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Smartphones Impact in Medical Marketing and m-Healthcare for Developing Countries

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Abstract: Smartphones play an important role in the electronic, social, cultural and medical fields. Smartphones are the first step to discover everything new to people and developing countries. It is a technology that plays a major role in promoting and marketing medical products and services through a social perspective. Most people around the world resort to the use a mobile technology (mobile, smart phone, etc.) to access to various mHealthcare services and medical information. Physicians attempts are continuing to embed a mobile techniques into a medical and clinical activities. In this study, the real impact of smartphones in m-Healthcare and medical marketing was presented.

Key words: m-Healthcare, medical marketing, smartphones, mobile technology, important role, Iraq

INTRODUCTION

Smartphones have become an integral part of every person's daily life, prompting immediate response to emergency situations and gaining a medical advice with specialists on various medical issues in order to enable patients to get a rapid service in a specific time (Jenny and Isaac, 2010).

Smartphones are becoming abundant in different societies and countries whether industrial, agricultural or otherwise. These devices have become the most important technique of telecommunication in the developing countries, even these devices have become the only means to connect the low-income populations by the information society. The main advantage of mobile phones are relatively better in resource-constrained settings. The search language of new issues in order to improving the healthcare and intelligence of countries developing communities has become the hallmark of m-Healthcare methodology (Castells, 2007).

During providing diverse healthcare services, the large scale expansion of smartphones has provided many and varied opportunities to provide interactive information for the patients and physicians both. Therefore, global organizations have introduced smartphones technology into health behavior interventions which has been increasingly successful.

To access to integrated mHealthcare services requires the a wireless networks development and infrastructure, in order to access to the comprehensive improvements for the rapid and comprehensive assimilation of mobile smartphones technology. In line with m-Healthcare trends, the mobile smartphones world is just a beginning in developing countries such as public health demand which shows low activity compared to high-income countries. According to the WHO (World Health Organization), there is an urgent need to strengthen m-Healthcare systems to achieve healthcare development goals in low and middle-income countries (Lane *et al*., 2011).

Table 1: Value expansion of smartphone market between 2017 compared with 2016 (random sample)

Ranking	2016	2017
1	China	India
2	USA	China
3	Japan	Malaysia
4	Malaysia	Indonesia
5	UK	Brazil
6	Germany	Pakistan
7	India	Nigeria
8	South Korea	Egypt
9	Russia	Iraq
10	Italy	Bangladesh

The provision of a cheap smartphones for data transfer and penetration of mobile phone networks has led to the provision of healthcare services to citizens in developing countries and provide an effective means to transmit critical medical data to physicians and hospitals shortly (Ahonen *et al*., 2011). Table 1 shows a random sample of growth of smartphones market by value between 2017 compared with 2016.

THE GOAL OF M-HEALTH SOCIAL INVESTMENTS

The significant expansion of the m-Healthcare industry serves the individual health goals and society.

As a result, public and psychological health service applications are used by patients and providers of goods as well as services related to the health of health care workers. The m-Healthcare can be applied in the following areas:

Healthcare quality and accessibility improvement

Support the medication: The most common application is reminder patient by phone calling or SMS which reminds to take a treatment in a timely manner.

Tracking the patient: To minimizing diagnostic and therapeutic errors, digital medical records are used through mobile applications where the patient can be monitored closely using a central system that is fed by a necessary patients data through their regular visit (Hata *et al*., 2009).

Management supply chain: Most mobile applications are collect data about sales, inventory, purchase and supply to suppliers, retail and healthcare systems. This assist to protect consumers from counterfeiting as well as retailers from avoiding fraudulent products that are ineffective and dangerous. These applications have enabled consumers to check the prices of medical products and services, particularly in remote areas controlled by retailers and individual service providers.

The health financing: Healthcare saving products increasingly by smartphones. Similarly, other industrials like agriculture used the smartphones to deliver the various products to the consumer in the remote areas. The consumers can be obtain discounts services for various medical services by using smartphones applications.

The emergency services: The smartphones provide a RPA (Rapid Patients Access) in critical situations, this is called emergency service which provides rapid access to the patient shortly. There is a rapid service provided by medical applications that enable rapid contact to the ambulance near patient's area (Kahn *et al*., 2010).

The monitoring: As health problems increase, the collection of sensitive data increases, allowing patients and physicians to make immediate decisions individually.

Management the disaster: Smartphones are widely used in in natural disasters increasing areas in order to providing emergency medical caring in emergency situations. There are mobile applications that fall under the category of disaster management applications.

Preventive strengthening of public healthcare

Disease preventing: Demand for home's m-Healthcare applications in the affected areas are increasing during emergencies to inform urgent health needs to rescue the patient's life.

The knowledge and the awareness: The greater the culture of peoples, the greater the knowledge of technological applications and smartphones applications are the most important applications that can be used which can be used if there is knowledge of how to install and how to use (West, 2012).

ROLE OF M-HEALTHCARE IN DEVELOPING COUNTRIES

Smartphones are the most common kinds of equipment in the world. Mobile healthcare (m-Healthcare) can be defined as the use of MED (Mobile Electronic Devices) for voice or data transmission through wireless or cellular networks. Smartphone penetration is more than 95% in the developed world and 45% in the developing world (Kaplan, 2006).

There are many factors that constrain m-Healthcare systems performance and efficiencies. The infrastructure limitation of the health systems deployed is one of the most important determinants of the performance of healthcare system in developing countries and the resources of the hospitals are concentrated in the urban areas. The burden of disease and its impact is greater on people's livelihoods. There are no enough healthcare employee and these employee are difficult to retain them, especially in rural areas (remote areas). Supervision systems and healthcare management are often nonexistent or poorly functioning.

In order to assist in m-Healthcare development by eliminate a physical barriers in order to access to the healthcare and delivery a real services by improving the healthcare management vulnerable system and vulnerable communication (Mechael *et al*., 2010). Healthcare challenges are the worst in the world developing and one of the most important barriers to sustainable global development.

According to WHO statistics, there are 60 countries in the developing world are suffering from a severe shortage of healthcare employee which represents a deficit of 2.8 million healthcare employee. As a result of the unstable conditions in developing countries (WHO) experts have indicated that healthcare providers in the developing world will have to shift their attention over the next 20 years from late-stage treatment of early detection such as diabetes, cancer, Alzheimer's and other diseases that affecting the populations of developing countries. This gap is creates an overlapping in smartphone technologies used in a public health.

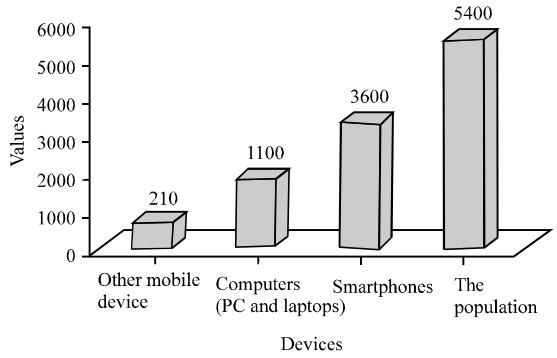

Fig. 1: Technology and statistics m-Healthcare-related associated with developing countries

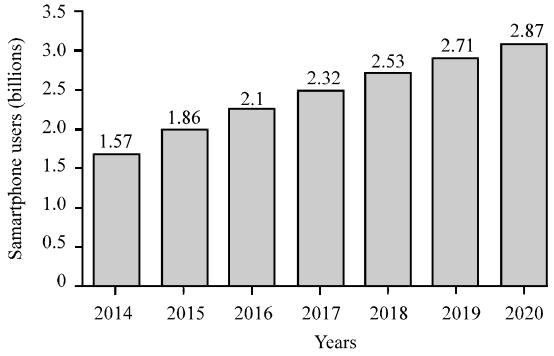

Fig. 2: Smartphone users numbers between 2014-2020

The trip from communicable diseases to chronic diseases: The increasing number of a chronic diseases patients such as diabetes, stroke, heart disease, this will result in big losses on the national income of developing countries which will cost these countries billions of dollars, statistics according to WHO.

The role of mobile healthcare (m-Health): According to the WHO by 2020, smartphones will be a key component of mobile healthcare technology (Fig. 1).

SOCIAL MARKETING AND M-HEALTHCARE

The mobile phones and smartphone are the most important means of using mobile technology to deliver the necessary healthcare to patients in remote areas. And according to the NISH (National Institutes of Health) can be defined provide healthcare services by mobile communications and wireless networks. The golden opportunity offered by mobile technology has boosted the public healthcare sector dramatically by using a social marketing perspective. The literary definition is use mobile technology as effective means of universalizing of the people who was targeted by technology.

Through medical marketing (e-Healthcare market or m-Healthcare market), the largest group of people in remote areas can be reached shortly and low cost by the available healthcare applications that meet the consumer's needs provided there is a learning culture, application use and skill (ABI, 2016).

HOLY GRAIL: SMARTPHONES VS. SOCIAL MARKETING

Worldwide, smartphone users are 2.1 billion in 2016 and are expected to attain 3.1 by the end of 2017 which is on a continuous increase. By 2020, it is expected that there will be a smartphone for every people of 8 billion people in the world.

Smartphones can be describe as a photo book, music player, e-Mail, internet, game console and more. This devices record all persons movements in every second, different locations homes and offices. So, each smartphone can be considered as a Holy Grail for each customer (Montjoye *et al*., 2013).

The reverse engineering play important role in by provide a huge opportunities for social marketing in the digital era by increasing the efficiency of advertising campaigns and attain a wider audiences down to developing countries through smartphone technology. The extracted data from smartphones sensors can be analyzed in order to providing an important information to support behaviors related to healthcare such as sport, healthy eating and others here is a great smartphones potentials to support prevention and making decision support.

Smartphones are used to change individuals behavior through their utilized alongside websites and social networks to monitor individuals behavior closely. Smartphones are rapidly becoming features of behavior change products and services and the empirical evidences show greater success. Figure 2 shows the number of smartphone users worldwide from 2014-2020 (in billions) (Lathia *et al*., 2013).

CASE STUDIES; SIMULATION SMARTPHONES; APPLICATIONS

Case 1; the smartphone Compliance Applications (CA): Smartphones applications designed are called Compliance Applications (CA). CA are effective applications, reminder to ensure that patient is committed to taking the medication in time as a doctor instructed. CA applications work through ID.

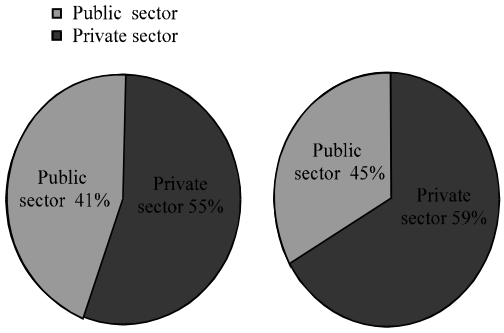

Fig. 3: Revenues of medical marketing between 2010, 2017 for private and public sectors

When the patient take the medication, a code message was sends to the server stating that the medication has been taken. If the server does not receive a code message at a specified time, a warning message send to the patient immediately.

CA applications have achieved impressive results. 95% of a chronic diseases patients have complied with an ideal drug regimen after using these effective healthcare applications.

Case 2; a chronic disease disposal project-dementia: There are several methods available to convey an important information to the patient even rural areas. One of these methods in an attractive and fun way that has played an important role in the success of m-Healthcare.

There are several available methods to convey a necessary information to the patient even rural areas. One of these methods in an attractive and fun way that has played an important role in a success of m-Healthcare. Another method of patien's communicating is the games. Another method to communicate with patients is games. For example, dementia, this disease has been displayed through a mobile application called "IMGRMB" based-on set of images presented to the user. The games target a group of users and many kinds of smartphones. The goal of the games is not just for entertainment but increase and saving a knowledge. The most acceptable games are the games which have a loading rate of over 10 million downloads and statistical results showed that largest number of participants are from developing countries.

The social marketing initiative by smartphone is one of the most culturally and economically successful method to provide adequate information to the target group. Figure 3 shows the medical marketing revenues between 2010-2017 in both public and private sectors.

CONCLUSION

Based on above examples, there is urgent need to use smartphones to overcome various healthcare issues. Smartphones has provided a golden opportunity to strengthen relationships between healthcare professionals, organizations and patients. There are many challenges and barriers to this need but good planning and effective solutions have made developing countries benefit from the limits of m-Health technology and improve their services as well as improve people's lives. Due to developing countries have a capacity to control these issues, mobile applications will be used by different categories of people regardless of their cultural and educational level.

Provision of low-cost technological commodities has made a deployment of smartphone in developing countries the focus of manufacturers. Next, stimulate the companies to produce varied smartphones in accordance with the cultural level of those countries by providing intelligent applications in easy languages, easy use and marketing to those countries.

m-Healthcare has provided an effective solution to various healthcare issues in developing countries. It has provided the possibility of monitoring health information remotely and consulting with physicians through the continuous transmission of information online or through videos in order to controlling their health and thus becoming healthier communities globally.

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