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The Impact of Using Airline Mobile Applications on Passenger Satisfaction in Egypt Air

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Keywords

Mobile Applications,
Airline Mobile Applications,
Passenger Satisfaction,
Egypt-Air.

Abstract

Mobile airline services, such as booking, check-in, boarding pass, gate caller, flight and lost baggage information, have been increasingly utilized recently. This paper aims to analyze the effects of mobile marketing tool at passenger satisfaction of Egypt Air. To achieve aim and objectives of the research a quantities method was used by a questionnaire tool. The sample was passengers in Egypt Air 400 questionnaires were distributed only (384) questionnaires were valid for the statistical manipulation of data distributed in Cairo international airport and Egypt Air domestic sales offices. The research reached several results, the most important of which is the presence of the application is very flexible. Airline mobile applications are the best way of airline service because of its ease of use and availability when needed; there is positive significant relationship between passenger satisfaction and using of airline mobile application. The research thus recommended that Egypt Air should develop mobile applications to offer airline service. They should announce their mobile application in their website, social media. They should make training for their staff in mobile applications using. Developing mobile applications include several features that increase the number of passengers and attract others to use it.

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1. Introduction

Mobile applications are applications that are intended to keep running on cell phones and different gadgets that have mobile ability. They are planned so that any telephone that has the application highlights can utilize them without influencing ordinary operations of the telephone itself. With the dimension of innovation on the planet today, programming applications to peruse the web, reserve lodgings, car rental, booking seat on an aircraft and so on, can be introduced on cell phone consequently bringing most extreme usage of time (Alo et al., 2014).

Smart mobility-based operations can change systematic value decrease by simplifying the airline, airport, and passenger value chain. In this way, the industry should recognize immediate value impact on airline/airport operations and passenger services, and the ability to monitor, manage, and control existing and new operational metrics (Howard et al., 2010).

The airlines are starting to structure their own airline mobile application or have other companies develop the airline mobile applications for them. A typical airline application would incorporate the capacity for passengers to buy a flight, to registration early, or acquire their tickets from the mobile booths at the airports. However, as the competition increases between the airlines and between third-party airlines mobile application developers, some airline applications have added features that could support with airport navigation (Amadeus, 2011).

Research Problem

With the expanding market competition, Egypt Air does not seem prepared for this quickly adjusts and adapt to changes in the markets in addition to obtaining Competitive advantage. To do this, Egypt Air Airline mobile applications must be linked and Egypt Air performance with General Airlines objectives. This is achieved by measuring the performance of Egypt Air Mobile Application and passengers where the airline you must decide which tool is most suitable or the framework that expands Egypt Air performance. The main questions in this the research is: “Do mobile applications affect...Egypt Air performance?

SQ1: What extents will the airline mobile application have an effect on passenger behavior and however does it contribute to the passenger satisfaction towards the airline?
SQ2: in at what point the innovation-process are the customers and do they use mobile applications for travel purposes already?
SQ3: How does the introduction of a mobile travel guide applications affect consumer behavior?
SQ4: Is a mobile travel guide application a suitable tool to increase customer loyalty towards an airline?
SQ5: How the possibility of such mobile travel guide applications has an effect on their behavior?
SQ6: How people could actually have a higher loyalty to a certain airline by using such a travel guide application?

Research Objectives

1. Identifying the importance of the using the mobile applications in offering and marketing of Egypt Air's airline services.
2. Exploring the current situation of the using of mobile applications in Egypt-air.
3. Investigating the status quo and potential of mobile services in the airline sector such as booking, check-in, boarding pass, gate caller, flight and lost baggage information.
4. Analyzing the effects of mobile marketing tool at passenger satisfaction of Egypt Air.
5. To identify problems faced by customer and the staff in current traditional reservation process.

2. Literature Review

2.1. Mobile Applications

Mobile applications are software created for particular operating systems and working on mobile devices such as: smartphones, palmtops and tablets. The utilization of mobile applications by airlines makes it possible to reduce the costs of passenger services, creating opportunities for establishing contacts with them in real time in interactive form of e.g. chat. An appropriately designed system will automatically inform passengers about booking modifications and will remind them of a flight .Systems for administration of mobile applications have lower demand for servers and are characterized by higher security in the area of data storage. Designing a system and programming databases also requires fewer programmers than the IT systems used thus far .The use of mobile applications is also a source of numerous benefits for the travellers. Among functional aspects we can highlight rich, intuitive user's interface, as well as high efficiency and high level of security .Mobile applications are characterized by minimized need for mobile data transfer. More and more often airports provide hot spots with wireless Internet access a passenger at the Munich Airport can use Internet access free of charge, without temporal limitations (Baczko, 2011).

The Mobile App as brand image 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. Previously mentioned airports such as Schiphol, Charles de Gaule, etc., have seen apps as a sales and image management tool. 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 (Hutton & Rodnick, 2009).

There are many Mobile Apps available today. They are available through distribution platform such as Apps store, Play Store, Blackberry store etc. they depend on the type of Mobile device the user has. Currently, many companies make a special Mobile Apps to offer their products and contact with customers in easy way. Most people who have Mobile "Smartphone" have downloaded an "Apps" to their Mobile just for

entertainment (such as Mobile Games Apps and so on). Later these Apps developed and designed into a new channel for companies to connect with their customers (Schmitz et al., 2016; Guth and Krook, 2011; MMA, 2008).

Information and communications technology has become of great importance in the global aviation industry as an effective mechanism for further controlling expenses, increasing profits, and raising operating efficiency, whether in airports or airlines (Hansman, 2005).

Mobile applications in this time are a major growth sector of the information and communications economy (Delhumeau, 2013).

In the airline industry, a number of tasks and functions various undertakings and capacities, for example, task administrations, in-flight stimulation, and passenger benefit, rely upon data correspondence advancements Information and Communication Technologies. Thus, data correspondence innovations Information and Communication Technologies are utilized vigorously via aircrafts and a lot of capital has been put resources into this field (Buhalis, 2004).
It is argued that a variety of industries are probably to be considerably modified by the emerging of mobile technologies, and this technology will force companies to measure their methods (Barnes, 2003).

2.2.Mobile Marketing

Mobile Marketing Association (MMA)1 (2008, p.1) defined Mobile Apps as "They consist of a software that runs on a Mobile device and performs certain tasks for the user of Mobile phone. They also including basic telephony user interface, messaging service, games, video, audio and others include tools for downloading and reading blogs such as Content Next's Apps for MocoNews." Moreover, Mobile Apps have been defined as “End-user software Apps that are designed for a cell phone operating system and which extend the phone’s capabilities by enabling users to perform particular tasks” (Purcell, et al., 2010, p.9).

Applications marketing have the same goal than marketing, to attract and to maintain customers. In applications marketing several approaches are used such as traditional marketing and digital marketing. Digital marketing is often used for applications marketing, because the app itself is in the digital world, and also because it offers less expensive options than traditional marketing. As the application market is constantly growing, the new apps have difficulties to stand out and get found on the app stores. Well planned marketing communication plays an important role on the success of the app, since the resources can be used efficiently. Planning includes making a research on the current markets and application trends, defining target audience and creating a marketing communications plan (IJET, 2010).

Mobile marketing Companies from the aviation sector use mainly mobile marketing ,which according to the definition presented by Mobile Marketing Association may be defined as a "collection of practices which enable organizations to communicate and cooperate with users in an interactive way by means of any mobile device (MMA Global, 2018).The use of mobile marketing also allows companies to reach other segments of the market and makes it possible to facilitate communication with

passengers and to create an additional sales channel .Another definition of mobile marketing is presented by Scharl, who assumes that this kind of marketing uses wireless medium in order to provide in the right place and time personalized information which promotes products and services delivering benefits to all stakeholders (Scharl, Dickinger and Murphy, 2005).

For airports, mobile marketing tools have presented a melting pot of opportunities since this promotional and booking channel has learnt to adapt to an increasingly well-informed and educated in new technologies passenger. Companies, especially marketing specialists, soon realized the vast opportunities offered by virtual marketing. Mobile systems have become important tools that allow e-travellers to navigate in an uncertain world. A critical review of the literature suggests that a holistic understanding of the use of smartphones for travelling purposes has to be worked on and developed. The use of these mobile devices for travelling is shaped by a series of complex interactions between environmental factors, cognitive beliefs, previous experience and everyday use. This particular use of smartphones has the potential to significantly transform the touristic experience (Wang, Xiang & Fesenmaier, 2014).

2.3.Airline Mobile Applications

Airlines provide a range of mobile applications and tools providing a diversity of functionalities on the travel process. Table 1 below provides summary of passenger-focused mobile applications currently by Egypt Air. These applications can be classified as information focused or process focused. The lion's share of uses is data centered, which can be either broad or flight explicit. General data centered applications run from giving climate and contact data, airport maps, and locating airport lounges. View schedules, itineraries and flight status updates. In contrast, process orienting applications focus on mobilizing existing business processes such as changing reservations, purchasing tickets, or checking-in for a flight (Pagiavlas et al., 2005).

2.4.Mobile Applications categories

There are different taxonomies for Mobile Apps. Some researchers have categorized them as technical Approach and others as service provider. (Budiu,2013) assumed that There are three main types of Mobile Apps from technical method as; (a) Native Mobile Apps, (b) Web Mobile Apps, (c) Hybrid Mobile Apps. Moreover,(Kennedy and Gretzel, 2012) suggested that there are 7 categories for travel Mobile Apps from value chain. These categories are: Navigation, Social, Mobile Marketing, Security/ Emergency, Transactional, Entertainment, and Information Apps.

2.4.1. Native app 1.

All apps targeted toward a particular mobile platform are known as native apps. Therefore, an app intended for Apple device does not run in Android devices. As a result, most businesses develop apps for multiple platforms.

While developing native apps, professionals incorporate best-in-class user interface modules. This accounts for better performance, consistency and good user experience.

Users also benefit from wider access to application programming interfaces and make limitless use of all apps from the particular device. Further, they also switch over from one app to another effortlessly. The main purpose for creating such apps is to ensure best performance for a specific mobile operating system.

A major challenge for all companies developing native apps is to target the platform that will best match their customer requirements. There are a variety of choices for native app development, but the primary focus for most airlines has been the Apple iPhone, the Google Android and RIM BlackBerry platforms. Despite the growth of smartphones worldwide, the majority of global mobile phone owners still use full feature phones. Most airlines view the mobile web as the way to reach these full feature phone users, but there is also is an opportunity to provide full feature phone users with a downloadable app written in Java. This is a similar strategy deployed by Facebook and LinkedIn who have both created downloadable Java apps for full feature phones. Since these types of phones do not have an independent operating system (OS) the downloadable function would require working with the individual wireless carrier to include the app on their deck of downloadable software for full feature phones.

2.4.2. Hybrid app 2.

The concept of the hybrid app is a mix of native and web-based apps. Apps developed using Apache Cordova, Xamarin, React Native, Sencha Touch and other similar technology fall into this category.

These are made to support web and native technologies across multiple platforms. Moreover, these apps are easier and faster to develop. It involves use of single code base which works in multiple mobile operating systems. Despite such advantages, hybrid apps exhibit lower performance. Often, apps fail to bear the same look-and-feel in different mobile operating systems.

2.4.3. Web-based app 3.

A web-based app is coded in HTML5, CSS or JavaScript. Internet access is required for proper behavior and user-experience of this group of apps. These apps may capture minimum memory space in user devices compared to native and hybrid apps. Since all the personal databases are saved on the Internet servers, users can fetch their desired data from any device through the Internet (Budiu,2013).
Mobile phones can impact the air travel expertise in six ways: keeping passengers informed by notifying them with any flight changes; mobile self-service applications can provide passengers greater control throughout their journey; creating travel paperless; facultative m-payment; marketers are ready to send targeted content to passengers' mobile devices; and passengers will progressively use mobile devices to make their own personal recreation system to be used on board by downloading contents from the web before their flight (Society International Telecommunication For Aeronautics (SITA), 2009).

2.5.Egypt-Air Mobile Application

EGYPT AIR application for Android helps in enabling the customer to know a lot of information related to the flights of Egypt Air companies by booking a ticket and planning the trip he wants while in his place, through your mobile phone that runs on the Android system (Howard, et al., 2010; Amadeus, 2011; Alo et al., 2014; NIIT Technologies, 2018).

Through the application, it will contribute to knowing many things related to travel and flights related to Egypt Air. It will also display the flight timings and specify for you the locations of Egypt Air offices all over the world to facilitate the process of communicating with them, in addition to many other various features that you will discover when downloading. The application is always available on the distinguished website, Direct App through a direct link (Dickinger, Haghiran, Murphy & Scharl, 2004; Norm, 2011).

The EGYPT AIR application for Android is an application issued by Egypt Air as it keeps pace with the era of technology and modern technological progress, as it comes with the company's attempts to diversify its offers and its attempt to revive flights to Egypt in light of the tourism recession that Egypt is suffering from. This application has become an easy tool in the hands of every Egyptian citizen, as it It saves a lot of time and effort for customers, as the company is considered one of the best airlines and provides its services to more than 80 destinations around the world (Howard, et al., 2010; Amadeus, 2011; Alo et al., 2014; NIIT Technologies, 2018).

The application provides a lot of important information about Egypt Air flights and gives you the full opportunity to book your ticket yourself and plan your trip with what suits your special circumstances. In addition, you can now specify your seat on the plane and issue a boarding pass 24 hours before going to the airport. It also allows... You can book the hotel you want to stay in during your trip, all of this through your mobile phon (Egypt Air, 2018).

Advantages of downloading the EGYPT AIR application for Android, direct link The Egypt Air mobile application contains many diverse features, which we will present to you in the following points (Egypt Air, 2018).

- Through the application, trips can be booked on the Android phone.
- The application enables you to complete travel procedures, choose your seat, and receive your boarding pass 24 hours before going to the airport.
- The application shows you the reservation data, choose your seat, and the type of food you prefer.
- The application contains a service for reviewing the Egypt Air flight schedule to different places.
- The application enables you to know the flight status of any Egypt Air flights around the world.
- The application informs you of the baggage allowance, baggage allowance, and excess weight fees.
- The application contains answers to many customer questions.
- The application displays the addresses and numbers of Egypt Air offices around the world.
- The application works on all Android and iPhone phones.

- The size of the application is suitable for downloading on any phone and does not weaken the device's capabilities.
- LINK Development Company developed the program, which has an attractive and elegant interface and high-quality colours.

2.6.The Benefit for Mobile Application in Airline Industry

The airline industry constitutes a challenge for marketing specialists due to high dynamics of provision of information. Airlines strive to communicate more and more effectively with the passenger. The specific character of the branch also constitutes a challenge for mobile application developers, who update the more often than applications of companies from other branches Mobile apps assist airlines decrease costs through self-service alternatives, such as kiosks, that speed up the airport boarding process and help current staff concentrate on customer support (Karaca & Gülmez, 2010).

In the Foresee Mobile Satisfaction Index Travel Edition, satisfied users are said to be 73% more likely to use the airline mobile app as main source. In this industry, providing a quality mobile experience is now fundamental: data show that more users prefer to use the app rather than the mobile site, reporting they discard the latter when the app is available (Ekelhart &Manhoot, 2008).

3. Methodology

The researcher used the descriptive-analytical approach in which they tried to investigate the status quo and potential of mobile services in the airline sector. Mobile airline services, such as booking, check-in, boarding pass, gate caller, flight and lost baggage information, have been increasingly utilized recently, and this paper aims to analyze the effects of mobile marketing tool at passenger satisfaction of Egypt Air., since it is the most appropriate approach to describe the phenomenon in question, In this approach, the researcher is trying to describe the subject of the study, analyze the data, and compare, explain, and assess, hoping to reach meaningful generalizations to increase and enrich knowledge on the subject.

3.1.Data Collection

Data has been collected through questionnaires that were prepared in approach that is relevant to the situation so as to decrease invalid responses. They were distributed to passengers at Egypt Air. The researcher used the descriptive analytical approach, where a questionnaire was prepared and distributed to a random sample of three hundred and five (305) of passengers in Egypt Air the statistical analysis of the responses was carried out via SPSS v25.

3.2.Measures

To fulfill the research objectives for identifying the current status and potential of mobile services in the airline business, airline mobile services, such as booking, check-in, boarding pass, gate caller, flight information and lost luggage information, have been increasingly used over the last years, and this paper seeks to analyze the effects of mobile marketing tool at passengers of Egypt Air. To achieve that, this

research employed a method of descriptive analytical methodology by using a questionnaire tool, a survey consisted of nine sections is used as a data collection tool. The first section includes the passengers' demographic characteristics (gender, age, educational level, and income). The second section includes travel and general characteristics (purchase airline services, travel frequency, travel purpose, long duration trip was the ticket booked, and current use of mobile applications). The third section included 8 items representing using of airline mobile applications. The fourth section functions of airline mobile application included 5 sections and 23 items (flights 3 items, booking 5 items, airport 3 items, airlines 4 items, and ancillary services on mobile devices 7 items). The fifth section passenger requirements included 2 dimensions and 20 items (innovation features services 10 items and aspects of airline travel experience10 items). The sixth section included 3 items representing cross-selling. The seventh section included 4 items representing image perception. The eighth section included 4 items representing passenger satisfaction. The ninth section included 6 items representing security control. The questionnaire items were anchored according to the three point Likert Scale, "1 = Disagree", "2 = Neutral", and "3 = Agree".

3.3.Data Validity and Reliability

3.3.1. Data Validity

To validate the data collection instrument utilized in this study in terms of its readability, format, and ability to measure the study's constructs; the researcher distributed the questionnaire instrument to a number of passengers in Egypt Air. The questionnaire instrument was then updated and refined to reflect the comments and suggestions received by the domain experts. Moreover, the experts showed interest and interacted with the researcher concerning the questionnaire instrument which adds to its validity.

3.3.2. Data Reliability

The reliability of an instrument is the degree of accuracy and consistency with that it measures whatever it is measuring (Ary et al., 2002). Before proceeding with further analysis, the reliability testing was leaded in order to ensure consistent measurement across various items in the questionnaire. Indeed, the reliability of a measure indicates stability and consistency of the instrument. Consequently, this method determines reliability through examining the internal consistency of the research instrument such as questions (items) in the questionnaire, which are normally presented. Cronbach's alpha coefficient measures this effect and ranges from 0 (no internal consistency) to 1 (maximum internal consistency) (Döckel, 2003). Reliability coefficient of 0.70 or higher is considered "acceptable" in most social science research situations (Nunnally, 1978). As depicted in table (1), the Cronbach's Alpha Reliability was computed for seven sections. The tests showed that the Reliability Coefficients for all the sections were equal 0.919 and Validity Coefficient for all the sections were equal 0.959 which indicates that the instrument is reliable for being used.

Table (1) Cronbach's Alpha Value for Airline Mobile Applications

Items	No. of items	Cronbach's Alpha Value	Validity Coefficient *
Using of Mobile Airline Applications	8	0.768	0.876
Functions of Mobile Airline Application	23	0.834	0.913
Passenger Requirements	20	0.868	0.932
Cross Selling	3	0.760	0.872
Image Perception	4	0.804	0.897
Passenger Satisfaction	4	0.755	0.869
Security Control	6	0.741	0.861
Total	68	0.919	0.959

* Validity coefficient = √ Reliability coefficient

In order to measure the internal consistency and reliability of the study's constructs. Cronbach's Alpha (α) measure was used. The scales' reliabilities were measured and the Cronbach's Alpha of all scales in Table (1) ranged from 0.741 to 0.868, and for total questionnaire items was (0.919), this indicate an acceptable Cronbach's Alpha value for each field, whenever Cronbach's Alpha value is acceptable if it's more than (0.7). It is also evident that the validity coefficient is (95.90%) which means the reliability and validity of the study sample.

3.4.Data Analysis

To achieve the objectives of this study, the researcher used the descriptive analytical approach. The researcher depends on using The Statistical Package for Social Sciences (SPSS V. 25) was used to process data statistically. The treatment included the following statistical methods:

- Frequencies, Percentages, Means, and Standard Deviation (SD): To describe the characteristics of the study population of the functional items, and to determine the responses of its members towards the study axes.
- Cronbach's Alpha Test: To calculate the stability coefficients of the questionnaire, and the coefficient of stability of each axis of the study axes.
- Pearson Correlation analysis.

4. Results

The following part explains the results concerning the nine dimensions representing of airline mobile applications delivered by Egypt Air.

4.1 Descriptive analysis of airline mobile applications in Egypt Air

In this section, the researcher relied mainly on the descriptive analysis to get the means and the standard deviations for the study constructs along with their items. The items were measured using a Likert-type scale as follows.

First Section: Demographic Characteristics of Respondents

Table 2: the demographic profile of the sample elements

Variable		Frequency	Percentage (%)
Gender			
	Male	128	42.0
	Female	177	58.0
age group			
	21-29 years old	40	13.1
	30-39 years old	90	29.5
	40-49 years old	103	33.8
	50-59 years old	72	23.6
	60 or older	0	0
Educational level			
	Bachelor's Degree	106	34.8
	Diploma	45	14.8
	Master's Degree	104	34.1
	PHD degree	50	16.4

As depicted in Table (2) shows the discussion of the research findings begins with a brief demographic profile of respondents in terms of gender, age, education level, and income the majority of the respondents were female (58%), rather than male respondents (42%). Of this sample, the age bracket of 40 to 49 had the greatest number of respondents (33.8%), followed by the age bracket of 30 to 39 years old (29.5%). and the majority of respondents had completed a bachelor's degree(34.8%).

Second Section: Travel and General Characteristics:

As depicted in Figure (1) shows the results of preferred of purchase airline services where 38% of passenger preferred using Mobile / smart phone, while online 30.5% of passenger preferred using Check-in desk, 15.10% of passengers in Egypt Air used ticket office ,and 12.50 % of passengers in Egypt Air used Self – service kiosk.

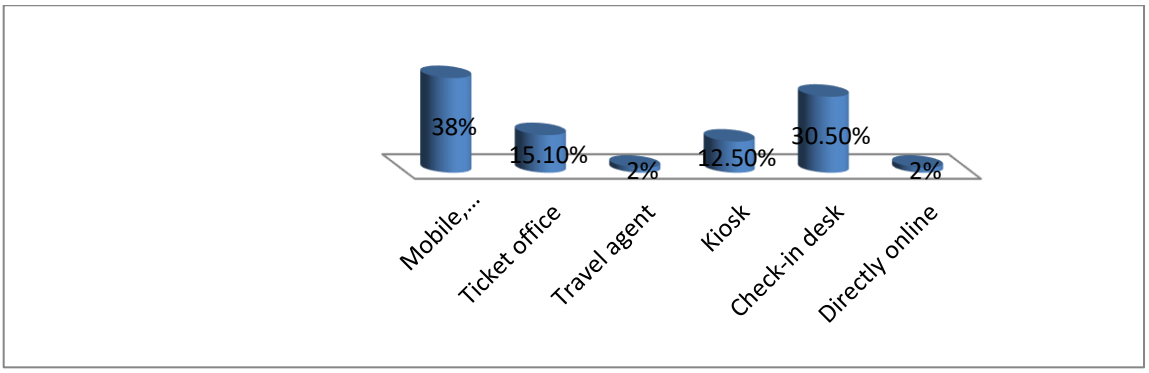

Figure (1) purchase airline services

As depicted in Figure (2) shows the results of travelled frequency per year, under half 44% of passengers in Egypt Air travelled frequency 3 to 5 per year, while 29% of passengers travelled frequency 1 to 2 per years, and 27% of passengers travelled from 6 to 10 times.

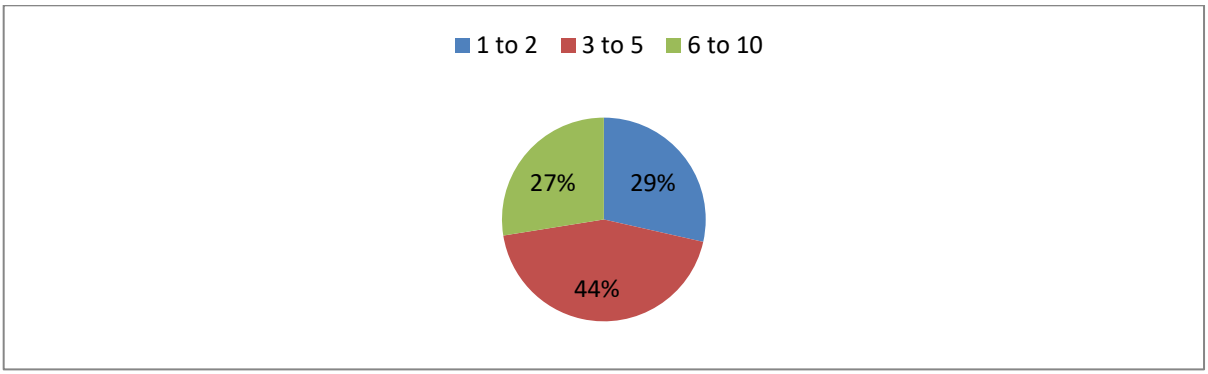

Fig 2: Travel Frequency

Figure (3) describes the general travel purpose for the sample. Firstly, 53.1% of passengers' of Egypt Air travel for Leisure, while 42% of passengers' travel for Business, and 4.9% of passengers' of Egypt Air travel for Personal reasons / Commuting.

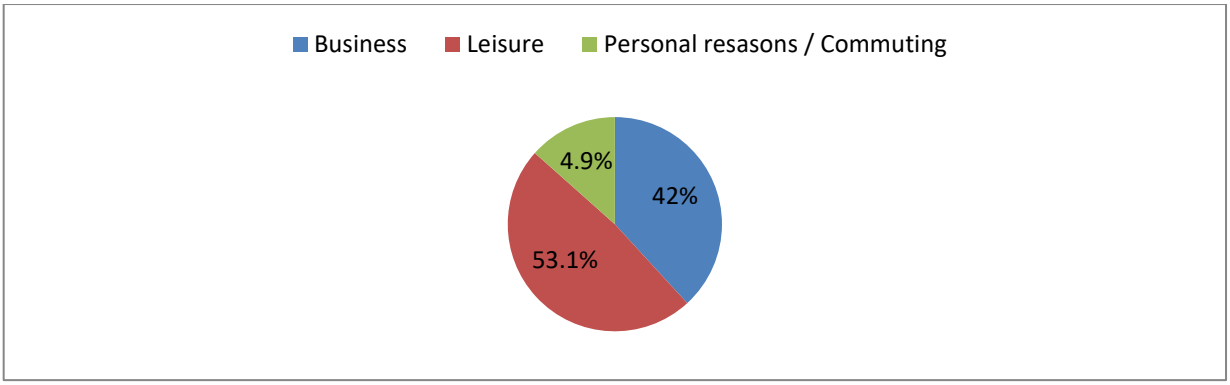

Fig 3: Travel Purpose

Figure (4) describes the general Flight Duration for the sample. Firstly, 66.40% of passengers' of Egypt Air travel for short haul, while 33.40% of passengers' travel for long haul.

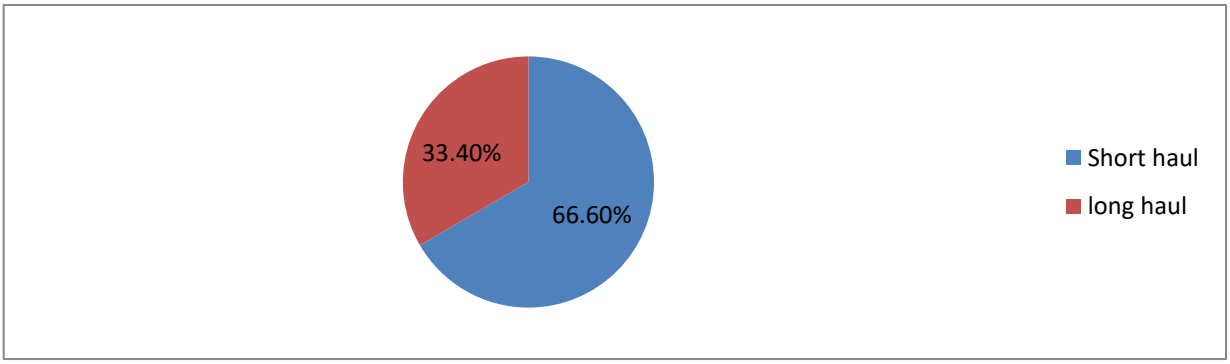

Fig 4: Flight Duration

Figure (5) demonstrates the current mobile usage for the respondents. The most frequently used services by respondents through their mobile devices is airline services (e.g: check-in, booking, buying tickets) 60%, for banking services 17%, for social networking 10.50% , the least used services used by respondents on their

mobile devices are entertainment purpose 7.50% and using the mobile for purchasing products 4.90%.

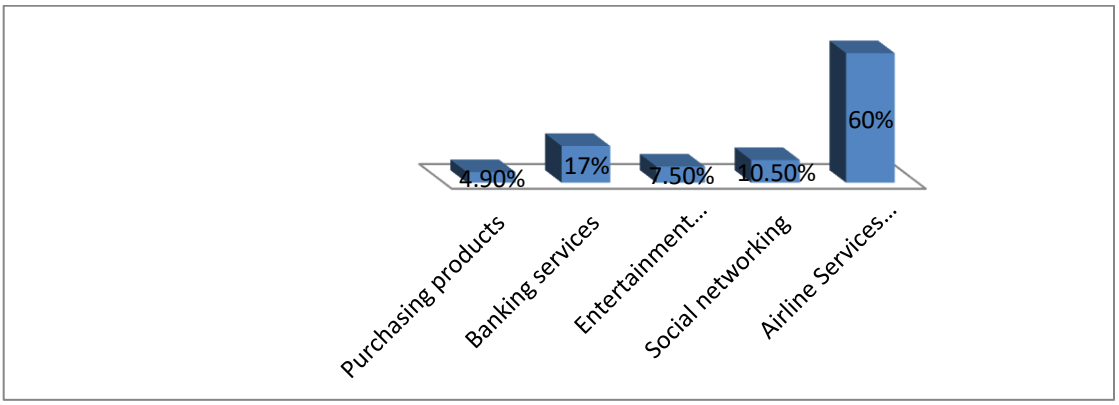

Fig 5: Current use of mobile applications.

The Third Section: Using of Airline Mobile Applications

Table 3: Using of Airline Mobile Applications

Items	D	N	A	Mean	SD	Rank	Evaluation
Application is easy to use	32.8	18.7	48.5	1.96	1.343	8	Neutral
1 was able to find the information quickly	31.1	5.2	63.6	2.16	.889	7	Neutral
I found the information well organized	29.8	10.5	59.7	2.32	.919	5	Neutral
Steps of booking tickets are straight forward	8.9	6.2	84.9	2.30	.899	6	Neutral
Using the mobile application helps me to complete duties faster.	14.4	23.3	62.3	2.76	.600	3	Agree
Using the mobile application improves the efficiency of my tasks.	7.9	8.2	83.9	2.48	.735	4	Agree
Using the mobile application makes my task easier.	5.9	4.3	89.9	2.76	.584	2	Agree
The mobile application is helpful in carrying out my duties.	7.9	4.3	87.9	2.84	.504	1	Agree
Total mean				2.45			Agree

Table (3) presents the means and standard deviations of using of airline mobile applications, where the means ranged between (2.84 – 1.96) compared with the total instrument mean for the domain (2.45) the item “The mobile application is helpful in carrying out my duties.” ranked first with a mean and standard deviation (mean=2.84, standard deviation = 0.504) compared with the total instrument mean and the standard deviation. The item “Application is easy to use” ranked last reached a mean (1.96) and the standard deviation was (1.343) compared with the mean and standard deviation of the total instrument.

The Fourth Section: Functions of Airline Mobile Applications

Table 4: Functions of Airline Mobile Applications

Items	D	N	A	Mean	SD	Rank	Evaluation
Flights							
Flight schedule information	12.1	4.3	83.6	2.71	.669	3	Agree
Flight status and time table information	9.2	8.5	82.3	2.73	.618	2	Agree
Real-time information of "Favorite" flights	6.2	4.3	89.5	2.83	.515	1	Agree
Booking							
flight booking service	3	4.3	92.8	2.90	.388	1	Agree
Manage booking	6.2	4.3	89.5	2.83	.515	5	Agree
Mobile Check-in	3.3	4.3	92.5	2.89	.403	2	Agree
Boarding pass	3.3	4.3	92.5	2.89	.451	3	Agree
Baggage information	3.3	9.5	87.2	2.84	.448	4	Agree
First & Business class lounges information	46.6	3.6	49.8	2.03	.983	6	Neutral
Airport							
Airport information	63.6	4.3	32.1	1.69	.928	3	Neutral
Airport services	12.8	9.8	77.4	2.65	.697	1	Agree
Aiding of passenger activities	33.4	2.3	64.3	2.31	.941	2	Neutral
Airlines							
Special airline service information	3.6	8.2	88.2	2.85	.451	1	Agree
Actual travel deals and offers	32.1	3.6	64.3	2.32	.929	2	Neutral
Frequent flyer programs	33.8	4.3	62	2.28	.938	4	Neutral
Destination guide	32.1	4.3	63.3	2.31	.928	3	Neutral
Ancillary services on mobile devices							
Tourist information (Car rental & Hotel booking)	32.1	4.3	63.6	2.31	.928	7	Neutral
Premium seating	9.2	4.3	86.6	2.77	.600	4	Agree
Premium boarding	10.5	10.2	79.3	2.69	.652	6	Agree
Pre-purchase meal	6.9	9.5	83.6	2.77	.563	3	Agree
New and travel alerts	3.9	7.5	88.5	2.85	.458	1	Agree
On board service information	3.3	11.5	85.2	2.82	.463	2	Agree
Gallery	9.8	7.5	82.6	2.73	.629	5	Agree

Table (4) presents the means and standard deviations of flights functions of airline mobile applications, where the means ranged between (2.83- 2.71) compared with the total instrument mean for the field (2.76) the item "Real-time information of "Favorite" flights" ranked first with a mean and standard deviation (mean=2.83, standard deviation = .515) compared with the total instrument mean and the standard deviation. The item "Flight schedule information" ranked last reached a mean (2.71)

and the standard deviation was (.669) compared with the mean and standard deviation of the total instrument.

Table (4) shows the means and standard deviations of booking functions of airline mobile applications, where the means ranged between (2.90- 2.03) compared with the total instrument mean for the domain (2.73) the item "flight booking service" ranked first with a mean and standard deviation (mean=2.90, standard deviation = 0.388) compared with the total instrument mean and the standard deviation. The item "First & Business class lounges information" ranked last reached a mean (2.17) and the standard deviation was (0.983) compared with the mean and standard deviation of the total instrument.

Table (4) presents the means and standard deviations of airport functions of airline mobile applications, where the means ranged between (2.65- 1.69) compared with the total instrument mean for the field (2.44) the item "Airport services" ranked first with a mean and standard deviation (mean=2.65, standard deviation = 0.697) compared with the total instrument mean and the standard deviation. The item "Airport information" ranked last reached a mean (1.69) and the standard deviation was (0.928) compared with the mean and standard deviation of the total instrument.

The Fifth Section: Traveller Requirements

Table 5: Innovative Features / Services

Items	D	N	A	Mean	SD	Rank	Evaluation
Real time update on flights status on mobile	4.6	3.9	91.5	2.87	.454	2	Agree
Real time baggage arrival update on mobile	6.9	7.9	85.2	2.78	.555	4	Agree
Calendar display	6.9	7.9	85.2	2.78	.575	5	Agree
Use mobile onboard	10.5	11.5	78	2.68	.656	6	Agree
Receive directions on mobile	32.1	3.9	63.9	2.32	.929	7	Neutral
Use mobile for booking, check-in, etc.	32.1	3.6	64.3	2.32	.939	8	Neutral
Self-luggage tagging	32.1	3.6	64.3	2.32	.949	9	Neutral
Airport kiosks to buy additional services	33.4	3	63.6	2.30	.939	10	Neutral
Pay in advance for extra services	2	3.6	94.4	2.92	.331	1	Agree
Dynamic frequent flyer programs profile	4.6	7.9	87.5	2.83	.484	3	Agree
Total mean				2.61			Agree

Table (5) presents the means and standard deviations of traveller requirements (Innovative features / services), where the means ranged between (2.92- 2.30) compared with the total instrument mean for the field (2.61) the item "Pay in advance for extra services" ranked first with a mean and standard deviation (mean=2.92, standard deviation = 0.331) compared with the total instrument mean and the standard deviation. The item "Airport kiosks to buy additional services" ranked last reached a

mean (2.30) and the standard deviation was (0.939) compared with the mean and standard deviation of the total instrument.

Table 6: Airlines Travel Experience

Items	D	N	A	Mean	SD	Rank	Evaluation
I think the mobile application provides disruption management	8.2	7.5	84.3	2.76	.589	1	Agree
I think the mobile application provides check-in / Baggage process	10.2	3.6	86.2	2.76	.622	2	Agree
I think the mobile application provides seating	9.2	7.9	83	2.74	.615	3	Agree
I think the mobile application provides make changes to booking	13.1	9.2	77.7	2.65	.702	5	Agree
I think the mobile application provides in-flight service	18.4	10.2	71.5	2.53	.786	7	Agree
I think the mobile application provides baggage claim at destination	14.8	15.7	69.5	2.55	.738	6	Agree
I think the mobile application provides optional service fees	10.2	11.5	78.4	2.68	.649	4	Agree
I think the mobile application provides Boarding / De boarding	33.8	5.6	60.7	2.27	.935	10	Neutral
I think the mobile application provides choosing & booking flight	32.1	4.9	63	2.31	.927	9	Neutral
I think the mobile application provides flight crew experience	32.1	3.6	64.3	2.32	.929	8	Neutral
Total mean				**2.56**			**Agree**

Table (6) presents the means and standard deviations of traveller requirements (aspects of airlines travel experience could be improved), where the means ranged between (2.76- 2.27) compared with the total instrument mean for the field (2.56) the item “I think the mobile application provides disruption management” ranked first with a mean and standard deviation (mean=2.76, standard deviation = 0.589) compared with the total instrument mean and the standard deviation. The item “I think the mobile application provides Boarding / De boarding” ranked last reached a mean (2.27) and the standard deviation was (0.935) compared with the mean and standard deviation of the total instrument.

The Sixth Section: Cross- Selling

Table 7: Cross Selling

Items	D	N	A	Mean	SD	Rank	Evaluation
The use of the mobile app offers more information when buying products and services in the airline.	33.4	3.3	63.3	2.30	.939	3	Neutral
The mobile app offers me	3.3	7.5	87.5	2.83	.493	1	Agree

products and services that interest me and I would go ahead and bought, thus, saving me effort and time.							
I intend to buy new products and services through this mobile app.	63.3	6.2	87.9	2.82	.516	2	Agree
Total mean				2.65			Agree

Table (7) presents the means and standard deviations of cross- selling, where the means ranged between (2.83- 2.30) compared with the total instrument mean for the field (2.65) the item "The mobile app offers me products and services that interest me and I would go ahead and bought, thus, saving me effort and time." ranked first with a mean and standard deviation (mean=2.83, standard deviation = 0.493) compared with the total instrument mean and the standard deviation. The item "The use of the mobile app offers more information when buying products and services in the airline." ranked last reached a mean (2.30) and the standard deviation was (0.939) compared with the mean and standard deviation of the total instrument.

The Seventh Section: Image Perception

Table 8: Image Perception

Items	D	N	A	Mean	SD	Rank	Evaluation
The use of this mobile app improves the perception and image I have of this Egypt Air.	18.4	9.2	72.5	2.54	.786	4	Agree
The development of this app has improved the image and branding of Egypt Air.	8.2	8.9	83	2.75	.595	2	Agree
People who use this app have more prestige.	7.5	9.8	82.6	2.75	.582	1	Agree
I like to receive relevant information regarding flight schedules and delay before my flight on this mobile app.	11.1	6.2	82.6	2.71	.654	3	Agree
Total mean				2.69			Agree

Table (8) presents the means and standard deviations of image perception, where the means ranged between (2.75- 2.54) compared with the total instrument mean for the field (2.69) the item "People who use this app have more prestige." ranked first with a mean and standard deviation (mean=2.75, standard deviation = 0.582) compared with the total instrument mean and the standard deviation. The item "The use of this mobile app improves the perception and image I have of this Egypt Air." ranked last reached a mean (2.54) and the standard deviation was (0.786) compared with the mean and standard deviation of the total instrument.

The Eighth Section: Passenger Satisfaction

Table 9: Passenger Satisfaction

Items	D	N	A	Mean	SD	Rank	Evaluation
Overall, I am satisfied with the service I received from this application.	10.5	7.5	82	2.71	.644	3	Agree
I have an enjoyable feeling while using this application.	11.1	4.9	83.9	2.73	.650	2	Agree
The use of this mobile application has been a good experience.	6.2	3.9	89.9	2.84	.512	1	Agree
Overall, I am satisfied with the way in which the information, products, and services of the airport have been managed through this mobile app.	31.8	4.9	63.3	2.31	.924	4	Neutral
Total mean				2.65			Agree

Table (9) presents the means and standard deviations of passenger satisfaction, where the means ranged between (2.84- 2.31) compared with the total instrument mean for the domain (2.65) the item "The use of this mobile application has been a good experience." ranked first with a mean and standard deviation (mean=2.84, standard deviation = 0.512) compared with the total instrument mean and the standard deviation. The item "Overall, I am satisfied with the way in which the information, products, and services of the airport have been managed through this mobile app." ranked last reached a mean (2.31) and the standard deviation was (0.924) compared with the mean and standard deviation of the total instrument.

The Ninth Section: Security Control

Table 10: Security Control

Items	D	N	A	Mean	SD	Rank	Evaluation
I think I can trust this mobile app.	31.8	4.9	63.3	2.31	.954	6	Neutral
This mobile app is concern with the interest of its users.	31.8	4.9	63.3	2.31	.924	4	Neutral
When this application designs its commercial offer, it takes into account the wants and needs of its users.	31.8	4.9	63.3	2.31	.934	5	Neutral
This mobile app gives real information.	0	20.7	79.3	2.79	.406	1	Agree
I am pleased to use this mobile app given that it provides me security, and control of my time within the airport.	13.1	15.7	71.1	2.58	.712	3	Agree

Once the security control area is past and in the boarding area, being informed by the mobile app gives me peace	10.8	11.8	77.4	2.67	.664	2	Agree
Total mean				2.50			Agree

Table (10) presents the means and standard deviations of security control, where the means ranged between (2.79- 2.31) compared with the total instrument mean for the domain (2.50) the item "This mobile app gives real information." ranked first with a mean and standard deviation (Mean=2.79, standard deviation = 0.406) compared with the total instrument mean and the standard deviation. The item "I think I can trust this mobile app." ranked last reached a mean (2.31) and the standard deviation was (0.954) compared with the mean and standard deviation of the total instrument.

4.2.Pearson Correlation analysis:

Table (11) Correlation between Passenger Satisfaction and Using of Airline Mobile Applications

		Using of Mobile Airline Reservation Application
Passenger Satisfaction	Correlation Coefficient	**.817****
	Sig.	**.000**

As seen in the table (11), there is a positive and significant relationship between passenger satisfaction and using of airline mobile applications. The value of Pearson correlation coefficient was (.817** - sig = 0.000). These results showed that there is a strong positive relation between passenger satisfaction and using of airline mobile applications. This positive correlation indicates that as the passenger satisfaction increases, using of airline mobile applications increases.

Table (12) Correlation between Functions of Egypt Air Mobile Application and Passenger Satisfaction

		Passenger Satisfaction
Functions of Egypt Air Mobile Application	Correlation Coefficient	**.615****
	Sig.	**.000**

As seen in the table (12), there is a positive and significant relationship between functions of Egypt Air mobile application and passenger satisfaction. The value of Pearson correlation coefficient was (.615**- sig = 0.000). These results showed that there is very strong positive relation between functions of Egypt Air mobile application and passenger satisfaction. This positive correlation indicates that as the functions of Egypt Air mobile application increases, passenger satisfaction increases.

Table (13) Correlation between Security Control and Passenger Satisfaction

		Passenger Satisfaction
Security Control	Correlation Coefficient	**.596****
	Sig.	**.000**

As seen in the table (13), there is a positive and significant relationship between security control and passenger satisfaction. The value of Pearson correlation coefficient was (.596** - sig = 0.000). These results showed that there is very strong positive relation between security control and passenger satisfaction. This positive

correlation indicates that as security control increases, passenger satisfaction increases.

Table (14) Correlation between Image Perception and Using of Airline Mobile Applications

		Using of Airline Mobile Applications
Image Perception	Correlation Coefficient	**.856****
	Sig.	**.000**

As seen in the table (14), there is a positive and significant relationship between image perception and using of airline mobile applications. The value of Pearson correlation coefficient was (.865** - sig = 0.000). These results showed that there is a strong positive relation between image perception and using of airline mobile applications. This positive correlation indicates that as the image perception increases, using of airline mobile applications increases.

Table (15) Correlation between Security Control and Image Perception

		Image Perception
Security Control	Correlation Coefficient	**.899****
	Sig.	**.000**

As seen in the table (15), there is a positive and significant relationship between security control and image perception. The value of Pearson correlation coefficient was (.899** - sig = 0.000). These results showed that there is strong positive relation between security control and image perception. This positive correlation indicates that as security control increases, image perception increases.

5. Conclusion and Summary

This research aims to investigate the characteristics in Egypt Air passengers in terms of acceptance new technologies; specifically the mobile services in airline, which are provided by the Egypt Air, this research analyze the effects of mobile marketing tool at passenger satisfaction of Egypt Air. Different tests were applied, including reliability test, correlation test, and regression test. The following results were obtained.

- The findings from the distributed questionnaires revealed that passengers in Egypt Air are satisfied with mobile service.
- In terms of gender, were female have a greater intention to use airline mobile services than male.
- In term of age, the age groups 40-49 years and 30-39 years are more in favors of using the service than 20 or under years old.
- The application is very flexible and dynamic in nature. Airline mobile applications are the best way of airline reservation because of its ease of use and availability when needed; there is positive significant relationship between passenger satisfaction and using of airline mobile application. The value of Pearson correlation coefficient
- Results showed that there is very strong positive relation between functions of Egypt Air mobile application and passenger satisfaction. The value of Pearson correlation coefficient

- Results showed that there is very strong positive relation between security control and passenger satisfaction. The value of Pearson correlation coefficient.

6. Recommendations

- Egypt Air should develop airline mobile applications to offer airline service. They should announce their airline mobile applications in their website, social media. They should make training for their staff in mobile applications using. Developing airline mobile applications include several features that increase the number of passengers and attract others to use it.

- Egypt Air must invest in next-generation technology that automates manual tasks, shares information and provides proactive communication to the passenger. This will transform the overall passenger expertise and make dynamic enhancements in operations.

- Egypt Air should be aware of rising technologies that might facilitate improve their daily operations and therefore the satisfaction of their passengers.

- Egypt Air should additionally adapt to new trends that are rapidly growing in the world for example airline mobile technologies. A better expertise would help retain more passengers and additionally presumably herald new passengers as these options make the airline or airport stand out among the competition.

- Egypt Air need to constantly match technology and passenger needs to sustain a competitive advantage.

- Egypt Air will use airline mobile application to provide better service to passengers at variety touch points along the trip, delivering real-time, relevant, and value-added information, offers, discounts, and personalized services that support build a trusted relationship

- Egypt Air will recognize the dynamical requirements and expectations of passengers' Egypt Air; hence, passenger surveys ought to be sporadically conducted to generate three types of service performance reports.

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تأثير تطبيقات الهاتف المحمول على رضا المسافرين في مصر للطيران

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الكلمات الدالة

تطبيقات الهاتف المحمول ,شركات الطيران ، التسويق عبر الهاتف المحمول ، رضا المسافرين ، مصر للطيران.

المستخلص

يهدف هذا البحث الي دراسة الوضع الراهن لأمكانيات خدمات الهاتف المحمول في قطاع الطيران , لقد تم استخدام خدمات مصر للطيران مثل ؛ الحجز، وتسجيل الوصول، وبطاقة الصعود إلى الطائرة، والمتصل بالبوابة، ومعلومات الرحلة والأمتعة المفقودة، بشكل متزايد في الآونة الأخيرة، ويهدف هذا البحث إلى تحليل آثار أداة التسويق من خلال الهاتف المحمول على رضا الركاب في مصر للطيران. ولتحقيق ذلك استخدم هذا البحث المنهج الوصفي التحليلي باستخدام أداة الاستبيان. وكانت العينة من المسافرين في مصر للطيران؛ مكونة من (384) استبانة صالحة فقط للمعالجة الإحصائية للبيانات الموزعة في مطار القاهرة الدولي ومكاتب المبيعات المحلية لشركة مصر للطيران. وتم تحليل نتائج الاستبانة باستخدام المنهج الوصفي، وتحليل الثبات، وتحليل المعاملات، وتحليل ارتباط بيرسون. وتوصل البحث إلى عدة نتائج أهمها ؛وجود التطبيق مرن للغاية, تعد تطبيقات الهاتف المحمول الخاصة بشركات الطيران أفضل وسيلة لخدمة شركات الطيران بسبب سهولة استخدامها وتوافرها عند الحاجة؛ توجد علاقة إيجابية معنوية بين رضا المسافرين واستخدام تطبيقات الهاتف المحمول الخاصة بشركات الطيران. ومن ثم أوصى البحث بضرورة قيام شركة مصر للطيران بتطوير تطبيقات الهاتف المحمول لتقديم أفضل خدمة، يجب على مصر للطيران الإعلان عن تطبيقات الهاتف المحمول الخاصة بهم في موقعهم الإلكتروني ووسائل التواصل الاجتماعي. وينبغي علي مصر للطيران تدريب الموظفين على استخدام تطبيقات الهاتف المحمول. ويتضمن تطوير تطبيقات الهاتف المحمول العديد من المميزات التي تعمل على زيادة عدد المسافرين وجذب الآخرين لاستخدامها.