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Airline Facebook pages – a content analysis

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Abstract

Purpose The emergence of new media has changed the way how airlines interact with the public. This study analyzes how airlines use one of the most popular new media platforms, Facebook, to manage public relations, communicate with customers and diversify their sales channels. This topic has not been covered by scientific literature so far.

Methods This paper uses content analysis to identify types of content provided by airlines on their official Facebook pages and extent of services offered (customer service, flight booking applications etc.). It focuses on Facebook pages of 250 largest airlines by number of passengers.

Results The study shows that airline Facebook pages contain limited information and are not substitutes for airline websites. Three fourths of airlines enable users to post content. By replying to users' posts, 68 % of airlines use FB as a customer service platform. The major determinants of whether an airline operates a FB page are airline size and its business model.

Conclusions Social networks play an increasingly important role in marketing and customer service of airlines. We expect the usage of social media by airlines to further increase in the future as a direct result of increasing importance of "generation Z" on the market.

Keywords New media · Social media · Facebook · Airlines · Communication channel · Content analysis

1 Introduction

Air transportation is one of the most interdependent industries in the world economy. On one hand, it has enabled efficient use of just-in-time methods in management of stocks, increased the speed of product cycle and led to a significant acceleration of globalization processes. On the other hand, though, air transportation is a victim of its own success and its future depends on its ability to react to changes in the world economy – the very changes it had helped bring about. Owing to the fact that demand for air transportation is indirect, the importance of flexibility cannot be overstated. Being flexible and willing to alter the usual procedures makes the difference between a successful airline and a bankrupt one. We believe from a long-term perspective, only airlines that follow new trends in communication with customers and constantly innovate their communication and sales channels will be successful. Twenty years ago, brick-and-mortar ticketing agencies and call centers would be a guarantee of high load factors and profits. Today, the range of distribution and communication channels is much broader and more complex, including web sites, web-based applications, social media and other.

The aim of this paper is to analyze how airlines use one of the new channels, Facebook, to manage public relations, communicate with customers and diversify their sales channels. Content analysis is used to identify types of information provided on airlines' Facebook pages and extent of services offered (customer service, flight booking applications etc.). First, several definitions of new media and social media are offered and the position of Facebook within this framework is identified. Second, official Facebook pages of 250 largest airlines by number of passengers in 2010 are analyzed and their content is compared using descriptive statistics. Third, regression analysis is used to identify determinants of airlines' use of FB pages and the number of fans these pages have. Finally, conclusions are drawn regarding airlines' communication strategies on Facebook.

2 New communication and sales channels of airlines

The network of communication and sales channels of airlines remained relatively stable throughout the major part of the

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20th century. However, the end of the 1990s saw a fast development of new media followed by a boom of social media. As a result, the textbooks on airline marketing had to be completely rewritten.

According to van Dijk [1], new media are defined by three characteristics: (1) they integrate telecommunications, data communications and mass communications into a single platform, (2) their content is interactive and (3) they are available in a digital form. They include web sites, internet applications, CDs, DVDs, PC games and similar media. They were introduced in the 1980s and their role in the world economy has been accelerating ever since. They act as a facilitating agent for globalization [2] and are a frontier that is rich with opportunities and risks [3].

Social media (also called consumer-generated media) are a sub-group of new media. Xiang and Gretzel [4] define them as Internet-based applications that carry consumer-generated content which encompasses "media impressions created by consumers, typically informed by relevant experience, and archived or shared online for easy access by other impressionable consumers." [5] Simply put, social media are "people engaged in conversation around a topic online" [6].

There is no generally accepted classification of social media. Some authors divide them into instant messaging, message boards, blogs, video sites and social networks [7], others distinguish between collaborative projects, blogs, content communities, social networking sites, virtual game worlds and virtual social worlds [8]. The most widely cited classification seems to be the one by Xiang and Gretzel [4] who divide social media into (1) virtual communities, (2) reviews, (3) blogs, (4) social networks and (5) media sharing sites.

Virtual communities are online places where users share their knowledge and experience in fields of common interest, such as travelling, cooking, alternative medicine or pet keeping. *Reviews* are online sites focused on rating and reviewing places, products and services. A popular travel-related consumer review web site is tripadvisor.com. *Blogs* are personal online journals intended for general public, where authors analyze situations from their daily life and present their opinions on various actual topics. Probably the best-known social media are *social networks*. The first social network – sixdegrees.com – was launched already in 1997, but social networks did not become a world-wide phenomenon until 2006 when Facebook opened membership to anyone with a valid e-mail address. Social networks are "web-based services that allow individuals to construct a public or semi-public profile within a bounded system, articulate a list of other users with whom they share a connection and view and traverse their list of connections and those made by others within the system" [9]. The most popular social networks are Facebook, Twitter, LinkedIn, MySpace and Hi5. The last sub-group of social media are *media sharing sites*, such as YouTube or Picasa.

All of these media can be used for communication between airlines, customers and the public. Taking into account direction of this communication, three groups of social media can be identified:

- *Bi-directional social media* are those enabling mutual communication between airlines, customers and the public. Standard examples include Facebook and Twitter. These social media allow all users to add content and all users to reply. Airlines can inform the public about important news and other users can share this news and comment on it. All users can ask questions and airlines as well as other users can provide answers.

- *Airline-to-public social media* (A2P) are those used for one-way communication from airline to the public. Customers and general public can not leave any feedback (which makes them similar to traditional media), but can share, re-post or e-mail airline's posts, thus increasing their reach. Airline-to-public social media include blogs, YouTube and other related platforms. Under certain circumstances Facebook can be considered an A2P media as well. If page administrator disallows users' comments any bi-directional medium becomes an A2P platform.

- *Public-to-public social media* (P2P) are similar to A2P, but instead of an airline, the page is administered by a different user. The administrator can post airline-related content; however, the airline is not able to respond directly to the content. Typical P2P social media are blogs, virtual communities, airline rating web sites and media sharing platforms. These media have a significant impact on airlines' image and it is therefore of utmost importance for airlines to monitor them. If a potentially viral negative communication is identified, PR department of an airline should take necessary steps to avoid image damages. Possible strategies include contacting author of the communication to try to settle the issue or using A2P media to contest the claim.

A well-planned social media communication strategy can generate strong positive publicity with low financial costs. Conversely, neglect of social media can lead to long-term problems with negative image. A frequent mistake is launching a bi-directional social media page (for example on Facebook or Twitter) and ignoring users' posts, especially those of unsatisfied customers. This gives an impression of arrogance and can be image-damaging. If the airline is not able to arrange monitoring of its social media pages, launching an A2P page might be a better strategy.

Social media have not only been playing an increasingly important role in airlines' communication strategies, they have also found their way into airline distribution channels. Originally, flight tickets used to be sold either directly by airlines or by designated travel agents in brick-and-mortar sales points

situated in big cities. Each carrier had its own central reservation system, first in form of books, later as a computer database. In the late 1980s, airlines formed consortia and launched global distribution systems (GDS). GDSs have access to a complete inventory of seats of numerous airlines, which has led to standardization and simplification of sales and ticketing process [10]. At the turn of the centuries, some carriers started to express their dissatisfaction with fees attached to the use of GDSs and they launched their own online reservation platforms. Cheap Internet, expensive oil and severe competition from low cost carriers have intensified airlines' effort to reduce costs. The equation is simple: fewer intermediaries mean lower distribution costs, which in turn leads to higher profits and possibly also lower tariffs.

As a result of the emergence of the likes of Ryanair and Southwest who sell close to 100 % of tickets from their own websites, full-service carriers started focusing on increasing the share of direct distribution. Recently, sales via own web site have been complemented by other direct distribution channels, such as mobile ticketing applications or booking apps on social networks.

3 Methodology

This paper uses content analysis to identify types of content provided by airlines on their official Facebook pages. The method applied is similar to that of Halpern and Regmi [11] who have recently published a thorough content analysis of 451 European airport websites. Using a technique of deductive coding, they first identified 4 different types of content expected to be found on an airport's website. Then they started searching for these types of content online. In the process, a list of more than 70 items of content emerged – they added new items to the list as they discovered them. Halpern and Regmi then offered a simple statistical analysis of content of airport websites according to different airport characteristics, such as airport ownership, airport size, region, and internet penetration of the country.

Our research focuses on airline pages on Facebook. Founded in 2004, Facebook is an online platform for registered users which enables them to connect with other registered users. It is open to anyone who is at least 13 years old. Each user has a personal profile which includes basic information about them and a "wall" where they can post news ("status updates") and where their friends can leave public messages ("posts"). Private communication between users is also possible. Users are able to post photos and videos to their and to other profiles, write notes, play online games, etc. They control their level of privacy, which means they are able to determine who sees information on their profile.

"Facebook pages" are profiles of companies and more or less have the same capabilities as personal profiles of users.

Users cannot become friends with companies, but they can "like" their pages and that way become their "fans". Companies can add posts, photos and videos to their profiles and are also able to post small programs called "applications", which their fans can use. When a company "updates" its FB page, i. e. it posts a new item to its wall, all fans and a few other users are notified about it in their "news feed". This makes Facebook a powerful marketing tool – if a page has 100 thousand fans, each update has a potential reach of more than 100 thousand people. Companies can also use a paid service to advertise their posts to Facebook users who are not their fans, and thus increase their reach. There is no direct relation between official website of a company and its Facebook page, although they can of course be connected by a hyperlink. Whereas official website is a company's address on the internet, its Facebook page is its address on Facebook.

This study focuses on Facebook, because it is currently by far the most popular international social network with more than 900 million active users. If Facebook users constituted a country, it would be the world's third largest, behind China and India [12]. Facebook's popularity among users can be attributed to its size, simplicity and accessibility. High number of users, their willingness to share personal data and openness to all kinds of applications has also made Facebook a favorite of PR and sales departments of entrepreneurs and businesses.

The analysis focuses on Facebook pages of 250 largest airlines by number of passengers in 2010. As a cut-off point the total of 1 million passengers transported annually was chosen. This was done because consistent data on smaller airlines are unavailable and also because it would be virtually impossible to include all world airlines in the analysis. Due to a wave of mergers and bankruptcies in the period 2010–2012, 18 airlines from the 2010 list do not operate anymore and as a result they were excluded from the study (Appendix A). Hence, our research focuses on 232 largest airlines.

The first step of the study was to determine which airlines operate a Facebook page and which do not. This proved to be more difficult than expected as a result of the fact that not all airlines provide a hyperlink to their Facebook page on their official website and not all airline Facebook pages are official. Therefore, an elaborate strategy had to be developed consisting of three steps: (1) searching for a visible link to a FB page on airline's website; (2) searching for a link to a FB page in airline website's html code; (3) searching for a FB page using Facebook search engine and verifying the page is official. 132 (84 %) of airline FB pages were identified in step 1 or 2. Additional 25 (16 %) official FB pages were discovered through Facebook "Search" feature. To verify a page discovered in step 3 is official, we contacted the airline's PR department. (Sometimes this was not necessary as the page clearly indicated it is unauthorized). To complicate things further, a few airlines operate multiple official Facebook pages, either in different languages or for different

geographical markets. In this case we took into account all the pages and treated their content as if they were a single page.

Data collection for this study took place in the second week of November 2012. Although very time consuming, the content analysis was conducted by the author himself to ensure for consistency. As the author reads eight languages, accuracy of the content analysis was not compromised. For FB pages in Japanese and in some non-Slavic and non-Romanic languages, a colleague was present to help with translation and control the correctness of data collection process.

Once an official FB page of an airline was identified, data on number of fans and types of content present on the page were collected. The types of content were determined by a combination of deductive and inductive techniques – some of the content types were identified before conducting the analysis, while the importance of some others became apparent only during or after the first round of data collection. Before conducting the analysis, we identified four types of content we expected to find on airline Facebook pages: basic information about airline, posts by airlines, posts by fans and booking applications. During the first round of data collection, which consisted of pre-analyzing FB pages of 50 largest airlines, it became apparent that some other items, such as contests or games appear frequently. We also found that a single type of content called "basic information about airline" is insufficient and needs to be divided into more items such as "website link", "phone contact number" and "basic information", because airlines tend to list them separately and not always all of them are present. In the end, eleven categories of content of airline FB pages emerged: basic information including website link, phone number and a short company overview, airline's posts, fans' posts, answers to fans' posts, booking apps, contests and sweepstakes, games, miscellaneous apps and careers. Miscellaneous apps are all applications that cannot be classified as games, contests, booking apps or careers.

Similarly to Halpern and Regmi [11], a one was recorded if an airline FB page included an analyzed item of content and a zero if not.

Contrary to what might have been expected, data collection was not a rapid and straightforward process. While some information (such as airline's posts) was easily visible, some other types of content had to be searched for systematically. For example, many airlines would include their contact phone number in the "About us" section of the FB page; yet others have developed specialized customer-service applications showing contact phone numbers according to user's region. These applications tend to have different names and sometimes can be hard to find. Moreover, airlines use different terminology for similar items of content. The terminology is very often related to corporate culture of the airline. A booking application can be named simply "Booking", "Buy tickets", "Search flights" or have more elaborate names such as "Facebooking", or "Take off". These differences could have

seriously affected the research, had they not been accounted for. For example, a simple visual context analysis would probably incorrectly place an application called "Take off" to the miscellaneous category. Therefore, every application found on each airline Facebook page had to be run to verify its contents.

After the data collection was complete, seven characteristics were selected for creating airline subcategories (Table 1): geographical region, income group, business model, airline size, ownership, airline quality rating and internet penetration. An expanded United Nations classification was used for the geographical region variable. More than a half of the sample of 232 airlines were airlines from Europe and the Asia-Pacific region. The least numerous were African and Middle Eastern carriers. For income classification, airlines were divided into four groups according to the standard Gross National Income methodology based on World Development Indicators data. 58 % of airlines came from high-income countries, while only 1 % was airlines from low-income countries (Kenya and Ethiopia).

To avoid a treacherous debate about airline business models, a "tell me who you are" method was used. As a result, airlines were classified as full-service, low-cost, regional or charter according to what their websites claim they are. For example, it is sometimes difficult to determine whether an airline operating a simple hub-and-spoke model is a full-service or a regional carrier. Instead of trying to fix a set of criteria, the choice was made with respect to the information in the "About us" section of the airline's website. The same method was employed for the ownership variable, where airline websites were the primary source of information as well. While acknowledging that airline ownership structure might be complex, a simple 50 %+1 rule was followed: airlines with more than 50 % of private capital were considered to be private, the rest public. No distinction was made between federal, state or local government ownership – all of them fall into the same category.

Airline quality rating was adopted from the Skytrax website. For size, airlines were assigned to one of four groups: very large (30 million or more passengers annually), large (10 to 29.9 million), medium (3 to 9.9 million) and small (less than 3 million passengers). For internet penetration of an airline's home country, a rate of 75 % or more is considered high, a rate of 49 % or less low, the rest being in the medium category. Categorization of the last 2 variables is arbitrary and was used only for purpose of this research.

4 Results

The majority (67.7 %) of airlines included in this study have their official pages on Facebook. Table 2 shows how the proportion of airlines maintaining an official FB page differs

Table 1 Categories for airline characteristics

Characteristic	Categories (number of airlines)	Source
Geographic region	Africa (12)	United Nations, expanded
	Asia and the Pacific (66)	
	Commonwealth of Independent States (18)	
	Europe (67)	
	Latin America and the Caribbean (19)	
	Middle East (16)	
	North America (34)	
Income group (GNI using the Atlas method)	High income – $12,476 or more (135)	World Development Indicators 2012
	Upper middle income – $4,036 - $12,475 (67)	
	Lower middle income – $1026 - $4,035 (28)	
	Low income – $1,025 or less (2)	
Business model	Full-service (122)	Airline websites
	Low-cost (52)	
	Regional (45)	
	Charter (13)	
Airline size	Very large – more than 30 million passengers (19)	ATW World Airline Report 2011
	Large – 10 to 30 million passengers (45)	
	Medium – 3 to 10 million passengers (87)	
	Small – less than 3 million passengers (81)	
Ownership	Private (171)	Airline websites
	Government or local (61)	
Airline quality rating	5 stars (6)	Skytrax 2012
	4 stars (27)	
	3 stars (98)	
	2 stars (12)	
	1 star (0)	
	No rating (89)	
Internet penetration	High internet penetration – 75 % or more (92)	World Development Indicators 2012
	Medium internet penetration – 50 % to 74 % (49)	
	Low internet penetration – 49 % or less (91)	

with business model. It appears that low-cost airlines have the highest Facebook adoption rate. However, it needs to be noted that within the full-service airlines group there are thirteen Chinese and Iranian airlines that are not allowed to use Facebook due to country-wide government bans. If these are excluded from the analysis, the difference between full-service and low-cost airlines fades away.

Mere 10 out of the sample of 45 regional carriers maintain an official FB page. This does not come as a surprise. Business model of regional airlines is based on providing feeder services to large full-service carriers. They are relatively

unknown and many passengers of US majors are not even aware that some of their local flights are operated by third-party airlines. Regional carriers typically do not sell flight tickets, they do not offer pre- and post-flight customer service and therefore they do not need a strong PR strategy of which presence on social networks would be a part.

An important element of success of an airline's Facebook strategy is the number of people it manages to reach. Table 3 lists the top 20 airlines according to the number of FB fans in November 2012. Some of the airlines that appear on this list also belong to the top 20 largest airlines by number of passengers. Quite logically, a question about a possible link between the two variables arises. Correlation analysis suggests that the link exists, but it is not exceptionally strong, with Pearson correlation coefficient reaching 0.51 and Spearman rank correlation coefficient 0.66.

Table 4 shows the results of content analysis of airline Facebook pages. The only type of content that can be found on all FB pages of the studied sample is the link to airline

Table 2 Proportion of airlines maintaining a FB page, by business model

Business model	% airlines	N
Full service airlines	75.4 %	122
Low cost airlines	86.5 %	52
Charter airlines	76.9 %	13
Regional airlines	22.2 %	45

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Table 3 Top 20 airlines with the highest number of fans

Rank	Airline	Likes
1.	Southwest Airlines	3241307
2.	KLM	2160447
3.	AirAsia	1641476
4.	Turkish Airlines	1206963
5.	Lufthansa	1182504
6.	Gol Linhas Aereas	1102549
7.	Air France	1080194
8.	ANA - All Nippon Airways	1030463
9.	Jet Airways	991787
10.	Emirates Airline	967422
11.	Azul	939991
12.	Alitalia	876226
13.	Japan Airlines	722312
14.	Cebu Pacific Air	721366
15.	JetBlue Airways	670790
16.	Nas Air	587208
17.	Malaysia Airlines	566705
18.	LAN Peru	548235
19.	British Airways	519767
20.	Philippine Airlines	469545

Numbers of fans were recorded between November 8 and 16, 2012

websites. No FB page from our sample included all eleven types of content.

Almost 90 % of airlines publish basic information about their company on Facebook. This ranges from a short two-sentence description of the company to a detailed year-by-year corporate history. Interestingly, seventeen airlines from the sample do not provide any information, except for a website link. What is even more noteworthy, fewer than 50 % of airlines publish their contact phone numbers on Facebook. This might be an indication that call centers are increasingly

Table 4 Categories of content ranked by their appearance on FB pages of airlines

Rank	Content category	% airlines
1.	Website link	100.0 %
2.	Updates – posts by airline	96.2 %
3.	Basic information about the airline	89.2 %
4.	Miscellaneous apps	78.3 %
5.	Fans' comments	75.2 %
6.	Answers to fans' posts	68.2 %
7.	Phone contact number	49.7 %
8.	Booking application	34.4 %
9.	Contests, sweepstakes	33.1 %
10.	Games	12.7 %
11.	Careers	11.5 %

giving way to web-based customer service centers, and airlines prefer to communicate with their customers electronically. In the words of a European airline social media team employee who did not want his identity to be disclosed: "We do not publish our contact phone number simply because we do not want the passengers to call us. Call centers are expensive."

While almost all airlines regularly update their FB pages by posting new statuses or pictures, only three quarters allow fans to post content. Typically, to dissuade users from posting complaints or negative comments, airlines declare that they "will not address specific customer service issues here" in the "About" section of their FB page. However, in reality the majority of them would eventually respond to customers' queries and complaints. The nature of these responses ranges from politely directing the user at airline's website or call center to providing a detailed answer. This depends on airline's company policy and capacities: a typical airline Facebook page is probably maintained by one or two employees only. However, some airlines have established rather large teams responsible for all aspects of airline's social media strategy. These teams work as customer service representatives as well as PR agents. Probably the most prominent example is the Dutch carrier KLM, one of the few airlines who monitor their Facebook page 24/7, thanks to a team of 20 employees [13]. According to Air France-KLM senior vice president of e-commerce, Martijn van der Zee, customer service via social media is around 40 % more effective than traditional methods [13]. It is therefore of no surprise that some airlines have already begun transferring a part of call center employees to their social media departments.[1]

Taking into account the content categories of "fans' posts" and "answers to fans' posts", three approaches to airline communication with customers have been identified:

- *Fully bi-directional communication* – is the strategy of choice of the majority of airlines (71 %). Users add content to the page and airline PR or customer service department staff provide replies. The quality of service differs from airline to airline.

- *One-way communication from airline to public* – users are not allowed to add content to the page. The page serves strictly as a PR platform to generate publicity for airline. This form of communication has been chosen by 25 % of

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[1] As the author of this paper is a frequent flyer, from time to time he has a negative experience with an airline and dares to complain. The last time there was an issue with a major airline (double charging credit card) the author decided to post a comment on the airline's Facebook page. Within 20 min a customer service representative replied to the comment and inquired about the problem by means of a private message. Within an hour the problem was solved. The author of this paper incurred no cost (as he would have if he had contacted the airline's call center located overseas) and what might have been a nightmare and unpleasant lengthy experience changed to a story of satisfaction and increased loyalty.

airlines from the sample of 151 airlines operating a regularly updated FB page, including Emirates, Kenya Airways or Japan Airlines. This strategy effectively changes Facebook from a bi-directional to an airline-to-public social medium.

- *Unmonitored bi-directional communication* – has been chosen by seven airlines from the sample (4 %), the most prominent being US Airways. Users are allowed to add content to the page, but airline staff do not provide replies. Pages operating under this strategy tend to overflow with negative comments and random visitors are not likely to get a positive impression about airline's service standards. If airline posts content only rarely, the page effectively changes to a public-to-public social medium.

The majority of airlines goes beyond mere posts and offers at least one application on their FB page. Booking applications, contests, sweepstakes and games are the most common. Other applications are usually very basic and range from a simple welcome animation, frequently asked questions or charity fund-raisers to seat sale and campaign announcements. A remarkable application is operated by KLM – "Meet and seat" enables registered users to browse hobbies and interests of fellow passengers and use this information to choose a seat for their upcoming flight.

Approximately one third of the airlines use Facebook as a sales point and their FB pages include flight booking applications. Usually it is a simple application for searching flights that will, eventually, redirect user to airline's own web site to finish the booking. Few airlines, for example Delta, have been using a special reservation module for Facebook. Interestingly, flight booking applications are more common on FB pages of full-service airlines than on FB pages of low-cost carriers (Table 5). This comes as a surprise, given that low cost carriers have traditionally tried to keep their sales channels cheap, and Facebook appears to be an ideal platform for diversifying an airline's direct sales without incurring increased costs. However, it might be the case that customers are not enthusiastic about buying tickets via social networks. The results of a survey conducted among 427 university students indicate less than 15 % of respondents would ever consider buying flight tickets via a social network.[2] Therefore, low cost airlines probably see little sense in developing a costly Facebook flight booking application, when they can simply provide a link that would redirect users to their website booking engine. We suspect a Facebook flight booking application might be

more of a PR stunt for full-service carriers than an effective sales channel; though there are no reliable statistics on flight tickets sales via Facebook to test this claim.

Table 5 shows the share of airlines maintaining a FB page and providing selected categories of content according to airline characteristics. Chinese and Iranian airlines are excluded from the analysis due to government bans on Facebook.[3] It needs to be noted though that some overseas offices of Chinese airlines (Singapore, USA) operate their own FB pages. These usually have a few thousand fans and their content is similar to official FB pages of other airlines. Regional carriers were excluded from the analysis as well, because their business model makes public relations and pre- and post-flight customer service relatively unimportant, and consequently their Facebook adoption rate is low.

Summary statistics presented in Table 5 appear to indicate that airlines' usage of Facebook is related to income level of their home country, airline size and its business model. Large airlines from high-income country group have a higher Facebook adoption rate than small airlines from lower income groups. Type of ownership appears to play only a minor role – the share of privately-owned airlines with a presence on Facebook is slightly higher than the share of government-owned airlines.

We have tested these preliminary conclusions at the 0.05 significance level. We found that airline size is indeed a significant variable and larger airlines are more likely to operate a Facebook page than smaller ones (Table 6). Business model is also important in the sense that while full-service and low-cost carriers have a high FB-page adoption rate, charter and regional carriers do not. There are no significant differences between full-service and low-cost carriers. Type of airline ownership and level of internet penetration play no role either. We have also conducted separate regressions including population of airline's home country as independent variable, but obtained no meaningful results.

Summary statistics in Table 5 appeared to indicate that airlines' usage of FB pages is related to income level of their home country. Regression analysis has not proved this statement, at least not at the selected level of significance. While p-values for income-related variables are relatively low, they do not allow us to make any strong conclusions about differences between airlines from rich and poor countries. It might simply be the case that all of them use Facebook alike.

The main result is similar to what Halpern and Regmi [11] found in their analysis of European airport websites: significant differences that exist between the pages of airports/airlines can be explained by airport/airline size. On the other hand, while Halpern and Regmi found that content of airport websites significantly differs with type of ownership, we did

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[2] The survey was conducted online in November 2012 among randomly selected students of Slovak universities. 97 % of respondents claimed they were active users of Facebook. 2 % did not use Facebook, but were active users of other social networks. 1 % did not use any social networks. All survey participants belonged to the so-called "generation Z" and therefore were expected to have a considerably higher adoption rate of internet communication technologies and applications than average population.

[3] Please note that while Chinese and Iranian citizens cannot use Facebook officially, it is still accessible by means of proxies.

Table 5 Proportion of airlines maintaining a FB page and providing selected categories of content

Categories (N=175)	N	Likes*	Facebook	Comments	Replies	Booking
Geographic region						
Africa	12	29211	75.0 %	55.6 %	44.4 %	22.2 %
Asia and the Pacific	47	267749	76.6 %	69.4 %	69.4 %	25.0 %
CIS	16	5596	68.8 %	54.5 %	45.5 %	36.4 %
Europe	54	210989	88.9 %	79.2 %	72.9 %	45.8 %
Latin America and the Carib.	15	346270	100.0 %	86.7 %	73.3 %	53.3 %
Middle East	16	230554	75.0 %	75.0 %	75.0 %	41.7 %
North America	17	359958	94.1 %	81.3 %	75.0 %	25.0 %
Income group						
High income	97	239784	88.7 %	76.7 %	72.1 %	38.4 %
Upper middle income	50	243587	80.0 %	75.0 %	67.5 %	37.5 %
Lower middle income	26	174723	76.9 %	65.0 %	60.0 %	30.0 %
Low income	2	27008	50.0 %	0.0 %	0.0 %	0.0 %
Business model						
Full service	111	244937	82.9 %	70.7 %	65.2 %	43.5 %
Low cost	51	288153	88.2 %	77.8 %	71.1 %	28.9 %
Charter	13	58635	76.9 %	90.0 %	90.0 %	10.0 %
Airline size						
Very large	16	845546	100.0 %	81.3 %	68.8 %	50.0 %
Large	38	325320	94.7 %	75.0 %	72.2 %	33.3 %
Medium	65	146651	84.6 %	74.5 %	69.1 %	34.5 %
Small	56	45016	71.4 %	70.0 %	65.0 %	37.5 %
Airline ownership						
Private	125	272953	85.6 %	75.7 %	70.1 %	36.4 %
Government or local	50	111134	80.0 %	70.0 %	65.0 %	37.5 %
Airline quality rating						
5 stars	5	277902	100.0 %	60.0 %	60.0 %	0.0 %
4 stars	23	399610	95.7 %	72.7 %	72.7 %	36.4 %
3 stars	87	258544	88.5 %	76.6 %	72.7 %	45.5 %
2 stars	11	43110	90.9 %	90.0 %	60.0 %	20.0 %
No rating	49	122952	67.3 %	66.7 %	60.6 %	27.3 %
Internet penetration						
High internet penetration	61	281122	90.2 %	81.8 %	74.5 %	36.4 %
Medium internet penetration	43	182539	88.4 %	76.3 %	71.1 %	39.5 %
Low internet penetration	71	208873	76.1 %	64.8 %	61.1 %	35.2 %

Full-service, low-cost and charter airlines only. Chinese and Iranian airlines were excluded from the analysis due to government bans on Facebook

* Mean number of likes

not observe much difference between Facebook pages of private and public airlines. This might be explained by the fact that internet as a marketing and sales channel is much more important for airlines than for airports, hence both private and public airlines use it alike.

There are important differences between airlines from various regions. For example, all Latin American airlines in the sample operate a FB page, but less than 70 % of airlines from the Commonwealth of Independent States do so. This might be linked to the level of internet penetration in airline's home country and to the low level of Facebook usage in ex-Soviet countries where several successful regional social networks exist (e.g. vkontakte.ru). Differences can also be seen between

airlines' communication strategies and their approach to providing booking applications on Facebook. As statistical analysis found no explanation for them, it might be the case that they have been caused by regional differences in corporate cultures.

Another interesting question is what determines the number of likes an airline has on Facebook. In the beginning of the section, we have stated that there is a positive link between number of likes and size of the airline. Regression analysis shows that a 1 % increase in number of likes corresponds to a 1.01 % increase in number of passengers. There appear to be two more factors that influence the number of likes: (1) airlines which have a hyperlink to their FB page on their

Table 6 Regression results

Variable	(1)	(2)	(3)	(4)	(5)
Intercept	−0.476	−0.315	−0.187	−0.179	0.053
	(0.10)	(0.17)	(0.37)	(0.49)	(0.73)
lnPAX	0.055**	0.056**	0.063**	–	–
	(0.03)	(0.03)	(0.01)		
lnGNI$_{cap}$	0.036	–	–	0.048*	–
	(0.14)			(0.05)	
Income group	–	0.052	–	–	0.068*
		(0.18)			(0.07)
Business model dummy	0.500***	0.495***	0.470***	0.548***	0.542***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Ownership dummy	0.000	0.008	0.021	0.021	0.032
	(0.99)	(0.90)	(0.75)	(0.76)	(0.63)
R^2	0.52	0.52	0.51	0.50	0.50

Results obtained using ordinary least squares regression. Population and income data for 2011. Income group: 4 – High, 3 – Upper middle, 2 – Lower middle, 1 – Low (see Table 1). Business model dummy: 1 – full-service and low-cost carriers, 0 – others. Ownership dummy: 1 – private ownership, 0 – government ownership. *P*-values in parentheses

* $p<0.10$, ** $p<0.05$, *** $p<0.01$

official website have on average 1.7 times more likes than airlines which do not, and (2) airlines which respond to users' comments have on average 1.4 more likes than airlines which do not. This is not surprising. Hyperlink on an airline's website makes its FB page more visible; hence it increases the number of fans. Similarly, FB pages of airlines which respond to users' comments are likely to have more fans, simply because they are interactive and there is a higher chance that they will appear in other users' news feed. Moreover, it is likely that many Facebook users become fans of an airline's FB page because they have an issue or a question they want to ask. If the airline does not provide customer service on its FB page, these users will probably "unlike" the page.

The final model takes the following form[4]:

$$lnLIKES = 0.538 + 1.039 * lnPAX + 0.990 * D_{link} \quad (1)$$
$$+ 0.864 * D_{response} + \varepsilon$$

where LIKES is the number of FB fans, PAX is annual number of passengers, D_{link} is the dummy variable for hyperlink on airline's website and $D_{response}$ is the dummy variable for customer service on Facebook.

5 Conclusion

The findings show that 68 % of the top 250 largest airlines operate an official page on Facebook. The major determinants of whether an airline operates a FB page are airline size and its business model. Large full-service and low cost carriers are more likely to launch a FB page than small charter or regional carriers. The number of fans an airline attracts on Facebook is primarily determined by its number of passengers. Other important factors include hyperlink to the page on

airline's website and the level of customer service it provides on Facebook.

Airline FB pages contain only limited information and are not substitutes for airline websites. In fact, all airline Facebook pages include a link to the airline's website, whereas only 84 % of websites of airlines operating a Facebook page provide a link to it. Almost all airlines regularly update their FB pages by adding various types of posts – the most common being news and interesting facts about the airline, seat sales, photographs of aircraft in company livery, updated information about operations, new destinations, and quizzes. For other information (list of destinations, check-in rules, baggage policy, etc.) the user typically has to visit airlines' websites. Three quarters of airlines allow users to add content to their FB pages and the majority of them provide replies to users' queries and complaints. Effectively, these airlines use Facebook as an additional customer service platform. Approximately one third of airlines use Facebook as a sales channel.

The study focused only on Facebook, as it is the most popular social network of today. A similar research could be conducted analyzing airline Twitter accounts. Other social networks are incomparably smaller and their adoption rate by airline PR departments is relatively low, therefore we did not see a case for including them in the study. It did not seem to be of particular importance to increase the number of airlines included in the research either, as this would have added only small regional carriers to the sample.

Future research in this field should focus on searching for a link between Facebook usage by airlines and their revenue. Low-cost airlines such as AirAsia or Cebu Pacific have been known to use Facebook for seat sales promotions which often go viral. It will be especially interesting to compare the socio-demographic structure of airlines' passengers with the number and socio-demographic structure of their fans on Facebook – when controlling for airline size, do airlines with higher number of fans have lower average age of passengers? How does

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[4] OLS, all variables significant at the 0.01 level.

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airline's Facebook activity affect sales? Other suggested directions for research include exploring how communication strategy airlines use on Facebook affects customer satisfaction, comparing airlines' activity on Facebook with other transportation modes, etc. Considering very high Facebook adoption rate among young generation, it appears social media will be an important research topic in the years to come.

Appendix A – Alphabetical list of airlines included in the study

Adria Airways, Aegean Airlines, Aer Lingus, Aeroflot Russian Airlines, Aerolineas Argentinas, Aeromexico Connect, Aeromexico, Aerosvit Airlines, Air Algerie, Air Arabia, Air Astana, Air Berlin, Air Canada, Air Caraibes, Air China, Air Corsica, Air Do, Air Europa, Air France, Air India Express, Air India, Air Italy, Air Macau, Air Malta, Air Mauritius, Air New Zealand, Air Nostrum, Air Transat, Air Wisconsin, AirAsia X, AirAsia, airBaltic, AirTran Airways, Alaska Airlines, Alitalia, Allegiant Air, American Airlines, American Eagle Airlines, ANA - All Nippon Airways, Arik Air, Arkia, Asiana Airlines, Austrian Airlines Group, AviancaTaca, Azul, Batavia Air, Binter Canarias, Blue Air, Blue Panorama Airlines, Blue1, Brit Air, British Airways, Brussels Airlines, Cathay Pacific, Cebu Pacific Air, Chautauqua Airlines, China Airlines, China Eastern Airlines, China Southern Airlines, China United Airlines, Cityjet, Compass Airlines, Copa Airlines Colombia, Copa Airlines, Croatia Airlines, CSA Czech Airlines, Cyprus Airways, Delta Air Lines, Dolomiti, Donavia, easyJet, Edelweiss Air, EgyptAir, El Al, Emirates Airline, Ethiopian Airlines, Etihad Airways, EVA Air, Executive Airlines, ExpressJet Airlines, Finnair, Flybe, Frontier Airlines, Garuda Indonesia, Germanwings, Globus, Go Air, GoJet, Gol Linhas Aereas, Gulf Air, Hainan Airlines, Hawaiian Airlines, Horizon Air, Iberia, Iberworld, Icelandair, IndiGo Airlines, Indonesia AirAsia, Interjet, Iran Aseman Airlines, JAL Express, Japan Air Commuter, Japan Airlines, Japan TransOcean Air, Jat Airways, Jazeera Airways, Jazz, Jet Airways, Jet2.com, JetAirFly, JetBlue Airways, JetKonnect, Jetstar Asia, Jetstar, Juneyao Airlines, Kenya Airways, Khors Air, Kingfisher Airlines, KLM cityhopper, KLM, Korean Air, Kulula, Kuwait Airways, LAN Airlines, LAN Colombia,

LAN Peru, LanExpress, LIAT The Caribbean Airline, Lion Air, LOT- Polish Airlines, Lufthansa CityLine, Lufthansa, Luxair - Luxembourg Airlines, Mahan Air, Malaysia Airlines, Malmo Aviation, Mandala Airlines, Mandarin Airlines, Meridiana fly, Merpati Nusantara Airlines, Mesa Airlines, Middle East Airlines, Monarch Airlines, Nas Air, Niki, Nok Air, Nordavia, Nordwind Airlines, Norwegian, Nouvelair Tunisie, Olympic Air, Oman Air, Orenair, Pakistan International Airlines, Philippine Airlines, Piedmont Airlines, Pinnacle Airlines, PSA Airlines, Qantas, QantasLink, Qatar Airways, Regional, Republic Airlines, REX - Regional Express, Rossiya - Russian Airlines, Royal Air Maroc, Royal Brunei Airlines, Royal Jordanian, Ryanair, S7 Airlines, SAS Scandinavian Airlines, Saudia, Shandong Airlines, Shenzhen Airlines, Shuttle America, SilkAir, Singapore Airlines, Sky Airline, SkyExpress (Russia), Skymark Airlines, Skynet Asia Airways, SkyWest Airlines, South African Airways, Southwest Airlines, SpiceJet, Spirit Airlines, Spring Airlines, SriLankan Airlines, Sriwijaya Air, Star Flyer, Sun Country Airlines, SunExpress, Swiss, TAAG - Angola Airlines, TAM Linhas Aereas, TAP Portugal, Tarom, Thai AirAsia, Thai Airways International, Thomas Cook Airlines Scandinavia, Thomas Cook Airlines, Thomson Airways, Tianjin Airlines, Tiger Airways, Trans States Airlines, Transaero, TransAsia Airways, Transavia Airlines, Transavia France, Tunisair, Turkish Airlines, Tyrolean Airways, Ukraine Int'l Airlines, UNI Air, United Continental, Ural Airlines, US Airways, UTAir, Uzbekistan Airways, Vietnam Airlines, VIM Airlines, Virgin America, Virgin Atlantic Airways, Virgin Australia, Viva Aerobus, Vladivostok Air, Volaris, Vueling Airlines, WestJet, Wideroe, Wizz Air, Zest Airways.

Source: ATW World Airline Report 2011.

Note: 250 largest airlines by number of passengers in 2010. The following 18 airlines appeared on the 2010 list, but were not operating in November 2012 anymore: 1time airlines (ceased operations in November 2012), Atlantic Southeast Airlines (merged with ExpressJet), Avianova (October 2011), bmi (merged with British Airways), Cimber Sterling (May 2012), Colgan Air (merged with Pinnacle Airlines), Comair (September 2012), Continental Micronesia (merged with United Continental), Indian Airlines (merged with Air India), Malev Hungarian Airlines (February 2012), Mesaba Airlines (January 2012), Mexicana (August 2010), Mexicana Click (August 2010), Moscow Airlines (January 2011), Pluna (July 2012), SAM Colombia (October 2012), Spanair (January 2012), Wind Jet (August 2010).

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