

# Chapter 4.11

## Perception of Mobile Technology Provision in Health Service

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### ABSTRACT

In this chapter the user interface perception and resources for mobile technology (MT) support in health care service activities is investigated. Most procedures oriented to provide better operation and quality of health service depend on the existing information and communication technology (ICT) system. However, the implementation of new technology competes with funding available for health institutions resources, hence introducing them is complex. The technical difficulties encountered in using ICT are: an inadequate physical infrastructure, quality of service (QoS) issues, and insufficient access by the user to the hardware/software communication infrastructure. A case study by multi-criteria approach was investigated involving three categories of

hospitals in Chile and empirical data was collected comprising diverse health sector representatives. The main contribution is the proposed research decision-making model using the analytic hierarchy process (AHP) to evaluate and compare information and communications systems as fixed, wireless, or computer-assisted provisions for health-related activities and to identify the high priority dimensions in a health care service.

### INTRODUCTION

A communications and IS provides an essential role for health-related activities. Most of the actions oriented to improve the operation and the quality of health service depend largely on the level of the information available and a commu-

nication system. The demand for health services increases each year by diverse demographic factors; (growth, immigration, ageing, etc.), cultural (greater information and expectations), technological (new therapeutic and diagnostic procedures), business (aggressive marketing of new procedures), professional (induced demand, preventive medicine), and organization (information deficiencies and management). The provision and management of services in the health sector implies processing enormous quantities of economic, welfare, clinical, and administrative data impossible to carry out by manual procedures (Oddershede, Carrasco, & Ontiveros, 2006). Nowadays, health centers are committed to putting into practice actions to facilitate clinical care activities, to satisfy professionals' aspirations, and citizen necessities.

The health communication system has changed from sending simple messages point by point, for example laboratory results, to the creation of virtual electronic records (Del Llano Señarís, 2003). The use of great data bases to collect health, social, and economic data, developed at a cost that is a fraction of the previous costs, means that files concerning the health of millions of people can be useful to predict future health requirements in a given population and to consequently assign and prioritize resources.

A demanding task of current innovation in health care processes is to improve the time to treatment in view of the fact that appropriate medical intervention immediately following an emergency or urgent situation significantly increases the chance of recovery for the patient.

The health sector has only recently had access to advanced ICT and there is confidence that modern ICT can progressively improve their performance, although a weak telecommunications infrastructure has shown in the past to be difficult to implement any plans, and therefore offer a good quality service to fulfil user expectations. (Suh, Suh, & Baek, 1994)

An emerging concept for health care provision is mobile health (m-health), which includes mobile computing, communications, and multimedia technologies in order to provide better access (Chan, 2000). This new evolutionary research area will provide new patterns for health care (Istepanian & Lacal, 2003). This will make available resources for both the health care professionals and patients with an efficient, secure, ubiquitous, and robust infrastructure coupled with tools for the assessment and management of patient health status and the support of preventive programs. (Istepanian, Jovanov, & Zhang, 2004).

MT provides an easy information flow that has yet to be exploited to its full extent. Applications of mobile ICT and IS in health care can be recognized as both emerging and enabling technologies (Ammenwerth, Gräber, Herrmann, Bürkle, & König, 2003), which have been applied in several countries for either emergent care or general health care. For example, the variety of wireless technologies such as mobile computing, wireless networks and global positioning systems (GPS) have been applied to ambulance care in Sweden (Geier, 2003) and emergent trauma care in the Netherlands (Jan ten Duis, & Van der Werken, 2003). Relative information about the patient and the ambulance location can be transmitted to the hospital in real time. Then, the hospital can be well prepared for the arrival of the ambulance at any time. The challenge is to provide the appropriate treatment to the patient at the right time at the right hospital (Jan ten Duis, & Van der Werken, 2003). A system with secure mobile health care services has been tested in Finland, including health consulting, electronic prescription, and so forth. Authorized individuals can easily access the system via mobile devices such as mobile phones (Jelekäinen, 2004).

The recent expansion of mobile communications and computing technologies to support highly specialized health-related requirements has generated a substantial interest in understanding the factors related to accepting a suitable ICT and m-health system.

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