

New Marketing Strategy : Mobile Applications as Marketing Tools in Airports

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Abstract

Mobile applications (apps) on smartphones are being increasingly used to access news, entertainment, weather forecast, etc. As apps gain a stronger footing in the 21st century, large airports are taking advantage of this new marketing outlet by developing apps for branding and business communication. In recent years, this marketing model has established itself as a communication tool because of its multi- functionality, which provides added-value to the service content offered. This aims of the research were two-fold. First, to evaluate how an airport app is having a direct and positive influence on passengers' sense of security. Second, to analyze how this tool can improve passengers' satisfaction and their perceived image of an airport. To analyze the influence an app has on passengers-users at airports, 103 passenger-users were surveyed. The results are particularly relevant for passengers as they are more efficient during their leisure time in terminals, and their stress levels decrease. Besides, by having a mobile app, airports can improve their brand image as well as enrich the experience of passengers within the airport.

Index Terms : mobile marketing, app, satisfaction, image

I. INTRODUCTION

Airports are adopting mobile marketing with the aim of improving both the experience and satisfaction of passengers within these infrastructures. We should note, however, that translating these theories into practice is not an easy task, especially at airports where they have micro-settings with very different and well-defined activities. As airports only provide the facilities needed to bring together passengers and companies under the same roof, seeking to adjust airport capacity to demand along with attempting to maintain an acceptable margin of profit and user satisfaction is a very difficult mission [1].

Nevertheless, large airports are moving towards a more business-like model in which management is more commercially driven, and are focused on introducing an environment with more creative and technological features or amenities. Consequently, airports are losing the image of just being an inter-modal node in transportation where passengers are just another element in the chain process.

While applying a commercial perspective to airport management supposedly means that these infrastructures can improve their financing capabilities,

it is important to highlight that according to SITA [2], “improving customer service is the top driver for new technology investment in airports”. Therefore, the objectives of this research are two-fold; first, to analyze how airport apps are having a direct and positive influence on passengers' sense of security-control; second, to study how this tool can improve passengers' satisfaction and their perceived image of an airport. People are increasingly using their mobile devices to multitask and carry on multiple conversations in organizations [3].

Mobile applications, most commonly referred to as *apps*, are just another mobile marketing platform. As apps now have utmost importance in the service sector, they cannot be considered as mere communication tools. As stated in [4], “if long-term success is desired, the benefits must go beyond a purely cosmetic nature.”

Thus, mobile marketing should not just be a fashionable tool or something that companies adopt to keep up with competitors. No one doubts today that the internet is an important medium, and the rise of the smartphone and the tablet only predicts a great future for mobile marketing. As mobile devices are in the hands of people at all times, they have become an essential, personal, and intimate tools for all users. As mentioned previously, this

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marketing platform promotes products and services in a world where people are not just dedicating more time to the mobile internet but are also heavily relying on it to organize their lives (e.g. to make restaurant reservations or to take appointments with doctors).

Today, mobile marketing is not just accepted, but it is also expected. To say that buying and selling habits are rapidly changing due to the powerful association between mobile devices and marketing is not an overstatement. Therefore, airports, such as Schiphol in Amsterdam, saw an opportunity in mobile marketing both to increase passengers' overall satisfaction and to exalt the image passengers had of the airport. Following the creation of the *Schiphol Amsterdam Airport* mobile app, the experience of passengers at the airport was improved at all levels. In addition, according to World Airport Awards [5], this airport was rated as the best in Europe and the third best in the world for that year.

However, it should be pointed out that the important feature of these apps is not their geolocation capabilities. On the contrary, their essence lies in their capability to offer passengers a personalized experience and micro-segmented products. For this reason, airport managers should know and be familiarized with instant communication and immediate response mobile devices generate.



**Fig. 1. Schiphol Amsterdam Airport
(Awarded 5 times as the best Airport App)**

This new communication outlet offers communication executives immense possibilities. Yet, the challenge lies in knowing how to use this technology in a sensible and respectful manner since users may find receiving information on such a personal item like the mobile phone quite intrusive. Accordingly, success depends on how much value communicators can create for users so as to make the latter more susceptible to receiving messages [6].

Airports need to generate income and, more importantly, they have to obtain profits on their annual balance sheet. They can make their earnings from aeronautic and non-aeronautic activities. While aeronautic revenues are directly generated from airplane operations, landings, cargo, and passenger processing (landing rights, passenger service fees, airplane parking and storage fee), non-aeronautic revenues are obtained from commercial activities unrelated to airplanes; it encompasses all the activities that take place in airport terminals or on airport land, which includes car parking, car rentals, duty-free stores, advertising, etc.

Our research mainly focused on non-aeronautic income since mobile marketing has a greater outreach in this area, and there are more opportunities to create personalized experience for passengers. Furthermore, airports that have introduced mobile apps can also offer products and services tailored to the needs of passengers. Thus, these apps can help airports develop a business-like approach in which management becomes more commercially driven, and the focus is placed on having an environment with creative technological features or amenities. Consequently, airports will be able to shed their rigid image of merely being an intermodal node in transportation where passengers are just another element in the chain process. According to Rendeiro and González [7], applying a commercial approach to airports means an improvement in their financing capacity.

Undoubtedly, much work remains to be done in order to apply some mobile marketing perspectives and realities to the airport sector, and companies as well as consumers still have many opportunities in this field. Incidentally, it is worth mentioning that the last report from the Guild of European Business Travel Agents "GEBTA" [8], mentioned some measures that commercial airlines can implement regarding mobile devices. In this report, Apple stated that, "if airlines intensively seek to sell 'ancillaries' then smart phones are going to be their best allies. Near Field Communication (NFC) technology will facilitate automatic invoicing and check-in at airports, and once on board the mobile phone will allow an in-flight experience with connectivity, services, entertainment, pre-arrival information etc."

II. LITERATURE REVIEW

Although it may seem as if the concept of mobile marketing was introduced a long time ago, the fact is that

this is a new marketing activity that has existed for less than a decade. Furthermore, mobile marketing is not only a fairly recent modality in marketing but is also embedded in a constantly emerging technological sector, and thereby, it is exposed to continuous change. Therefore, mobile marketing is constantly being redefined and interpreted from various perspectives.

In fact, the literature review demonstrates a recent interest in analyzing this tool given that some researchers and organizations such as the Mobile Marketing Association (MMA), differ in the concept's definition and focus. However, the majority of authors conceptualized mobile marketing as another marketing tool with which businesses can develop their designs, advertising, and marketing activities [6, 9, 10]. On the other hand, other authors argued that mobile marketing is only a communication tool that allows businesses to interactively communicate with their clients [11, 12, 13].

In particular, according to Shankar and Balasubramanian, mobile marketing is a two-way or multi-directional communication and promotional channel through which companies can send their clients offers by using any mobile device technology.

Likewise, we should highlight that in this study a mobile app is a software program adapted for mobile devices, and it is just another tool for mobile marketing. Conversely, Bellman, Potter, Hassard, Robinson, and Varan [14] stated that apps are promotional tools that generate notoriety and a positive brand image since apps seek to have a media impact, encourage an interactive viral process through publicity, offers, discounts, awards, *etc.* Currently, apps are becoming sales outlets that not only allow businesses to sell their products and services, but companies also have the possibility to offer other businesses publicity services via their apps, i.e., companies can place advertising, banners, and links to other sites of interest with products or services offered by other businesses.

A. Defining Mobile Apps

Various authors have defined mobile apps from different perspectives, and literature on this subject is scarce as apps are a fairly new concept that is currently being developed and expanded. As mentioned above, many authors have defined the application as a promotional tool that generates media impact and virtual interaction [14, 15]. MMA [16] and Garcia [17] justified the application as a product that contributes value to user

management, information, and resolution in an automatic and interactive manner.

Unlike the previous authors, Costa, Barragáns, and M. Rey [18] and The AppDate [19] saw apps as a sales outlet where distribution is the entrance door that allows for the sale of business products and services. As mentioned above, companies often sell advertising space within their applications to other businesses.

Furthermore, Sanz, Martí, and Ruiz [20] presented an app as a management tool with which users can perform tasks such as searching for information, mapping *etc.* The features offered by apps are numerous, and today, with all the new demand of customers, new apps are being developed for professional and recreational purposes; they go beyond what we can imagine.

Likewise, this creative synergy is promoting market niches within the field that aims at meeting users' needs and offering a more personalized service. New smartphone users are bi-functional i.e., they can navigate the real world they live in as well as the virtual window opened by mobile devices. Without a doubt, smartphones have changed the behavior of people, as well as how they interact with their surroundings, in a way they have generated the parameters for Human-Mobility-Applied Applications (HuMobAp), i.e., humans move according to the needs and incentives generated by apps [21]. The need is to provide adequate information to demand of passengers in order to make decisions more favorable and increase passengers' efficiency during waiting times. In the questionnaire, passengers answered the following: "Was the information easy to understand? Were you able to find the information you were looking for? Was the system easy to use?"

Therefore, mobile marketing is an excellent communication tool for keeping users informed online [22, 23]. In this context Wang, Xiang, and Fesenmaier [24] argued that if tourists have access to online information sources, they will be more flexible and will be able to take advantage of online planning. For instance, when unforeseen incidents occur, tourists can adjust their activities and plans accordingly, and ultimately, they feel more confident about their traveling plans. In this study we follow the aforementioned authors' line of thought, and for this reason, we found it necessary to frame the following two hypotheses:

Hypothesis 1: The information provided by the app through mobile marketing tool exerts a positive influence on safety-control of passengers at the airport.

Hypothesis 2: The information provided by the app promotes the perception of the image you have of passengers in the airport infrastructure.

Obviously, it is necessary to wager on mobile apps as the primary basis for future strategic business plans and marketing. Additionally, if we are to advance towards a future that is increasingly connected to real-time information, we must relinquish our fears about adopting new technologies in our lives and businesses.

B. The Mobile App as a Marketing Tool

Applications can effectively and efficiently achieve various communication and/or business objectives, but achieving these objectives will depend on the focus of the app selected. Airports such as Schiphol, Charles de Gaulle, etc., have seen apps as sales and image management tools. From an image-branding perspective, contents, usefulness, and experiences are brought together in order to keep and form a positive brand image among the targeted population. Besides, one reason behind the popularity of brand apps as a marketing tool is attributed to its high level of user participation, as well as the positive impact they supposedly have on the attitudes expressed towards sponsoring brand [25].

Today airports are competing among themselves. In fact, the vast majority of airports have a new management model, and are no longer public property but are under private management; nevertheless, these infrastructures will continue to be supervised by public authorities.

Furthermore, the great long-term growth experienced in air transportation activities, together with deregulation in major markets such as The European Union and The United States, has not only caused the resurgence of airports specialized in serving different market segments (long distance, low-cost, air cargo, corporate aviation, tourists destinations, etc.), but it has also given rise to multi-airport systems that service conurbation areas. In other words, competition has become more fierce, and the image of airports is going to be a key factor for perceptions of passengers. Currently, with the help of apps, we can associate some airports to a specific brand image.

As pointed out by Apaolaza and Hartmann [26], brand image can be seen as an antecedent of customer satisfaction and it confirms the indirect effect of image on attitudinal loyalty mediated by satisfaction variables.

Airports need to create strategies around mobile marketing so as to get passengers to associate an airport with a specific brand image (Fig. 2). Obviously, this is not something new, and big companies like Coca-Cola, Pepsi, McDonald's, Nike, Adidas, Mercedes, etc., have made their brand's image the symbol of their company, for which they are recognized anywhere in the world. A literature review on image-building [27, 28], shows that the scales mostly used to measure image building have been the following: brand image design, app design and features inside it, an airport's reputation and its facilities, special sales and offers, convenient hours, security, lighting, accessibility, promotion, publicity, etc.

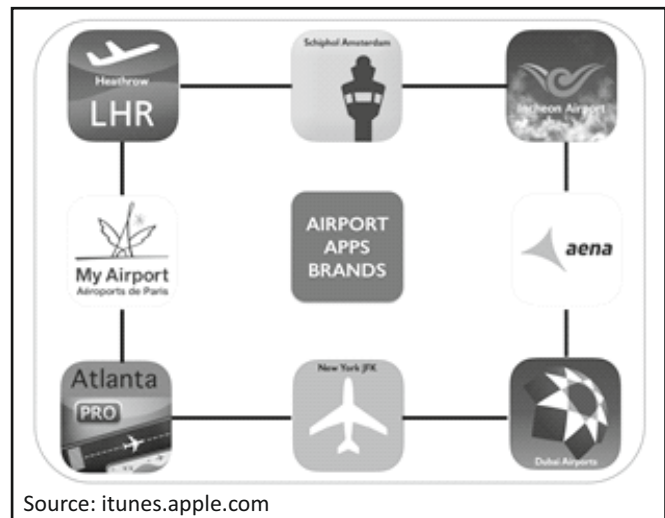


Fig. 2. Airport apps brands

The image an airport has on a mobile marketing tool can be understood, as pointed out by Lewis and Soureli [29], as a series of preconceptions held by customers based on their previous experience in the airport, which in turn plays an important role in satisfaction and in the permanence of these preconceptions. Thus, it is argued that the overall impression an individual has of an entity along with all the different images associated with that entity, will have a positive influence on a customer's satisfaction [30]. The latter author, in the aforementioned study, argued that according to the results obtained, associations to a corporate image are either direct or indirect determinants of global image and of an individual's satisfaction. In [31] the authors held the view that image is an important aspect in the customer satisfaction model. Therefore, this study proposes the following hypothesis:

Hypothesis 3: The level of perception of the image of the

airport has a positive or negative effect on passenger satisfaction.

Links and meanings are subsequently enhanced [32], connecting brands and tourists on a cognitive, emotional, and behavioural level to make experiences more enriching as argued in [33]. Passengers thus attach a value to brands (usually unconsciously) based on their own experience and the experiences of other significant agents as well as on the promotional and communication activities, and tourist products that these agents represent.

C. Concept of Satisfaction

The concept of satisfaction can be addressed with one of the following two approaches: transaction-specific, or the overall or cumulative satisfaction approach [34, 35]. The transaction-specific approach defines satisfaction as a consumer's response to his or her latest purchase with an organization [36], and for this reason, it will find itself influenced by situational variables present in that moment.

Moreover, satisfaction is an evaluative judgement formed after a choice has been made as well as a customer's emotional response to a particular purchase or moment of consumption [37, 38]. As clearly noted by Giese and Cote [38], satisfaction is an ephemeral and time specific response that makes reference to certain aspects of a purchase or product consumption. Hence, most satisfaction research adopts a transaction-specific perspective [39, 40]. In this paper satisfaction is seen as a wide concept with many intervening variables, as it has been shown in the aforementioned literature.

Furthermore, it is important to remember that satisfaction is a multidimensional construct. The results obtained from customers who are in a physical environment are not the same when compared to the results obtained from those in an interactive environment [41]. It is no surprise that mobile users are among one of the most important groups studied by researchers given the distrust many users have about embracing new technologies, which is a fact. At present, there is much uncertainty surrounding the use and acceptance of mobile payment technologies and their future success.

Thus, satisfaction can be the link between a customer's perception of value and satisfaction, and customer retention or loyalty [42]. On this point, Gronholdt, Martensen, and Kristensen [43] claimed that satisfaction is a broad and holistic phenomenon which can be

measured by a single dimension i.e. "overall satisfaction". Moreover, other studies conducted by Millan and Esteba [44]; and Castro, Armario, and Ruiz [45] considered the addition of attributes to other sensations derived from consumption, and they use product attributes to measure satisfaction using a multi-dimensional evaluation method. Both approaches are useful in evaluating consumption satisfaction [44] and can thus, also be applied to passenger satisfaction.

III. 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 multicollinearity analysis, SPSS 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 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. Afterwards, the questionnaires were reviewed by two marketing experts to address any problems that might adhere to the metric, the specifics of the investigation, or to the framing of the questions.

TABLE I.
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: Author elaboration

Once the target population was established (*Schiphol Amsterdam Airport* app users), the survey was carried out

for three months (August 1- October 31, 2014), during which 106 surveys were completed. Table I shows data sheet of the empirical study. Thereafter, the questionnaires were reviewed for quality control purposes to ensure that responses were reliable, of 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 $P=Q=0.5$ and with a confidence level of 95% ($Z=1.96$) which yields a sampling error of $\pm 9.7\%$ (m.a.s.).

IV. ANALYSIS AND RESULTS

The profile of respondents was predominantly male, with a medium-high level of education, and living in

urban areas. Table II shows in more detail the sample characteristics.

In this research, I had opted for PLS models given that they have the ability to include significant formative and reflective constructs. In our models we take into account both variables since PLS is effective and makes it possible to work with both types. Lastly, as a structural equation model (similar to the one performed by AMOS) uses covariance among its measures which makes it problematic to include formative indicators [46]. Yet, a PLS model allows us to analyze models with both formative and reflective indicators [46, 47]. Table III shows the verification of the hypotheses raised by using a relationship path diagram with a *Smart PLS* model.

From the results obtained, we can accept hypothesis 1: the information provided by mobile marketing has a direct and positive effect on passenger safety ($\beta=0.181$; $p<0.05$). The data reinforces the aforementioned literature and sides with Munneke [48], who viewed apps as communication tools that can guide passengers from the moment they check in to the moment they board their flight. Consequently, this improves the passenger experience by decreasing stress level which allows passengers to manage their time more efficiently during waiting periods. In summary, we are providing passengers a greater degree of safety while moving around the airport. The contract of the stated hypotheses in this research study concerning the Path Diagrama relationships is shown in Table III, whereas the illustrated model of the stated hypotheses is shown in Fig. 3.

Based on the results obtained in scenario 2, it is shown that the information provided by the app favors the passengers' perceived image of the airport, as it is positively shown by this data ($\beta=0.432$; $p < 0.001$) and given the qualitative impact, it is the second most important in the path coefficient results obtained in the study. A literature review on the importance of information in an online environment shows how researchers emphasize the importance that websites should provide adequate information about the goods and/or services offered. Besides, as it has been clearly stated by researchers in [49] [50] there is a need to provide adequate information about a company and all of this contributes to a company having a better perceived image.

Therefore, the level of an airport's perceived image has an effect on a passenger's degree of satisfaction, as

TABLE II.
SAMPLE CHARACTERISTICS

Sample Characteristics	%
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
Highest level of education	
Uneducated	8.7
Primary education	15.5
Secondary education / Training cycles	46.6
University studies	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

Source: Author elaboration

TABLE III.
VERIFICATION OF THE HYPOTHESIS RAISED
THROUGH THE RELATIONSHIPS PATH DIAGRAM

Hypothesis Relationship Number	Path Coeff.	Sample Mean	Standard Deviation	Standard Error	T Student	RESULTS
H1 Informa → Sec_Con	0,181	0,202	0,124	0,123	1,659	Validated
H2 Informa → Image_per	0,432	0,443	0,080	0,080	5,254	Validated
H3 Image_per → Satisfac	0,316	0,381	0,098	0,098	3,684	Validated

demonstrated by the results ($\beta=0.316$; $p < 0.01$), with a positive sign and a valued significance. On this basis we accept hypothesis 3. On this basis marketing managers should emphasize the development of both communication and management policies in areas that significantly influence a brand's image, and consequently, satisfaction due to the fact that they both form a projected image that characterize a brand in customer's perceptions [29, 51].

Note: significant assumptions validated and marked with bold arrow, * significant at $p < 0.05$, ** $p < 0.01$ and *** $p < 0.001$ (5%, 1% and 0.1%, the confidence level of 95%, 99% and 99.9%, respectively, for t-student test a queue).



Fig. 3. The preferred empirical model estimated with PLS. Implementation of Mobile Marketing (App)

V. CONCLUSIONS

Due to the development of new applications for mobile devices, we are able to move about the airport more

efficiently since we are able to access real time information about flights, invoicing, inspections, baggage, departure gates, and better options for finding stores, services, food, etc. within the terminal.

The results obtained support the hypothesis that informing users about their travel plans via an app has a positive effect on their sense of safety-control. Without a doubt, when customers have all the information they need on their mobile devices, they are given a sense of security and of having control over their thoughts and movements. This improves their ability to walk around the terminal with greater ease as well as being able to use their time more efficiently. The app helps the passengers know all the flight information: take off time, delays, boarding gates, etc.

Thanks to the planning provided by the airport apps, the user-passenger has control over his or her leisure time, he or she can have a coffee, buy a book or walk around the airport exploring the facilities available. In short, the app reduces a passenger's stress levels by providing him or her security, tranquility, and a time-management tool.

Furthermore, the information provided by the app promotes the perceived image passengers have of the airport. The results obtained are compelling and they show that the information provided by the app significantly favors the perceived image of airports. In fact, communication can be seen as an act of transparency carried out by airports while also making it easier for passengers to have access to important information so they can improve their experience inside a terminal. Therefore, a cognitive and physical link of the global image a passenger has of an airport is established.

According to Wang et al. [24], using mobile devices for traveling is shaped by a series of complex interactions between environmental factors, cognitive beliefs, previous experience, and everyday phone usage. These authors also opined that using smart-phones for this particular purpose has the potential to significantly transform the experience of tourists.

Moreover, the level of an airport's perceived image has an effect on a passenger's degree of satisfaction. Yet, we must consider an airport's image as a multidimensional phenomenon. When customers use an airport to travel, they have some preconceived expectation and image of the infrastructure, and consequently, they make an evaluation based on their affective perception-cognition of the services and products offered. It is also evident, as shown in this research, that satisfaction is influenced by

the environment or atmosphere in which it is consumed, which includes the image, experience, expectations, etc. The results confirm that an airport's global image has a positive or negative effect on satisfaction levels of passengers.

To summarize, different factors will positively influence a passenger: perceiving a good image of an airport app, the contents and images provided by an airport app; and finally, the service image offered by an airport and by the companies within its microenvironment.

If an airport wants to obtain better results in overall satisfaction of passengers and be more competitive, it should develop, as mentioned in [52] strategies and actions aimed at achieving a better market position that should deliver a superior value to consumers. These strategies must cover all aspects (functional and emotional) connected to an airport that can help form its image, of its perceived value or notoriety among consumers. In this manner, an airport will be able to influence the perceptions and impression consumers have, and they will also be able to achieve greater satisfaction, as noted in [53]. The airports of this new era are immersed in an interactive storm the result of which is mobile marketing. Every year, more airports are reaching a stage in which their commercial profits surpass their aeronautical revenues.

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