Mobile Apps: Improve Airports' Brand Image and Differentiate Among Competitors

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Abstract

The image airports project via their applications (apps) affects -directly or indirectly- passengers' satisfaction. Today, airports are competing among each other to attract more airlines and passengers to improve commercial revenues. Airport apps (as mobile marketing tools) are offering a wide range of opportunities to both passengers and airports. Apps are the best solution if airports want to improve the passenger experience as well as differentiate themselves from their competitors. The results from this investigation reveal that an airport's image-perception has either a positive or negative effect on customer satisfaction. Our structural equation model confirms that the projection of the airport image on an app improves passengers' sense of security-control, along with cross selling. This paper provides a glimpse to how commercial activities in airports will function with interactive media.

Key Words:
Image-perception, App, Information, Satisfaction

Resumen

La imagen que proyectan los aeropuertos a través de sus apps afectan directa e indirectamente en la satisfacción del pasajero. Hoy día los aeropuertos compiten entre si para captar un mayor números de aerolíneas y pasajeros, con el objetivo de incrementar sus ingresos comerciales. Las aplicaciones aeroportuarias como herramienta de marketing están ofreciendo un abanico de oportunidades al binomio pasajero y aeropuerto. Si los aeropuertos quieren mejorar la experiencia del pasajero y diferenciarse de los demás, las aplicaciones son la mejor solución. Los resultados de esta investigación indican que la percepción de la imagen del aeropuerto tiene un efecto positivo o negativo en la satisfacción del cliente. Nuestro modelo de ecuación estructural, ratifica que la proyección de la imagen del aeropuerto a través de la app mejora la seguridad-control del pasajero, además de tener efectos positivos en la venta cruzada. Este estudio proporciona una mirada al futuro de como funcionará la actividad mercantil de los aeropuertos en los medios interactivos.

Palabras clave:
Imagen-percepción, App, Información, Satisfacción

Introduction

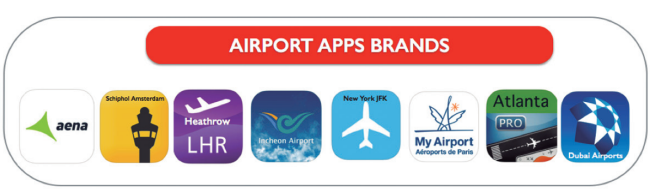
One of the most striking features in today's society is constituted by the consumption not only of goods and services but of images and information as well, giving rise to an image culture (Garcia, 2001). From a business perspective, a good image attracts all the people needed to be successful: analysts, investors, customers, partners, and employees (Chajet, 1989). The image of a product or service is a major concept that has aroused enormous interest among researchers involved in consumer and user theory, and in the last few years, the concept has undergone great advancements and developments both at a theoretical and methodological level. The measurement of image is as important as its graphic representation afterwards given that the measurement provides a fast and precise analysis of all the information related to this construct (Picón, Varela & Braña, 2013). The vast majority of people have a mobile device, and it has become a part of ourselves as if it were another vital organ - a life line. If we are not conscious of the opportunities offered by mobile devices nor of the fact that interactive media is the future of commercial activities, then we are not only going to lose customers but also sales and revenues.

Nevertheless, this paper solely focuses on airports, and therefore, we must bear in mind that an airport is the main gateway to tourists destinations, i.e., the largest portal that has access to flows of tourists in any given destination. The competitiveness and positioning of any tourist destination depends significantly on its airport. Hence, positioning is: the perception that real or potential customers have in their minds about a product, and how this perception is reflected in their preference for some competitors over others. A tourist destination positioning is measured according to the image a tourist holds of it (Conde, Covarrubias & Carreón, 2010). Thus, an airport is highly relevant in the passengers-users when through the offering of high quality products and services it is marked as the cornerstone of customer satisfaction; as these can be enjoyed by everyone, and they provide the image of the destination a high level of recognition (Fraiz, Alén & Domínguez, 2008). Moreover, image (as a visual representation) is a determining factor in airports and applications are currently playing an important role in this matter. An image is recognized by its graphic design and the visible elements surrounding it, which is developed by companies through various codes such as logotype, corporate colors, architecture, visual applications, and uniforms, among other things; and then are projected onto various outlets with a communicative intent.

A company's image passes through perception, experience, mental constructions, and memory (Costa, 1992). Likewise, the image projected via mobile marketing in airports will be similar both inside and outside the infrastructure. As a significant number of social groups share the image they have of their experience inside the airport, when the airport is mentioned, the affective and rational character will come to mind, and this will have an influence –either positive or negative– on an airport's perception. It is evident that image as a concept is evolving with time and technology, especially with the help of the latter, from a more cognitive perspective that solely focuses on valuing attributes towards a more wholesome perspective that takes into account an emotional perspective (Moreno, Beerli, & de León, 2012).

For this reason, airport image is going to become a key factor in passengers' perception. Currently, thanks to the help of mobile applications, hereinafter referred to as "apps", we are able to identify some airports with a specific brand image. Therefore, airports need to plan their strategies via mobile marketing in order to get passengers to perceive a specific brand image with an airport. Obviously, this is nothing new since companies like Coca-Cola, Nike, Adidas, Mercedes, etc., have made their brand image the insignia of their company, and they are recognized anywhere in the world because of it. At first, for a tourist, a brand may only represent a name and a symbol, afterwards, these links and meanings improve (Tybout & Carpenter, 2002), and they affect and connect brands to tourists at a cognitive, emotional and behavioral level (Wood, 2000). Thus, passengers assign a worth to brands –generally unconsciously– based on their experiences, the experiences of other significant agents, the management of special offers and communications associated with the brand, and the tourism products they represent.

Figure 1 Airport apps brands



Source: itunes.apple.com

Airports were traditionally considered to be public utilities whose sole focus was, for the most part, to facilitate the safe and efficient movement of aircrafts and passengers rather than on any commercial consideration. As a result, airport operators adopted a fairly passive approach to marketing by doing relatively little to encourage customers to use their services. However, this has started to change in many places as airports become more commercially oriented. This, together with the deregulation of many markets, has led to a much more competitive airport industry (Forsyth, Gillen, Mueller, & Niemeier, 2010; Thelle, Pedersen, & Harhoff, 2012). Consequently, marketing has not only become a core activity at many airports but it has become vital for success (Halperm & Graham, 2013). The airport managers should attach importance to the non-aeronautical business affecting

airport efficiency, make efforts to develop diversified commercial activities, increase terminal operation forms, and attract passengers and other tourists and shoppers to experience consumption at the airport in order to increase revenues. By exploiting the complementarities between aeronautical services and commercial services, the overall efficiency of an airport company can be improved. In addition, they should enhance the operating efficiency through improving the quality of service to promote customer satisfaction (Liu, 2016).

According to Graham (2014) airports have many customers, but two of the most important are airlines and passengers, and the marketing strategies used for the two customers vary. For the latter, airports tend to use traditional marketing approaches such as providing electronic and printed information, advertising across a wide range of media outlets, developing loyalty programs, offering sponsorship, holding fundraising events and air shows. Yet, the extent to which an airport operator can by itself influence a passenger's choice is limited since the passenger's decision is primarily determined by both the airline services available and the location of the airport. Instead, many airports focus on marketing to airlines, which can arguably have a much more significant impact on the airport's success (Halpern & Graham, 2015).

Theoretical Framework

Understanding image in the airport

Based on the concepts of image presented in this bibliographical review, we can see how it is defined as a multidimensional construct, which is supported by authors like (Pike & Ryan, 2004: Andrade, 2012). These authors are inclined to consider image as the rational and emotional interpretations formed by subjects, resulting from the incorporation of two interrelated dimensions: perceptual/cognitive evaluations and emotional evaluation. The former make reference to the beliefs and knowledge tourist have of a destination (Baloglu, 1999; Pike & Ryan, 2004). Whereas the latter represents the feelings the tourist has towards the destination (Kim & Richardson, 2003).

According to this approach, airport image should be considered as a multidimensional phenomenon. When passengers pass through an airport, a priori, they have some expectation of the infrastructure, and therefore, they evaluate the airport according to their perception-knowledge-emotions towards the products and services offered. Similarly, the combination of these two components of image gives rise to a global image that reflects the positive or negative assessment that one may have (Leisen, 2001). Thus, global image is supposedly the overall perception that a public has of a company based on the various impressions they received over time (García & Rodriguez del Bosque, 2006).

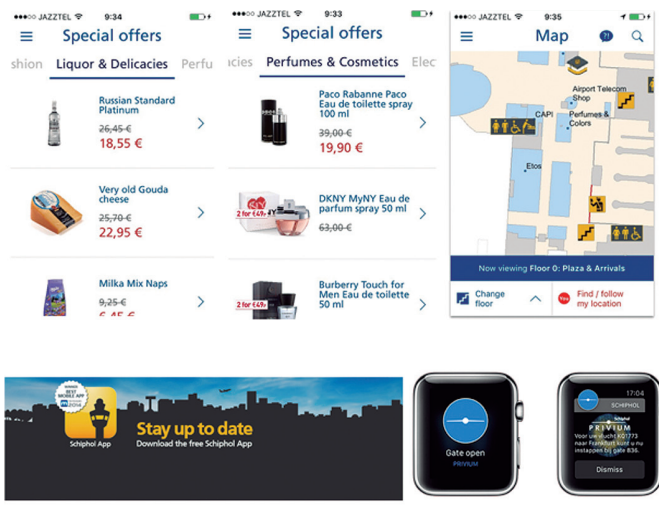
As previously mentioned, the airport forms part of the destination, and in the words of Kotler, Heider & Rein (1993), the airport image is comprised of the information, beliefs, impressions, attitudes and emotions that an individual holds of a place. Moreover, image is paramount in order to make one's product or service attractive, and to accomplish this, one needs to take into account two main points: First, to show what is being offered, and secondly, to show it in a clear and attractive way. On the one hand, image is an attitude that reflects a combination of characteristics possessed by product. On the other hand, from a company's perspective, image is the wide range of associations that comes to a customer's mind when he or she hears the name of the company or organization (Nguyen & Leclerc, 2011). According to Chia-Jui, Jin-Ru, Yu-Chun and Hui (2016) service perceived is found to have a significant positive influence on destination image. Airports have to improve their service, so that the travelers will have better experiences and a good image of their destination and this will in turn have a positive effect on their behavioral intentions.

Most studies on the role of image in commercial activities has focused on analyzing concepts and specific purchasing behaviors, as well as the attributes that make it up in relation to specific establishments (Lewison, 1999). When one tries to apply this concept to commercial distribution, it is characterized by its tendency to concentrate, either spontaneously or planned, and the aim is to take advantage of the synergies generated by different establishments that are acting together to attract more customers.

Moreover, in this study we will be objective given that every airport has its own characteristics, niche market, and limitations. Hence, it would not be advisable to implement an airport app in small airports, especially if there is no commercial activity within the terminal. As stated by Barros (2014) airports are not homogenous: there are airports of various sizes. These kind of tangible characteristics translate into differences in the performance and outcomes obtained in the market, thereby, resulting in different clusters within the market. These clusters can be distinguished one from another based on their different input and output combinations, which means that in this field, investments need to be made at a regional level. Figure 2 (next page) shows the app as sales channel and brand image.

An airport with a commercial focus is quite similar to a shopping center or mall: it houses many establishments in order to generate income and obtain profits in its income statements. From this perspective, the image of open and planned shopping centers is a much broader concept than that of individual establishments; the former encompasses an entire heterogeneous offer that

Figure 2 The app as a sales channel and brand image (Amsterdam Airport Schiphol app)



Source: http://www.schiphol.nl/Travellers/FlightInformation/SchipholAppAndMobileWebsite.ht

customers can geographically relate to and can evaluate according to some characteristics in scale for measuring perceptions. Norm (2011) states that airports are increasingly starting to look more like shopping centers. Therefore, it is quite conceivable that commercialization via mobile phones will be integrated into airports. As a result, airlines, together with airports, will be able to offer special promotions on mobile devices.

Image as a construct is a corollary of being trustworthy, professional, and innovative; it also contributes to society and adds prestige to users. Thus, we foreseen that image will have a positive effect on a customer's satisfaction, expectations, and loyalty (Bayraktar, Tatoglu, Turkyilmaz, Denle & Zaim, 2012). Despite the fact that authors like Revels, Tojib & Tsarenko (2010) argue that *image-perception* plays no role in a customer satisfaction, they do defend the notion that using mobile services does improve self-image.In this paper, we share Hart & Rosenberg (2004) stance as they defend that a company's image has an effect on their basic services and on customers' perceived satisfaction (da Silva & Alwi 2006; Bayraktar, Tatoglu, Turkyilmaz, Delen, & Zaim, 2012). Image defines customers' expectations, in turn, these have a decisive influence on the perceived quality of a service, and consequently, on customer satisfaction (Apaolaza & Hartmann, 2009).

Defining perception

Another dimension in the scope of this work is passengers' perception, which has been linked to image-perception due to the limited time passengers had for completing the questionnaire. As we foresaw this setback, we designed a questionnaire that could be completed in the least amount of time possible. We evaluated the effects that perception has over satisfaction levels, and how it has an effects in the remaining variables. In a study conducted by Revels, Tojib & Tsarenko (2010), it was demonstrated that the perceived usefulness, ease of use, enjoyment, and cost, has an influence on a customer's satisfaction with mobile services (m-services).

An image generated by perceptions is defined by the possibilities offered by the perceived environment (Bri-ceño & Gil, 2004). Perception is the mechanism that allows individuals to engage in, as well as understand, the exterior world. People find using their senses easy, for this reason, the sensations received must be sharp, descriptive, enjoyable, and they should be controlled by the receivers. Placing the world at the disposal of the senses, increases the depth and subtlety of sensations, and it gives one that instant gratification and well-being accompanied by the perception experienced (Lynch, 1992).

The perception of using mobile devices for services different from the traditional ones, as in the case of mobile commerce, differs around various factors such as geographical location, platforms, security, creativity, customization, among other things. Hence, this per-ception is paramount given that increasing the amount of app users will depend on it (Robayo-Botiva, 2012). In the process of image building via mobile marketing, communication plays a key role given that it can boost the knowledge and familiarity one has of a company, and these variables have a positive influence on how a company is perceived (García & Rodríguez del Bosque, 2006).

If Kennedy (1977) and Muslim *et al.* (2013) views were inferred to the mobile marketing sector, we could see that the functional component is linked to the products, services, and contents offered by the tool, all of which are perfectly controlled and well-calculated by companies. Conversely, in the emotional component the image of the service affects the psychological aspects (Naehyum, Sangmook & Lynn, 2012) through previous experiences; these experiences intervene in a customer's satisfaction as the overall measure of a series of experience-specific satisfactions (Yu and Dean, 2001). Having reviewed the aforementioned authors' literature on the image-perception variable, we proposed the following hypotheses regarding this scope in our investigation:

H1. The image-perception of an app improves the security and control a passenger has in an airport.

H2. A good commercial image-perception in the airport will have a positive effect on cross selling.

Mobile apps as multifuncional tools

We should highlight that in this paper, in a sense, apps are seen as a software adapted for mobile devices, and it is just one more tool available in mobile marketing. Regarding the definition of an app, researchers have defined it from various points of view, and literature on this concept is still scarce as it is a concept that is currently being developed and expended. At first we shall begin with authors such as Scolari, Navarro, Pardo, García & Soriano, (2009); Bellman, Potter, Hassard, Robinson & Varan (2011), whose stance is to see an app as another promotional tool which can generate both notoriety and a positive brand image.

The functions offered by apps are numerous, and all the new demands requested by customers are leading to the development of new apps 'which go beyond what we could have ever imagine' for professional and recreational purposes. All this creative synergy is promoting niche markets within the field since the intention is to meet the needs of users and offer them more personalized services. New smartphone users are bi-functional, that is, they can navigate the real world they live in, at the same time, they benefit from the virtual window offered by mobile devices. Hence, apps are the multi-tool pocket knife of the future; they make life easier at any time, and its use is multifunctional. Big airports are conscious about implementing new technologies to their commercial activities, and apps are a very attractive marketing tool because they can improve passengers' experiences, promote a brand's image, and strengthen communication between airport and passengers.

Reviewing the concept of satisfaction

With respect to the concept of satisfaction, it can be addressed from one of the following two approaches: the transaction-specific or the overall/cumulative satisfaction approach (Yang & Peterson, 2004). The transaction-specific approach defines satisfaction as a consumer's response to his or her latest purchase with a organization (Oliver, 1993), and for this reason, it is influenced by the situational variables present at the moment of purchase.

This is clearly reflected in Giese & Cote (2000) definition when they indicate that satisfaction is a time specific and ephemeral response that makes reference to certain aspects of a purchase or a product consumption. A passenger's overall satisfaction on a mobile marketing tool is conditioned by the moderating effects of a passenger's characteristics. In line with Pantouvakis and Renzi (2016)' study provides evidence that satisfaction or dissatisfaction perceptions of passengers vary according to their nationalities. Hui, Wan and Ho (2007) investigated the demographic impact of characteristics such as gender, marital status, income, occupation and nationality, and they discovered that different service aspects caused differences in satisfaction, recommendations, and repeat purchase intentions. For this reason, this paper shows that satisfaction is influenced by customers' characteristics, the environment or consumption setting, image, experience, security, expectations, control, etc. Furthermore, it is important to remember that satisfaction is a multidimensional construct, and it cannot obtain the same results from customers that are in a physical environment as from those who are in an interactive one (Florido-Benítez, del Alcázar and González, 2014). Therefore, one can formulate the following hypothesis:

> **H3.** An airport's level of image-perception will either have a positive or negative effect on the amount of satisfaction experienced by a passenger.

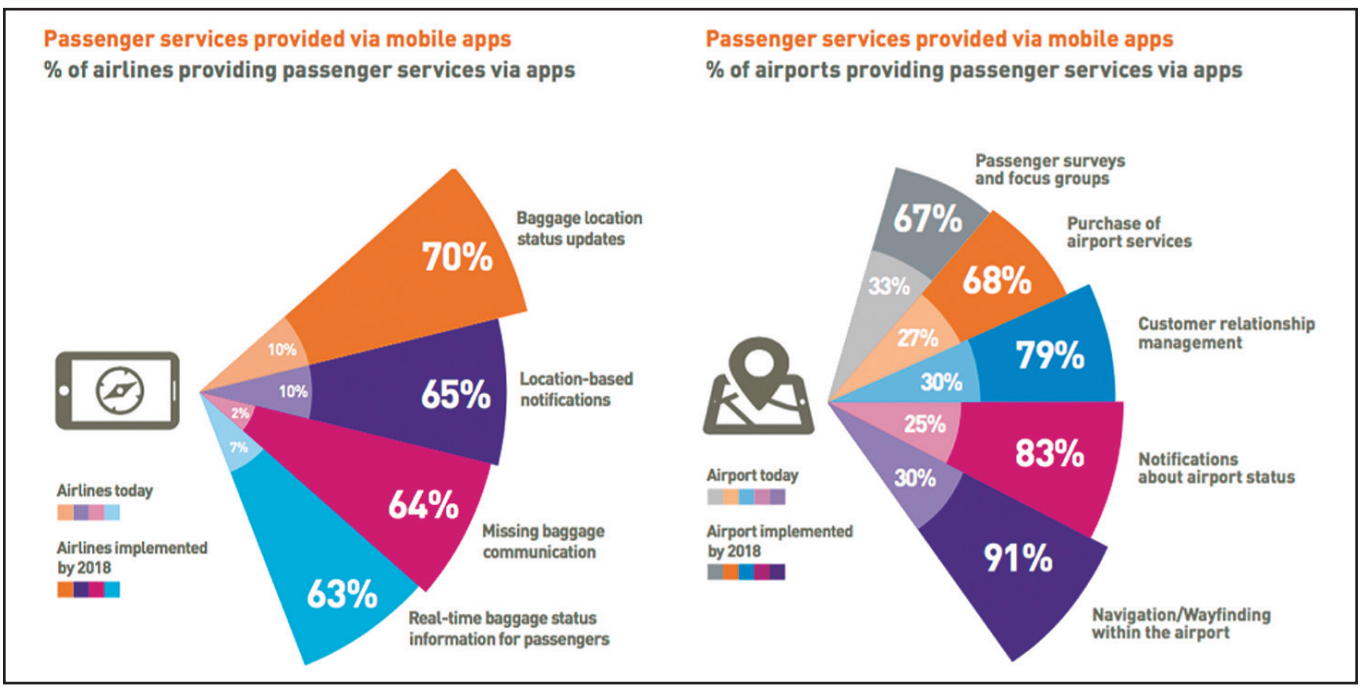
Information on airport apps

Seeing the multi-functionality and services offered by apps, it is evident that airports make profitable and improve their processes in all aspects. Nevertheless, we cannot forget that an airport is an intermodal node that forms part of a tourism service, which along with other tourism resources provides an added-value to a destination. Knowledge is power, and of course, the more information we have within our reach (in the mobile), the more we will be able to manage in our surroundings. Hence, the mobile is the new compass rose of the XXI century which will guide us wherever we go. Bentacourt (2003) argues that the information available on a company is important in today's world since with the help of this information a series of work policies, based on decisions taken and aimed at increasing a company's efficiency and profitability, are elaborated. As stated by Jacobson *et al*. (2004) and Pressman (2005), a business' information, together with its management systems, should be modeled, analyzed, designed and implemented using software engineering techniques.

Our vision for the Internet of things is, in essence, what can and needs to be connected will be connected. The ability to seamlessly integrate the passenger end-to-end experience is essential in today's market. Beacons offer an opportunity to fully leverage products and services via mobile application to enhance the passenger experience, generate revenue and improve efficiencies, with enhanced customer service being of the utmost importance (SITA, 2016). Figure shows Passenger services provided by airports and airlines through app today and forecasts by 2018.

Meanwhile, in the field of information, the most studied dimension is the information received by a passenger or customer through this tool. Mobile Marketing provides information at the right moment and precise place; at the same time, the interaction and feedback is immediate

Figure 3 Passenger services provided by airports and airlines through app today and forecasts by 2018



Source: https://es.sita.aero

(Ktoridou, Eparnimonda and Vrontis, 2007). According to Ruiz, Gil and Moliner (2012), information is fundamental for tourism. On a mobile device information can be transmitted via messages, music, photos, and videos. Besides, this is a mass media tool just like social media (Kwon, Kim & Kim, 2013; Okazaki and Mendez, 2013).

The vast majority of the most important airports around the world have the app as a communication tool to keep passengers informed on their flights, check-ins, security control, baggage information, boarding gates, etc. Furthermore, the app also includes a virtual store where passengers can buy products and services according to their needs. Thus, the following hypotheses to verify are:

H4. The information offered by an app has a positive influence on a passenger's sense of security-control in the airport.

H5. The information provided by the app favors the image-perception that passengers have of an airport's infrastructure.

Methodology

To achieve the objectives outlined in the study, structural equation models were applied to the models herein, and they were analyzed with the PLS program, version_2.0 Smart-M3. Besides, to perform the multi-collinearity analysis, SPPS version_22.0 was used as it allowed us to reach different conclusions from the preliminary objectives of the study. The questionnaire was written in Dutch and it consisted of two parts: first, 31 items measured on a Likert scale from 1 (strongly disagree) to 5 (strongly agree), and the Likert scale was chosen since it is best suited for the survey participants. The second part of the questionnaire included socio-demographic aspects which made it possible to outline the characteristics of the mobile app users, and the information requested included the following: gender, age, education level, monthly income level, occupation, type of community, and perception of mobile apps.

Once the target population was established (*Schiphol Amsterdam Airport* app users), the surveyed designed to validate the theoretical model was carried out for three months (August 1- October 31, 2014), during which 106 surveys were completed. Thereafter, a quality control test was performed to ensure that the responses were reliable, that they met the quality needed for the research, and that the surveys were completed accordingly; only three questionnaires had to be discarded because they were incomplete. Therefore, the final sample was comprised of 103 valid questionnaires, under the assumption of a simple random sampling for an infinite population with P = Q = 0.5, with a confidence level of 95% (Z = 1.96) and a sampling error of +/- 9.7%.

Table 1 Sample characteristics

Passenger's personal data	%
Gender	
Male	65
Female	35
Age	
18-25	24.3
26-35	31.1
36-45	25.2
46-55	14.6
+55	4.9
Education and studies	
No studies	8.7
Primary Education	15.5
Secondary/Vocational Education	46.6
University	29.1
Monthly net income	
600 €	16.5
601€ - 900€	2.9
901€ - 1.200€	7.8
1.201€ - 1.500€	11.7
1.501€ - 1.800€	11.7
1.801€ - 2.100€	34
2.101€ - 3.400€	10.7
+ 3.400€	4.9
Type of community	
Urban	74.8
Suburban	4.6
Rural	10.7

Source: Own elaboration

Table 2 Data sheet of the empirical study

Universe	Passengers who use the Airport Schiphol Amsterdam app in The Netherlands
Sample size	103 respondents
P= Q	0.5
Level of reliability	95% (Z=1.96)
Sampling error	+/- 9.7% (if there is a m.a.s.)
Sampling scheme	Convenience sampling
Fieldwork date	August 1st - October 31st 2014

Source: Own elaboration

Evaluation and validation of the formative indices

With the content validity analysis, we made sure that the formative indices grouped all the conceptual domain of the latent variable. This indices should include all the dimensions that compose it. The specificity test on the indicators identifies a group of indicators which collects all the meanings the concept has according to terms described in the content validity. Regarding the weights test, the objective was to see the contribution that each indicator had in the formation of the latent variable (Bollen and Lennox, 1991; Chin, 1998). The Smart-PLS system provided us weight or loads estimates regardless of whether or not an item was formative or reflexive (Bollen and Lennox, 1991; Chin, 1998; Diamantopoulus, Riefler & Roth, 2008).

Meanwhile, in the case of the formative indices, we had to take a closer look at the weights to analyze the contribution of each item. In this regard, one had to take into account the epistemological relationship between the latent and observed variables since they affect the validity of the index. Besides, as the definition of formative constructs does not require for the scale to be internally consistent, the traditional methods to test reliability and validity in the reflexive scales are not adequate (Bagozzi, 1994). In this paper, the CI threshold was set at 20, as proposed by the previously mentioned authors. Furthermore, having taken into account all the previous values shown, we performed the validation of the formative indices by first analyzing their weight.

We completed our analysis by studying the multi-collinearity of all the variables in each index and by making sure of the content validity at every moment. All of this allowed us to maintain conceptual control over all the corresponding variables herein. As a summary, table 3 gathers all the formative indices that were validated, and no item was eliminated as no multicollinearity was detected; at the same time, we confirmed the content validity of the constructs. These were the indices used to evaluate the structural models of the hypotheses test, which will be further addressed on in this paper. Besides, by applying the algorithm allowed by Smart-PLS version 2.0 M3, we were able to get the weights of the indices validated, and they are outlined in the following table.

Next to each construct we find: the highest Pearson's

Table 3 Formative indices validation

Formative indices validation		Weights	t-student
IMAGE-PERCEPTION (max_corr.= 0.335; max VIF= 1.2 (T=0.84); max CI=18) R^2=0.19			
P5ima-per	The use of this mobile app improves the perception and image I have of this airport	0.315	1.900
P6ima-per	The development of this app has improved the image and branding of this airport	0.234	1.510
P8ima-per	People who use this app have more prestige	0.653	4.883
P10ima-pe1	I like to receive relevant information regarding flight schedules and delays before my flight on this mobile app	0.483	3.676
INFORMATION (max_corr.= 0.295; max VIF= 1.1 (T=0.91); max CI=14) R^2=0.15			
P12Infor	I was able to easily access the desired content	0.604	2.855
P13Infor	I was able to easily understand the options presented	0.637	3.193
CROSS SELLING (max_corr.= 0.383; max VIF= 1.3 (T=0.763); max CI=14) R^2=0.34			
P20Sale	The use of the mobile app offers more information when buying products and services in the airport	0.442	3.462
P22Sale	The mobile app offers me products and services that interest me and I would go ahead and bought, thus, saving me effort and time	0.425	3.033
P25Sale	I intend to buy new products and services through this mobile app	0.434	3.535

Source: Own elaboration

correlation among all the pairs of indicators in that block, as well as the VIF, Tolerance T, and the highest condition index or number (CI). A statistical t value superior to 1'64 implies that the weight of the corresponding indicator is significantly different from 0 at 95% for a column of the t-student test.

Evaluation and validation of the reflective indicators

The method of analysis was done in two stages as proposed by Anderson & Gerbing (1998). First, before testing and evaluating the structural models, an evaluation of the reflective scales needs to be carried out. It is necessary to corroborate the convergent and discriminant validity of the corresponding constructs (Barclay, Higgins & Thompson, 1995). The investigation based on PLS evaluated the convergent validity given that it helps determine whether various indicators in a construct measure the same, which requires them to be highly correlated. Likewise, the internal consistency measure (Pc), developed by Fornell & Larcker (1981), was used to determine the convergent validity, together with the average variance extracted (AVE); the AVE expresses the amount of variance that a construct obtains from its indicators in relation to the amount of variance due to error. As a result, values above 0.5 indicate that more than 50% of the variance in the construct is due to its own indicators (Cepeda & Roldán, 2004). Following Nunnally's recommendations (1978), the internal consistency should be above 0.7 in order to consider acceptable the reliability of a construct (Barclay et al. 1995; Chin, 1998; Hair et al. 1999). Furthermore, the AVE should be above 0.5. If the following requirements are met, the indicators can be considered reliable, and the reflective measurement model is acceptable.

In the analysis of the relative scales regarding satisfaction, the four variables meet the reliability requirements since the results of the four loadings are above or equal to 0,6. Regarding the convergent validity or internal consistency (Pc), it is above 0.7 and the AVE is above 0.5 as can be seen in Table 4. Meanwhile, in the analysis of the security-control construct, the six variables meet the thresholds proposed by the aforementioned authors in

the literature on the validation of reflective indicators. The results of the six loadings are above or equal to 0.6; and the convergent validity (Pc) is above 0.7. Lastly, the AVE is higher than 0.50.

The satisfaction and security-control variables meet the discriminant validity criteria, i.e., every reflective construct shares more variance with its own measures than with other constructs in the proposed model. Furthermore, the crossloadings estimates were also analyzed. This is another test that checks the discriminant validity, and it verifies that each reflective indicator is related more to the construct being measured than to another construct or variable in the model. Additionally, it also checks to see that each latent variable is related more to its own indicators than to those of another construct.

Results

The content analysis found in the table 5 provides a summary of the hypothesis test done using a *Smart PLS* model. From the results obtained, hypothesis 1 can be accepted: an app's image improves the perception of security and control a passenger has in an airport (β= 0.325; $p < 0.01$). The results confirm the important and positive effect this marketing strategy has.

Furthermore, based on the results obtained in hypothesis 2, the projection of a commercial image has a positive influence on cross selling, and thus, the hypothesis is accepted since one can see a significant relationship between the two constructs (β= 0.261; $p < 0.01$). This confirms the relationship that was hypothesized, and it is now quantitatively shown. Additionally, an airport's level of image-perception has an effect on a passenger's degree of satisfaction, as demonstrated by the results (β= 0.316; $p < 0.001$), with a positive sign and a valued significance; consequently, hypothesis 3 can also be accepted.

The results show that the information provided by the mobile marketing tool influences directly and positively on a passenger's security (β= 0.181; $p < 0.05$), therefore, the validity of hypothesis 4 is accepted. Finally, the results obtained in hypothesis 5 are also accepted. From them, we can derive that the information provided by the app enhances the perception a passenger has of an airport's image, as it is positively shown by this data (β= 0.432; $p < 0.001$). Furthermore, the qualitative impact is the second most important in the path coefficient results obtained in the study.

Table 4 Validation analysis of reflective indicators

Validation reflective indicators	
SATISFACTION Pc (0.86) y AVE (0.50)	
P1Satisfa	Overall, I am satisfied with the service I received from this application
P2Satisfa	I have an enjoyable feeling while using this application
P3Satisfa	The use of this mobile application has been a good experience
P4Satisfa	Overall, I am satisfied with the way in which the information, products, and services of the airport have been managed through this mobile app
SECURITY-CONTROL Pc (0.80) y AVE (0.51) R2=0.19	
P14Se_cont	I think I can trust this mobile app
P15Se_cont	This mobile app is concern with the interest of its users
P16Se_cont	When this application designs its commercial offer, it takes into account the wants and needs of its users
P17Se_cont	This mobile app gives real information
P18Se_cont	I am pleased to use this mobile app given that it provides me security, and control of my time within the airport
P19Se_cont	Once the security control area is past and in the boarding area, being informed by the mobile app gives me peace

Source: Own elaboration

Table 5 Hypotheses test summary

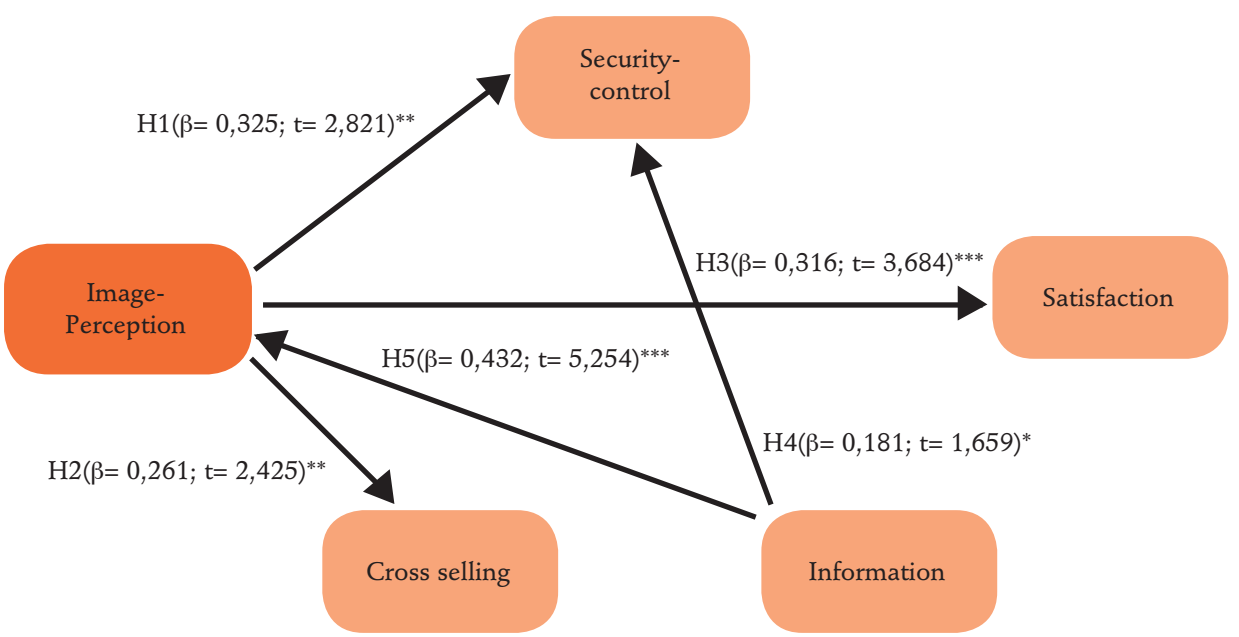
Hypothesis Number	Relationship	Path Coeff	Sample Mean	Standar Devitacion	Standar Error	T Student	Results
H1	Image_per —> Sec_Con	0.325	0.295	0.097	0.097	2.821	Validated
H2	Image_per —> Cross selling	0.261	0.314	0.131	0.130	2.425	Validated
H3	Image_per —> Satisfa	0.316	0.381	0.098	0.098	3.684	Validated
H4	Informa —> Sec_Con	0.181	0.202	0.124	0.123	1.659	Validated
H5	Informa —> Image_per	0.432	0.443	0.080	0.080	5.254	Validated

Source: Own elaboration

Based on the literature review on the importance of information in the online environment, one can see how researchers emphasize the importance of a website to provide adequate information on the goods and/or services offered. Besides, as it has been clearly stated by researchers, there is a need to provide adequate information about a company (Semeijn, Van Riel, Van Birgelen and Streukens, 2005; Aladwani, 2006), and all of this contributes to having a better perception of a company's image. Taking into account the previous analysis, we can conclude that the proposed model allows one to explain and predict in a fairly acceptable form that the imaged projected by airports on apps influences in a positive, functional, economical, and efficient way a passenger's satisfaction.

When a passengers transit through an airport, they have some preconceived expectations of the airport's image. Thus, they make an evaluation based on their cognitive-affective perceptions about the services and products offered. Regarding the emotional component, the service image has an influence on the psychological aspects

Figure 4 Projection of the image of airport through app



Note: the tested and significant hypotheses are shown in bold arrows (one tailed t- Student test, p > *0.05, **p < 0.01, ***p < 0.001, i.e., confidence interval of 95%, 99%, and 99.9 %)
Source: Own elaboration

(Naehyum, Sangmook y Lynn, 2012) through previous experiences that intervene in the overall satisfactions of specific experiences (Yu and Dean, 2001).

Additionally, according to Kang and James (2004), image is seen as a filter for how a customer perceives quality. Lastly, this construct is the overall result of the interaction of all the experiences, impressions, beliefs, feelings, and knowledge individuals have of a company (Hsiong-Ming, Ching-Chi and Cou-Chen, 2011). Similarly, this study first shows that satisfaction is influenced by the surroundings and environment in which consumption takes place, the image, the experience, the expectations, etc. Our results confirm that the global image of an airport has positive or negative effects in passengers' levels of satisfaction.

According to Wang, Xiang & Fesenmaier (2014), the use of mobile devices for traveling purposes is shaped by a series of complex interactions between environmental factors, cognitive beliefs, previous experience, and everyday phone usage. These authors also expose that using smart-phones for this particular purpose has the potential to significantly transform the touristic experience. In this interactive information context, both airports and passengers become important in customer relation management (CRM). Offering personalized information and services, together with free WIFI -so users can connect to the net without any problems and can have access to the information demanded- is going to become a differentiating element among airports.

For passengers, apps are a communication tool that can guide them from the moment they check-in to the moment they board their flight; apps can personalizes their flight, improves the passenger experience, and diminish stress levels, which allow passengers to manage more efficiently their time during waiting periods.

Therefore, we propose that the perception of a good commercial image in the airport will have a positive effect on cross selling. We must not forget that perception across a mobile device, more specifically of a company's brand image, is crucial in customers' perceptions since this will have an influence on the perceived value that the other products and services will have.

Authors like San Martín and Carpio (2012); Okazaki and Mendéz (2013) state that online transactions via mobile devices, together with the information provided on the products and services offered through these devices, is the future of this new business model in the tourism sector. If customers have had a good shopping experience using an airport app, it is probable that they will promote the app through word-of-mouth or recommend the app to their closest friends; on the contrary, we may also have many possibilities for the customer to spread negative publicity about our app.

Conclusions

Markets are like conversations which become interactive spaces where customers act as social activist that consume content through social media, and most importantly, these customers generate new content which is then shared with other consumers. As a result, mobile marketing has an influence on the perception a customer has of an airport's image, both in a general and personalized way through his or her experience. Hence, these individual experiences with an image (in this case the airport with customers) "encourage", to a greater or lesser extent the senses, the mind, the emotions; as well as the consumer experience, the relationship with a product, the service, and the brand or company. Image also gives sensorial, cognitive, behavioral, and relationship value, and these substitute the functional values. Additionally, the most effective opportunities to influence a buyer is after a purchase has been made; the consumer's experience is key for brand satisfaction and loyalty. The results obtained in this study support that an airport's level of image-perception will either have a positive or negative effect on a passenger's degree of satisfaction. Nevertheless, it is important to see airport image as a multidimensional phenomenon.

However, the results obtained also confirm that the perceived image of an app improves passengers' sense of security and control within airports. For example, passengers who have used the app and have perceived a good global image of the airport, if they were to return to the airport, the app would give them a sense of security and a peace of mind while moving about terminal. As a consequence, the airport management now has the opportunity to increase their potential customer ratio into real customer via their app. As an airport app projects in real time images of the needs being demanded by passengers, it improves passengers' decision making capabilities and their freedom to move inside the terminal. If passengers are looking for their boarding gate and the app is indicating them where to go, as well as their flight's time, we are improving their experience while also reducing their stress levels. To sum up, one has the opportunity to boost sales based on the image one projects.

The results obtained show the validity of these two constructs and, in most cases, they are both complementary, i.e., a good image produces a positive effect on sales. These results confirm the literature review herein regarding these two variables. Additionally, the results also confirm that informing a passenger through an app has a positive influence on their sense of security-control. When customers have all the information they need on their mobile devices, without a doubt, the information is gives them security and self- control over their thoughts and movements, and this allows them to move around the terminal peacefully as well as optimize their time. The app helps the passenger know all the flight

information: take off time, delays, boarding gates, and *etcetera*. As users have control over their leisure time, they can have a coffee, buy a book or walk around the airport exploring the facilities available. In short, the app reduces a passengers' stress levels by providing them security, tranquility, and control over their time. Moreover, the results obtained are compelling and they reveal that the information provided by the app significantly favors airports' image-perception. In fact, communication can be seen as an act of transparency done by airports which makes it easier for passengers to have access to important information so they can improve their experience inside a terminal. Therefore, the passenger establishes a cognitive and physical link with the airport's global image.

The growth of app activities on mobile devices, and above all in "the new generation" of devices, is gaining traction in the business sector given the various opportunities offered both by conferrers and demanders. Airport managers should know and be familiarized with the instant communication and immediate response generated by mobile devices. The competitiveness among tourist destinations has obliged all the agents involved to become more creative, productive, and above all, know how to differentiate themselves from others.

To conclude, this study infers that an airport app is the perfect tool that diminishes and differentiates airports from one another. Implementing apps enriches passengers' experience, improves users' levels of satisfaction, provides passengers greater security while transiting through a terminal, and reduces stress levels. With respect to an airport's image, it is important to promote the airport's app as a selling channel and to encourage consumption. The truth of the matter is that new paradigms in buying habits as well as mobile payment systems have come to stay, and airports need to find a way to benefit from this synergy. The app is the perfect tool to project an airport's brand image, which is a key factor in a passenger's perception. Airport managers should plan their strategies with mobile marketing to get passengers to perceive a specific brand image with an airport. Besides, airports like Schiphol, New York (JFK), Incheon, among others, have been doing this for years and their image is beyond well known.

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