the main contributions this dissertation is offering is methods for maximizing the revenue generation from an airports web presence, or in this case specifically ADAC's web portfolio. After identifying the many forms of web activities, in this section we discuss the various options to monetize the airports web portfolio. These could range from services on a website(s) to a standalone product or service. The below figure shows the four areas of potential revenue:

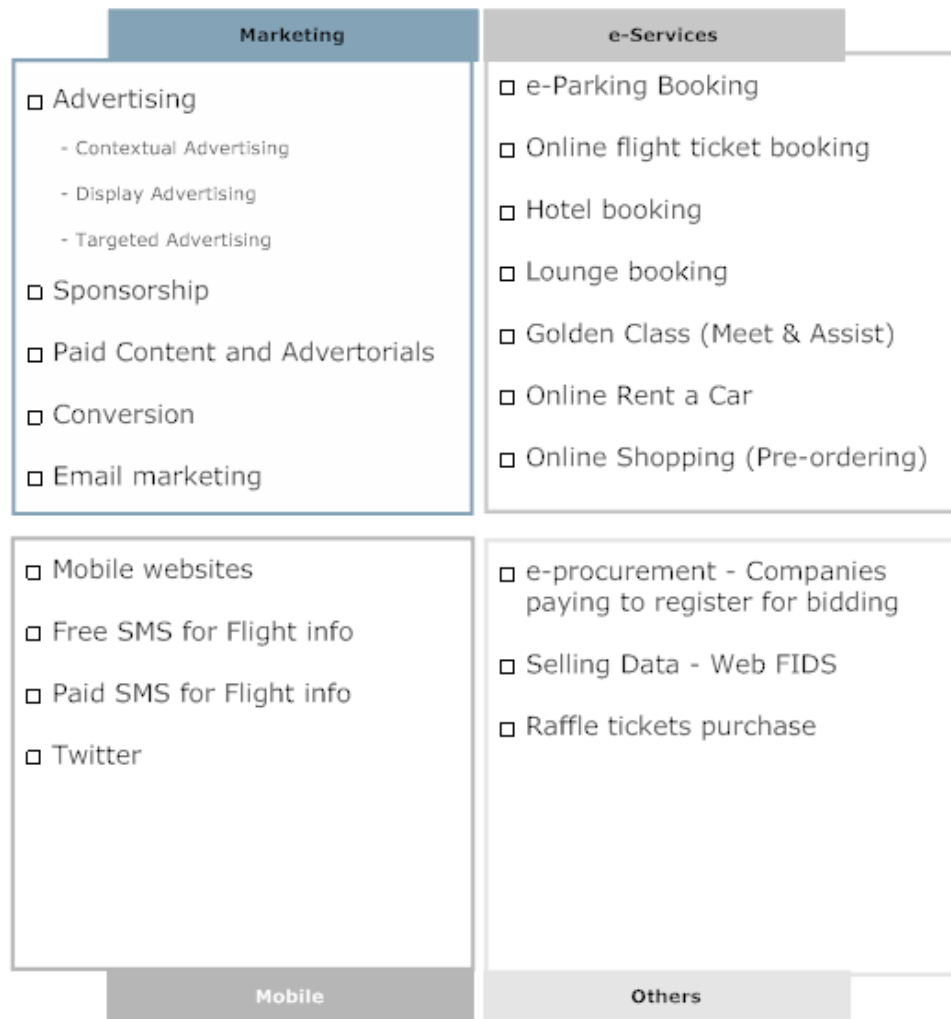


Figure (7) Areas of potential revenue for airports

3.4.1 Marketing

Marketing is simply bringing products and customers together. Airports websites attract a reasonable number of visitors. This is an opportunity for other business to target the airports website visitors, while paying the airport a dollar value for it.

3.4.1.1 Advertising

The most popular form of websites monetization is advertising. The goal is to get ads on the airport sites. There are many forms of advertising including:

- **Contextual Advertising:** It is the most popular form of web advertising. This is mainly caused by the wide success of Google AdSense with blogs and niche websites. However, Google AdSense could not be the ultimate solution. It is not recommended to limit a website to only one form of web advertising or only one ad network. AdSonar, Chitika, the Yahoo Publisher Network and other contextual options like Clicksor are available. Testing multiple ad networks is not an easy job especially when allocating ad tag and impressions randomly between these networks. Advertising network management tools such as RMX direct is a useful tool for the airport to manage, control and evaluate the multiple ad networks. A strategic decision has to be made on whether to work with third party ad networks or not, since this can affect the airports reputation and brand.
- **Display Advertising:** Contextual ad networks are not considered the optimum advertising solution. Sometimes there are not enough advertisers willing to advertise in a specific market niche, in some other cases users are not likely to click on the ads. The work around this is to work with CPM (cost per thousand impressions oriented ad networks that offer display advertising. This means that ADAC gets paid something for every ad viewed, opposed to only getting paid per click. Similar to the contextual ad networks, it is advisable to use more than one display advertising network to get a more diversity of ads and avoid being

controlled from one ad network, and to make sure the airport is generating the maximum revenue possible.

- **Targeted Advertising:** This type represents the most attractive type of advertisement, which is having advertisers interested in paying decent rates to advertise on the airport(s) website(s). A decent amount of revenue could be made using the targeted advertising even without huge amount of traffic the website.

In order to attract this type of advertising to the websites, a number of important steps need to be carried out:

- Create websites with well thought content, seamless and easy navigation and interactive designs.
- Produce a Media Kit, which is a section on the website that explains the types of advertising available on the website and the different options allowed. The kit can also include useful data about the user demographics, price structure, traffic, sample adverts and maybe testimonials of previous advertisers. It is very important that the media kit clearly show the potential advertiser how to approach the company to advertise on the website offering multiple communication channels, i.e. email, phone, forms, etc,...
- Create links like “Advertise with us” or “Advertise here” which are clearly visible to the visitors.
- Provide a partner or two or even internal stakeholders with free or low cost advertising spaces on the website to create a demand for the service, and also to make it visible for potential advertisers that advertising is available on the website. These could be close partners like Etihad Airlines or one of the subsidiaries ADAC owns like SkyPark the parking operator. Placing ads for an airline like Etihad for example would create interest among Etihad’s competitors to advertise on the website.

- Offer a solid platform for reporting analytics and statistics for the advertisers. It is understandable that the advertisers would want to measure their ROI or the effectiveness of advertising on the airport website. Ad serving tools like Double Click, RMX Direct, or the Middle East ad serving portal Brand Central can be utilized to offer this ability to the advertisers.

3.4.1.2 Paid Content and Advertorials

Such content can be found in newspapers or magazines which would appear as editorial content from the publication, while in reality it is paid content that is meant to guide the consumers into a specific product or service. However, this content is still of high value to the user. This can be sections on the Airports websites that promote a list of Rent a car companies, a number of hotels in Abu Dhabi, some Travel Agencies, Shopping Malls and other attractions that the passengers would be interested in to the level that these product/service providers are willing to pay an amount to reach them. Transparency is required; it has to be clear to the audience that these are paid advertorials.

3.4.1.3 Sponsorship

Some companies can choose to sponsor a certain section or a service on the airport website, where their logo and their offering can be displayed on that section. This is a unique form of advertising as the sponsors in many cases are integrated as part of the website experience. An example of a sponsored service for ADAC could be the SMS flight information service, which can be sponsored by one of the two telecom providers in UAE, Etisalat or du.

3.4.1.4 Conversion

Some website do not make direct revenues, however, they can guide potential leads into a certain website link or to a closer position to a sales point. Some businesses do pay a dollar value in return to receiving qualified business leads. Airport websites have the potential to create interest for certain products or services (internal or external) using contact us forms, service registrations and other lead qualification activities that leads to a business.. This could be implemented on the websites by allowing visitors to book tickets, hotels, rent cars, register for a tour from the airport(s) website. The airport then gets a dollar value for each lead or transaction taking place through the website. This will be touched again when explaining other monetizing techniques.

3.4.1.5 Email marketing

Email marketing is a vital form of web marketing, and could be one of the solid sources of revenue generation for airports or similar organizations which deals with huge customer base. The ability to send targeted ads to a vast audience that is interested in the advertised products or services is a huge advantage. Most of the passengers flying through the airports are either interested in shopping from the Duty free, or need a place to stay in, a car to drive, a travel agency to tour the country with, or a telecom provider to buy a mobile from. Selling the opportunity of targeting this audience to companies operating inside and outside the airport can generate a good amount of revenue. In order to avoid any legal liabilities or of being perceived as spam organization, email marketing should be optional for the customers. It should be designed as an opt-in experience where the users decide if they want to receive ads or are interested in certain products or services, as opposed to being an opt-out experience where users are already registered in the emailing list and are given the option to be removed from it. However, to be able to do this, the web portfolio has to be built with the below points in mind:

- A Centralized DB of User data among all websites should be built and maintained/updated regularly.

- More data about passengers should be collected from Airlines such as: Email, interests, Purpose of trip (Business, leisure, work, etc...)
- Websites should engage the user and capture his data whenever possible
- Contact us forms and lead generation/qualifications forms should be designed carefully to fulfill this need of meaningful data.

3.4.2 Online or e-Services

This technique is essential for ongoing revenue generation. Revenue is expected to grow as the websites offer value added services to the users.

3.4.2.1 E-Parking Pre-Booking

Once the new airport car parking's in Abu Dhabi airport are set and fully operational with the cutting edge technology used in building it, we should be able to integrate and enable online booking for the parking lots. Revenue generation from airport parking is estimated to be huge. Offering short and long term parking spaces, with a flexible system to book online will be a great source of revenue for the airport. Integration with Car parking systems will not be an easy job. However, a necessary step to tap this source of revenue.

3.4.2.2 Online flight ticket booking

Simply allowing ticket bookings from the airport websites while gaining a dollar value for each transaction. This can be done in multiple ways; one way is integrating with a third party booking engine like Amadeus or other engines.

3.4.2.3 Hotel booking

Similar to the flight ticket booking, hotel bookings can be done through the airport website(s). The airport gets a dollar value as revenue from each transaction that occurs on the website. This can also be done through the integration with one of the available hotel booking engines.

3.4.2.4 Lounge booking

Airports offer a number of lounges for the use of the airport passengers. Allowing the site visitors to book any of the airport lounges available and pay online is another form on revenue generation.

3.4.2.5 Golden Class (Meet & Assist)

Golden Class is a special meet and assist service offered by Abu Dhabi Hospitality Company a subsidiary of ADAC. Airports often have similar services where passengers will able to book this service and pay online. Some sort of a backend process needs to be deployed to ensure that the service is always provided as promised.

3.4.2.6 Online Rent a Car

This feature will allow the passengers to book and pay for rent a car services available in the airport. This could also be expanded to rent a car companies outside the airport for additional revenue. This can be built as a standalone engine, or using a third party engine integration. Again, the airport gets a dollar value for each transaction occurring on the website.

3.4.2.7 Online Shopping (Pre-ordering)

Shopping from the Duty free area in airports is a common practice for travelers. This service will allow passengers who visit the airport website to navigate through the products available on the Duty Free outlets, and perform their shopping experience online. The website visitors can navigate through the Special offers that are available, Exclusive releases showcased, or benefit from any online shopping discounts available. Users will have two options, either to pre-order their goods and collect it when they arrive at the airport, or alternatively printout a shop list of the items they are interested in and buy it once they arrive at the airport.

Airports can always use a mix of multiple forms of web marketing previously mentioned to increase the number of shoppers and boost the sales. This can be achieved through banner advertisements, direct mailers or SMS targeted to the

passengers flying through the airport.

3.4.3 Mobile Revenue

Mobile marketing and mobile services are very close to gaining momentum at this period of time. Many people now use their mobiles as their main tool of communication, and an ever increasing number are using their mobiles to access the internet. Mobile sites are becoming more familiar and prove to be very useful on the go. It is worth mentioning that many of those who use their mobiles to access the internet are Business oriented – high income individuals.

Mobile Applications for the airport such as an iPhone application could be developed to provide information for the passenger and offer various services such as parking pre-booking and Duty free shopping/Pre-orders, car rentals and other service. Advertising on these applications could be another type of revenue.

3.4.3.1 Mobile websites

Websites compatible with mobile devices are very important to communicate the essential information about the airport. This could range from direction to & from the airport, to Passenger guides inside the airport and rules and regulations of luggage. Not to mention the Flight information. There is a potential here for Advertorials or links to promote the paid airport services.

3.4.3.2 Free/Paid SMS for Flight info

ADAC could tie with one of the Telecom providers in the country to offer SMS flight information on demand. Users will be asked to send SMS to a dedicated number with the flight number to get the latest updates of the flight. The SMS can cost more than the normal SMS rate. ADAC could have different options of the service; one is limited to one SMS with the latest update of the flight. The second could be some sort of a reminder on every stage like, opening gates, closing gates, last call for boarding, etc...

ADAC can always send advertising SMS to the passengers who registered to this service through the site for the free form of it. The free SMS can differ in a way

that no advertising SMS will be sent to the user who has used the paid SMS service. Reminders of gate opening/closing can be also sent to the passenger. We can also increase the Duty free sales by utilizing SMS to notify passengers with the special offers, or offer them a %5 discount if they display the SMS to the cashier. Alternatively they could win something like fast track services if they spend 500 AED or so.

3.4.3.3 Twitter

Twitter is a micro blogging service that was launched in spring 2007, and becoming very famous nowadays. Twitter users share 140 characters status updates on what they are doing, or just share links and conversations. Many businesses exist nowadays on twitter as it offers them direct contact with the audience, and connects them with the brand influencers. The Web and mobile nature of twitter makes it a huge asset if utilized properly. Today flight information through twitter exists through flightrack portal, but no Airport has innovatively used twitter to its maximum potential. As a contribution of this dissertation, I propose and implement an innovative way to use the Twitter service to provide flight information enquiry service to the passengers. I also propose a business model to monetize the service through selling targeted advertising. In Chapter 5 the implementation of the Twitter Flight information enquiry service is thoroughly discussed.

3.4.4 Other sources

3.4.4.1 E-procurement – Companies paying to register

An e-Procurement can be setup for ADAC and its subsidiaries in order to standardize and enhance the procurements process. An e-Procurement system can prove to be beneficial to ADAC in many ways:

- Build a comprehensive DB of Vendors and suppliers for the different business requirements in every sector.
- Share contact information and feedback/rating about these companies and their level of service. A business unit that has worked with a certain vendor can rate and give/share feedback about their experience with the

vendor. This can help other business units gain business intelligence and make a better decision on what vendors to deal with.

- Potential for revenue generation: ADAC can restrict giving business to only companies who register on the system, and that should cover the cost as well as generate revenue for ADAC.
- This requires a lot of cooperation efforts between the business units, and a major prerequisite is clear and standard procurement processes

3.4.4.2 Selling Data – Web FIDS (Flight Information Display System)

Flight information is one huge asset that airports own. Selling the live data of the flight information system can be promising source of revenue for ADAC. Being able to view FIDS on a normal web browser is much more flexible and offers many options for monetization. The challenge is to build & promote the Web FIDS as a product. Enriching it with features, options and an easy neat user interface with clear pricing plan should take this service to next level. An exercise of product development should be carried out for this service as a step towards commercializing it. The initial target audiences for this product are Hotels, Travel Agencies, Travel Portals, Transport Authorities, and exhibitions.

3.4.4.3 Raffle tickets purchase

The airport carries out raffles on Luxury cars and cash prizes throughout the year. Selling these raffle tickets through the airport website can be another solid source of revenue.

3.5 Recommendations

In this section and as a contribution of this dissertation, a set of recommendations to airports managements are given based on the research findings and the analysis done on the case study throughout the research.

These recommendations are:

- Selecting a standard Enterprise content management solution for the web portfolio to standardize the platform. On the long term, this will benefit the airport in term of better ROI, and a quicker response time to the business needs.

- The use of a combination of the Web Marketing forms will result in great results for airports. The combination of the marketing forms comes from the business needs of the organization. Airports has to first define their goals, and then chose a strategy or form that fulfils that goal.
- Before deploying any website or any form of the web activities, success criteria should be set in advance. This will help in measuring the ROI on each activity. Putting the right metrics and criteria in advance, helps airports find out what works and what does not, hence making better decision on the long run.
- Implementing the multiple form of web activities which has potential revenue generation that where highlighted in section 4.4. Those can be implemented and explored in phases. Each one of them represents a project by itself.
- Setting up multiple reliable measurement tools (Google Analytics, Omniture, etc...) and not only depending on one of them. Reports from multiple sources will give much more insight about the usage of the web portfolio. Besides some of them can be shared with external parties while other will remain confidential.
- Building an enterprise wide Email Marketing DB for multiple use. If built and maintained well, this could be a great asset to any airport. The amount of information that can collected and categorized and later on utilized for notifications, advertisement and marketing revenue is promising. Direct mailers, Sponsored newsletters, offers to passengers visiting the airport, etc... can be sent using this service. Legal aspects should be taken into consideration as discussed in the dissertation.
- Implement the twitter flight information service application, which will result in instant ROI for the airport. Implementing the service will make any airport (In this dissertation Abu Dhabi international airport) the first in the world to utilize the service in this creative way, and will have a positive effect on the airport's image. More on the implementation of twitter is discussed in chapter 5.
- For new websites, products and services, a quick roll out on a Beta version is recommended to reduce time to market to get the required feedback to enhance the product, other than waiting for the paper work and logistics to finish.

- Create Business processes for content updates on the websites and web change requests. Such a move will streamline the process of updating the web portfolio and will save time and cost on the company.

Chapter 4

4 Implementation of a Social Media Application – Twitter Flight Information Service

In the previous chapters of this dissertation, the many forms of web activities were researched to define what is suitable for airports and Social Media was recommended as a beneficial tool that can be utilized for airports. The research has also shown how other airports have used social media and especially twitters. In this chapter and as contribution of this dissertation I propose and implement an innovative way of using the social network twitter to offer a flight information enquiry service for the airport passengers while building a business model behind the service, to retrieve its operating cost and generate revenue. In section 4.1 I define the concept of this service and I layout the benefits of implementing it in section 4.2. The success criteria for this implementation are defined in section 4.3. The business model behind the service is explained in section 4.4 and the details of the implementation are detailed in section 4.5.

4.1 The Concept

The idea is to take advantage of the popular Micro-Blogging service – twitter, and all the hype around it; by integrating it with the Flight Information Display system database, in order to offer a flight information inquiry service to the passengers. The service will be offered for free to the passengers. The airport will generate revenue from the service by selling targeted ads to the service users, as well as posting airport guides updates on twitter that encourages the passengers and service users to purchase/use the airport products and services.

As highlighted earlier in this dissertation, twitter has seen an exponential boost of the number of users globally, and the micro-blogging service has been gaining wide acceptance from the public. Lots of businesses have jumped into the twitterverse to make an impression. However, airports did not quite make the best use of it as we are planning in this implementation.

4.2 Potential Benefits

Implementing this Twitter flight information service can prove itself beneficial in multiple areas for airports. Those benefits are:

- Potential revenue from marketing/advertising through twitter
- Boosts the Airports Image as fun, friendly and engaging Airports.
- Will reward the Airport with a huge Media Coverage and promotion due to the nature of the twitter users, and the fact that the service is one of the first of its kind regionally and globally.
- Will give the airport a competitive advantage over other airports
- Opens the door for Innovative Customer Service, where customer service agents interact with customers in real time and at their (customers) comfort zone.
- Will probably have a positive effect and enhance the airports ratings on Skytrax, which has a strong influence in airports ratings worldwide.

4.3 Success Criteria

The success of the twitter flight information service can be measured against the following criteria:

- Number of the Twitter account followers
- Number of flight information requests made over a period of time (service usage).
- Percentage of Positive vs. Negative mentions of the airport's twitter account online
- Statistics on the referrals to the airports websites from twitter. (Tagged URL's could be used when posting links on twitter so they can be tracked and measured).
- Number of advertising campaigns carried out from the service, which is already tagged with a dollar value.
- Amount of revenue generated from selling the ad campaigns
- Number of retweets the twitter account gets from users.

- Statistics on the clicking rate of the links published through the airport twitter account.

Measuring the ROI and the effectiveness of this tool can be part of the future work on this dissertation, discussed in chapter 5.

4.4 The business Model/Monetization Strategy

One of the main questions this dissertation tries to answer is: How can airports monetize their web presence? and how can social media be (monetized) utilized to generate revenue for airports?

The twitter flight information service bases its business model on advertising.

Users who request flight information using the twitter service will also receive a second advertising message after their flight information message.

The system is designed so that the airport can create advertising campaigns from the control panel that are either time based or budgeted. In both cases the price of each advertising message sent to the users can be specified, which is charged back to the advertiser.

The system is also designed to run advertising campaigns simultaneously. So the airport can sell more than one ad campaign at any point of time. When multiple campaigns are running simultaneously, a priority for each campaign can be set from the control panel to manage the frequency of the ads compared to other ad campaigns.

4.5 Implementation

4.5.1 System Features

The system involves two types of users, namely, the public users of the system (those are the passengers and other users interested in the service) and the Administrator of the system. Each user type has a set of features and facilities that they can carry out using the system.

4.5.1.1 The User experience

The system provides the passengers with multiple services and information that they can request from the system. The system is very simple for the user, as he

uses the service in the same way uses twitter and interacts with other users. In this case the user interacts with the Abu Dhabi Airport twitter account @AUH. The system provides the service in two simple steps to the user, where means of usability where considered. These two steps are:

1) Follow the Abu Dhabi Airport Twitter account.

Users are required to follow the @AUH account on twitter which can be found on the link www.twitter.com/auh to use the service. The application is configured so that the @AUH account will automatically follow the users back in return. This is an important step before using the service, as twitter allows a user to send a direct message (private) to another user only if the user is following him. Flight information requests where designed to be as direct messages to ensure the privacy of the service users.

2) Use one of the service keywords

After the user is followed back by the @AUH account, the users can request flight information and other information by sending a direct message to the @AUH account using one of the following keywords:

Keyword	example	What does it do?
StatusA	StatusA EY101	Subscribes the user to the Arriving flight EY101 status updates. It send reminder 12 hours before the flight and 6 hours before the flight. After that a message is sent to the user whenever a change on the flight status happens.
StatusD	StatusD EY101	Subscribes the user to the Departing flight EY101 status updates. It send reminder 12 hours before the flight and 6 hours before the flight. After that a message is sent to the user whenever a change on the flight status happens.
StatusnowA	StatusnowA EY101	Sends the user a onetime status update of the Arriving flight EY101
StatusnowD	StatusnowD EY101	Sends the user a onetime status update of The Departing flight EY101
Arrivals	Arrivals	Sends the user the next 18 Arriving flight numbers
Departures	Departures	Sends the user the next 18 Departing flight numbers
Cancel	Cancel	Cancels all the user's flight updates subscriptions
Help	Help Do you offer free internet in the airport?	Will register the user's enquiry and respond in an instant with basic usage instructions.

Table (2) List of system communication keywords

Users can subscribe to a certain flights update and get updated whenever the flight status changes if they use the “StatusA” or “StatusD” keywords. The A and D are there to differentiate the Arriving flights from the departing flights. The keywords “StatusnowA” and “StatusnowD” are for one time enquiry of the flight (as opposed to subscription). “Arrivals” and “Departures” keywords will send the user a list of flight numbers of the next arriving or departing flights along with the airport code of the destination airport. This is useful when the user is not sure of his flight number; where the user can choose find his flight from the list sent to him.

Appendix A shows some screen shots of the service being put in use and a number of requests being made along with the responses the users receive.

4.5.1.2 The Administration Control Panel

The administration control panel is where this system is controlled and configured. The system administrator needs to carry a number of tasks to be able to manage the application.

The control panel includes the following features:

1. **Communication Keywords Manager:** Helps in customizing the service keywords and their formats. This controls the keywords used for the services and the aliases for these keywords. It also controls the message format or the response sent to the users. Also the option to send or not to send advertisements with each keyword is controlled. Two keywords namely, Arrivals, Departures, have a special field to control number of flight numbers to send with direct message.
2. **Help Response Manager:** As part of the system features, users are allowed to send a direct message starting with the keyword “help” followed by their enquiry or question. The system will detect certain keywords in the help message and reply with a predefined message. The admin can create those predefined messages from the control panel using the help response manager.

For example, if the admin configures the help keyword “hotel” from the system so that whenever this keyword is detected the system sends a message to the user saying:”Airport hotel is available in Terminal 1. Contact 02333333 for reservations”

The next time a user sends a help request with the word hotel included in the message, the system will respond with the above message. Additionally the admin can route these messages to a certain email address that can be defined from the admin.

3. **Instructions Manager:** This feature controls the instruction messages going out to the users. These are two messages, one is the introduction/instruction message that the users receive once they follow the @AUH account. The second one is the help/error message sent when the user uses the help keyword.
4. **Followers Manager:** This feature provides the admin with a view of all followers of AUH, and with this module admin can control every aspect of followers. This module interacts with twitter in order to follow/do not follow, block/unblock followers.
5. **Send DM to all followers:** Using this feature the admin can send a message to all followers. This is used for announcements and notifications to users.
6. **Subscriber’s manager:** lists all the subscribers to certain flights and their details. This helps the admin search through the subscriptions made to any flight through the system.
7. **Campaign manager:** The campaign manager is where the admin controls the advertisement campaigns in the system. There are two kinds of campaigns dated and budgeted. While creating a new campaign, one can choose any type of campaign. Dates are extendable by editing an active campaign. Priority field is the

weight of the campaign relative to other campaigns. The higher the value the higher the chance of campaign message being sent to the user of the service.

8. **Reports:** There are a number of reports available in the system. Those are for service usage, top airlines used, top destinations, direct messages per campaign and direct messages served per day. This module supports multiple date range selection for the search, which makes making custom reports possible.
9. **Data exports:** Reports and other modules namely, followers and subscribers manager has the facility to export data in PDF and excel formats.

4.5.2 Main System Architecture

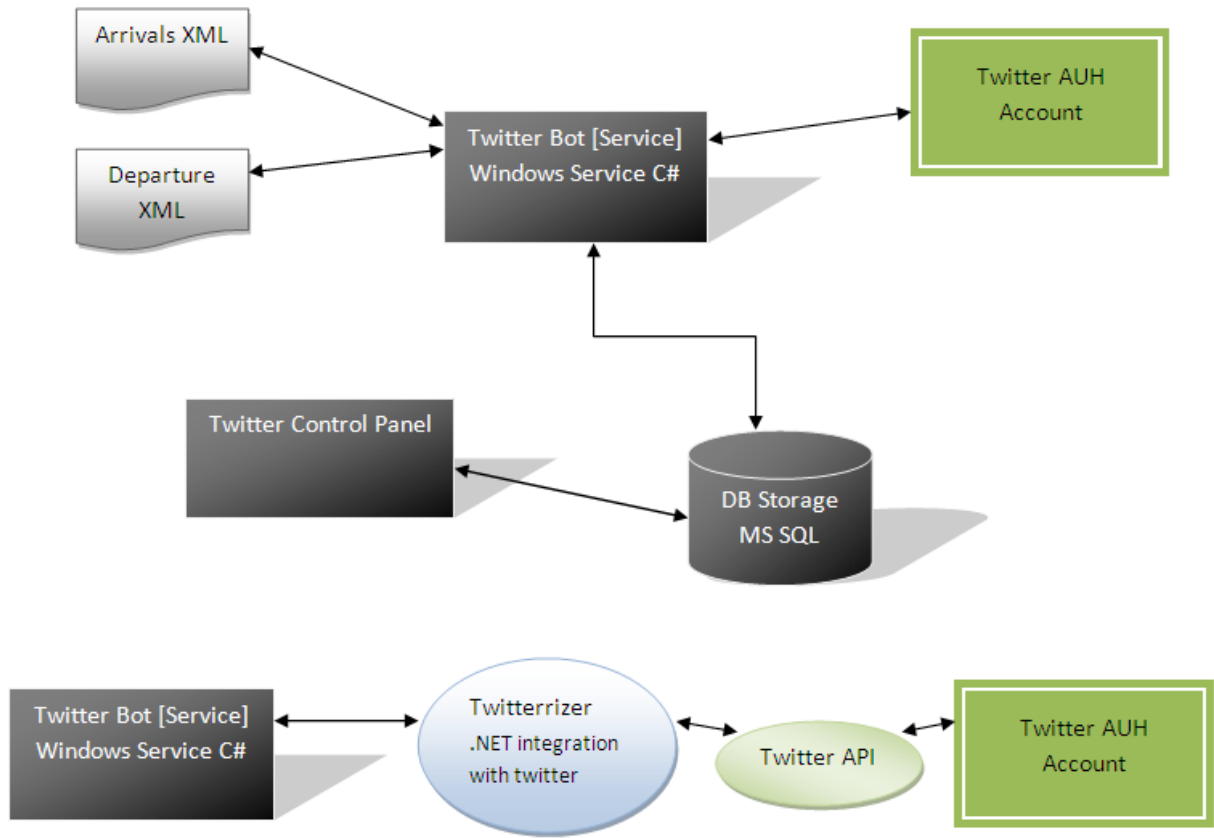


Figure (8) Twitter application main system architecture

4.6 System Components & Technologies

The system comprises of multiple components that work together to achieve the required results of the application. These components are:

1. Twitter API

The twitter Application Programming interface, which allows us to integrate with twitter and perform all the service requests required to achieve the application functionality. The twitter bot developed is mainly communicating with the Twitter API for the service requests.

2. Twitterizer [.NET integration with twitter]

Twitterizer Framework is a .NET 2.0 library that provides an easy to use, object-oriented interface to twitter's online API. This library will help us integrating with the twitter API. The twitter bot that was developed for the service used the Twitterizer libraries to facilitate the communication with the twitter API. The twitter bot was built using the Twitterizer framework

3. Twitter Bot [Windows service in C#].

The twitter bot is an application (bot) that runs as a windows service and interacts with the twitter API. It is basically an application that runs a number of windows services that interacts with the twitter API. The services retrieve the followers, direct messages and other info from the twitter API. The bot is developed in C# language.

4. Twitter Database [SQL Server 2005].

The DB is where all the user data, application settings, following and followers' data are saved. The DB also saves the Communication keywords used to trigger the service. In addition, the DB saves all the data related to the advertisement campaigns from name of the client and cost to start and end date of the campaign.

5. Twitter Account [AUH].

This is the @AUH account that is used for the airport. As it is known, AUH represents the airport code for Abu Dhabi International Airport. The account credentials are used to activate the service on the AUH account in the twitter bot.

6. AUH XML for Arrivals.

As a direct connection to the FIDS database was not possible, a work around this issue had to be found. The solution was to get an export from the required data from the database as a text file, and then manipulate it into a structured XML file. This resulted in a live XML feed of the Arriving flights to AUH, pulled from the Flight information display system database. The xml live link was defined in the twitter control panel as a variable so it can be easily set or changed if required in the future.

7. AUH XML for Departures.

Similar to the Arrivals XML feed. A live XML feed of the Arriving flights to AUH, pulled from the Flight information display system database.

4.6.1 Technical Limitations

During the implementation, the idea was faced with a number of obstacles and limitation to build the twitter applications. Those can be summarized in the following points:

- **Twitter API Limits:** The major limitation we faced is the limit on the twitter API requests. A normal twitter user gets a limit of 150 requests per hour. As the @AUH account is dealing with many user requests, it was obvious that the 150 limit will not suffice. The solution was to contact twitter to White list the @AUH account, which meant that the account will get a 20,000 API requests per hour. The IP of the server hosting the twitter application also needed to be white listed in order to make the application work properly.
- **Lack of twitter development experience:** The lack of experience programmers who have worked with the twitter API was also a major limitation. The technology is new and regionally very rare resources have the knowledge to carry out such a task. I had to nurture and educate vendors to experiment with twitter and invest their time and efforts in utilizing the technology.

- **Changes to the twitter API:** Twitter often changes lots of features and limitations on their API. This could lead to continuous updates and fixes to the twitter application to keep up with the twitter API changes and remain operational.
- **Uptime of twitter service:** The twitter service is famously known for being over capacity. This leads to the twitter flight info service being down too.

Chapter 5

5 Future Work

While this dissertation has revealed much about how to best utilize the web activities to generate revenue for airports, and has filled a gap of the lack of such specialized researches specific for the airport industry, this dissertation opens many doors where future work and further research can be done. The scope of the twitter implementation in this dissertation was limited to building the application and putting it into use. This creates an opportunity for further work in rolling out the service in Abu Dhabi Airport and monitoring its success and ROI over a period of time.

Future work on this dissertation could be carried out in any of the following areas:

- Researching the Implementation of any of the recommended web monetization strategies in section 4.4 and measuring the Return on Investment on them. The monetization strategies in section 4.4 are proven strategies that has worked for other business industries, however a contribution could be made by applying these strategies and implementing them in the airport industry, while measuring the results and the ROI of such implementations.
- One of the contributions of this dissertation is the implementation of the Twitter flight information enquiry service, which is a first in the world service and business model. Further contribution can be done when researching the deployment and rollout of the service over a period of time, and evaluate the success of the service against the success criteria defined in this dissertation, validate the business model that was proposed and determining the total ROI of implementing the service

Chapter 6

6 Conclusion

Airports have been transforming from cost centers into private profit centers in the past few years. The web has been a strong supporter for many business especially airports. Due to the large number of passengers/customers airports receive, airport websites holds a huge untapped potential of revenue generation and unique customer service.

A variety of web activities are available today for airports to take advantage of, section 3.3 shows how these various activities can be utilized for airports. The best utilization of these activities comes from understating the business goals and the main drivers behind using these activities, as well as from finding the right mix of these activities and how they fit together. There is not one optimum way for utilizing the web for airports; however a number of the web activities can be used to complement each other leading to the best web presence. Monetization strategies of the web activities are a must for airports that are seeking to maximize their benefit from their web presence, a number of these monetization strategies are mentioned in section 3.4.

Social Media has gained momentum and is proving to be a good business tool that can be used by airports, not only for public relations and communication, but also for innovative customer service and offering unique services. The implementation of the Twitter flight information enquiry service in this dissertation is a clear example of how Social Media (and the web generally) can be used offer innovative service to customers and at the same time generate revenue if the proper business model is built behind it. Innovative monetization of Social Media in the airport industry can be beneficial on the many aspects of: revenue, brand, image, and customer service and customer perception. The proposed monetization strategies in section 3.4 and the implementation of the twitter flight information enquiry service lay the groundwork for further research on proving the success, effectiveness and the return on investment of these strategies.

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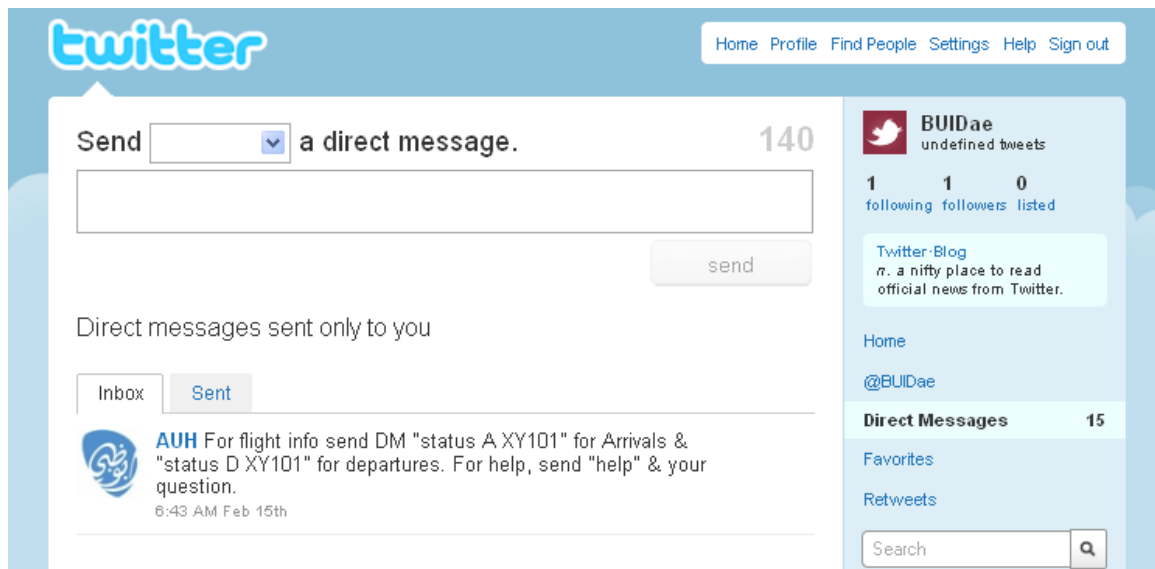
Tip Sheet: Social Media ROI: The Tools You Need to Succeed. *PR News*, 65(4). Available from: "<http://www.proquest.com>" [Accessed 3 February 2010].

Appendix A – System Usage in screenshots

1. Following the @AUH account



2. Welcome message received from the @AUH account



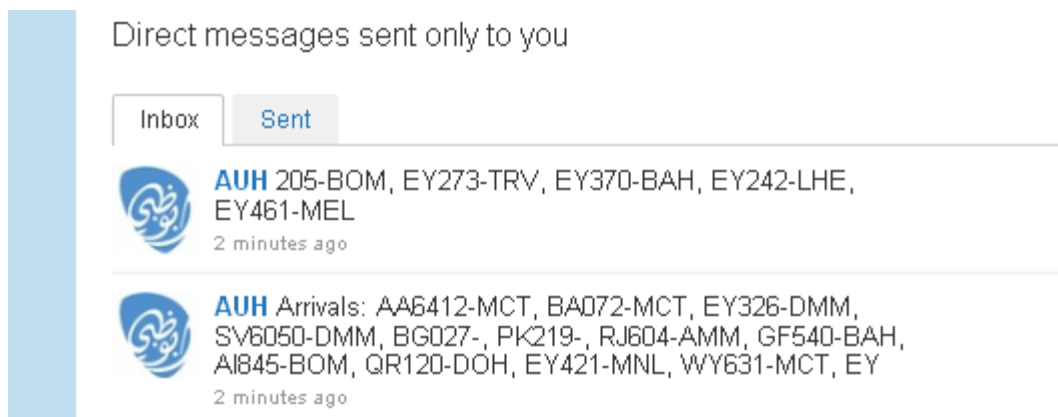
3. Requesting arriving and departing flights and the response from the system

Arrivals request




The screenshot shows the Twitter web interface. At the top is the Twitter logo and navigation links: Home, Profile, and Fin. Below this is a direct message composition box. It starts with 'Send' followed by a dropdown menu showing 'auh' with a downward arrow. To the right of the dropdown is the text 'a direct message.' and a character count '132'. Below the dropdown is a text input field containing the word 'arrivals'. To the right of the input field is a 'send' button.

Arrivals response



The screenshot shows the Twitter direct message inbox. At the top, it says 'Direct messages sent only to you'. Below this are two tabs: 'Inbox' and 'Sent'. The 'Inbox' tab is selected. There are two messages from 'AUH' (Abu Dhabi Airport Authority). The first message contains the text '205-BOM, EY273-TRV, EY370-BAH, EY242-LHE, EY461-MEL' and was sent '2 minutes ago'. The second message contains the text 'Arrivals: AA6412-MCT, BA072-MCT, EY326-DMM, SV6050-DMM, BG027-, PK219-, RJ604-AMM, GF540-BAH, A1845-BOM, QR120-DOH, EY421-MNL, WY631-MCT, EY' and was also sent '2 minutes ago'.

Departures request




The image shows the Twitter web interface for sending a direct message. At the top, the Twitter logo is on the left, and navigation links for 'Home', 'Profile', and 'Friends' are on the right. Below the header, there's a section for sending a direct message. It starts with 'Send' followed by a dropdown menu showing 'auh' with a downward arrow. To the right of this is the text 'a direct message.' and a counter '131'. Below this is a text input field containing the word 'departure'. At the bottom right of the input field is a 'send' button.

Departure response with advertisement message from the system


Direct messages sent only to you

Inbox


Sent



AUH 031-CDG, AA5995-CDG, EY005-MUC, EY323-DMM, EY305-KWI, KU6305-KWI
less than a minute ago



AUH Departures: SQ455-SIN, UA8747-FRA, LH619-FRA, EY313-JED, AC9081-FRA, US5845-FRA, EY7176-IEV, PS376-IEV, ED231-ISB, AA5988-FRA, EY001-FRA, EY
less than a minute ago



AUH Visit our Airport website - <http://bit.ly/djAUfi>
less than a minute ago

Advertisement message

82

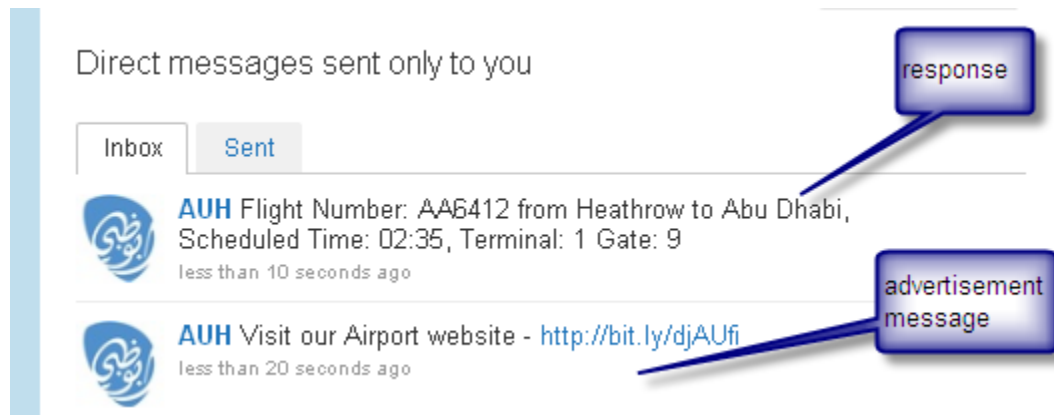
4. StatusnowA request and response

StatusnowA request – one time enquiry



A screenshot of the Twitter web interface showing the 'Send a direct message' form. The 'To' dropdown menu is set to 'auh'. The message text area contains 'statusnowA AA6412'. The 'send' button is visible at the bottom right. The Twitter logo and 'Home Profile' links are at the top.

StatusnowA response showing advertising message



A screenshot of the Twitter web interface showing the 'Direct messages sent only to you' inbox. The 'Inbox' tab is selected. Two messages are visible: one from 'AUH' about flight AA6412 and another from 'AUH' about the airport website. Two blue callout boxes with arrows point to the messages: one labeled 'response' points to the first message, and another labeled 'advertisement message' points to the second message.

5. StatusA request and response – subscribing to an arriving flight





A screenshot of the Twitter web interface showing the 'Send a direct message' form. The 'To' dropdown menu is set to 'auh'. The message text area contains 'statusA EY326'. The 'send' button is visible at the bottom right. The Twitter logo and 'Home Profile' links are at the top.

Response to a StatusA request showing advertisement

Direct messages sent only to you

Inbox Sent

 **AUH** Subscribed: Flight Number: BG027 from Dhaka Chittagong to Abu Dhabi, Scheduled Time: 01:30, Terminal: 2
less than 10 seconds ago

 **AUH** Visit our Airport website <http://www.abudhabiairport.ae>
less than 10 seconds ago

6. A help enquiry containing the keyword “hotels”

twitter Home Profile

Send a direct message. 103


help is there a hotel in the airport?

send

Response

Direct messages sent only to you

Inbox Sent

 **AUH** The Airport hotel offers a business centre, a health club with gymnasium, jacuzzi, sauna & a children's play area. <http://twurl.nl/2fsk5n>
less than 5 seconds ago

Administrator Control Panel screenshot

