

# European General Practitioners' Usage of E-Health Services

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## INTRODUCTION

Technology plays an increasingly critical role in current markets. Diverse technological innovations are significantly changing how services are provided in different industries (Bitner & Brown, 2000). In this regard, new digital and Internet-related technologies are dramatically modifying how companies, employees, and customers interact in service encounters (Alba, Lynch, Weitz, Janiszewski, Lutz, Sawyer, & Wood, 1997; Hoffman & Novak, 1996).

In the health care sector, Internet technologies have the potential to improve the provision of health and patient care services like no other communications medium in the past (Shepherd & Fell, 1997). The health care sector, where interpersonal encounters between health staff and patients determine to a great extent service quality and patient satisfaction, will require diverse modifications, in order to fully benefit from the improvements promised by Internet technologies.

The term e-health is being widely used to refer to "health services and information delivered or enhanced through the Internet and related technologies" (Eysenbach, 2001). Physicians are largely turning to e-health services for gains in efficiency and improved quality of patient care. Factors related to higher constraints on physicians' costs, time, and private practices are currently accelerating Internet adoption among health professionals (Kassirer, 2001).

However, previous research shows that there are significant differences, both at the national and regional level, with regard to the development and adoption of Internet-related technologies (Hamill, 1997). These differences are even observable among developed countries in the European Union. In this regard, in-

dividuals from Northern European countries show higher rates of Internet adoption, as well as far more developed digital infrastructures. The unequal access to Internet technologies and slower Internet adoption processes in technologically backward countries ("digital divide") limit the potential positive effects of Internet technologies on the provision of health services in such regions.

Less clear is the influence of other external variables (e.g., gender and age) on physicians' professional use of Internet technologies. Diverse studies have dealt with this issue (Korgaonkar & Wolin, 1999), both in health and nonhealth contexts, with mixed results.

To effectively promote the use of Internet technologies for the provision of patient care services, it is important to understand the nature of physicians' current professional uses of the Internet. This article explores how the public Internet and dedicated networks are currently being used by European General Practitioners, and how external factors affect the degree of physicians' usage of e-health services.

## BACKGROUND

### Role of Technology and the Internet in Service Sectors

In the services sector, technological innovations have a great potential for improving the provision of diverse services. Parasuraman and Colby introduced the "services marketing pyramid model," which explicitly acknowledges the key role of technology in supporting and facilitating service delivery (Parasuraman & Colby, 2000).

The rapid impact of Internet technologies on service encounters has been documented in several studies (Parasuraman & Zinkhan, 2002). The use of the Internet by companies and consumers is radically changing how services are provided, both in B2C and B2B contexts. As a result, an increasing number of Internet-related studies is being carried out, focusing on the implications of the Internet in service industries (e.g., development of the e-SERVQUAL scale of service quality on the Web) (Zeithaml, Parasuraman, & Malhotra, 2000).

## **E-Health Research**

A review of previous literature evidences that studies analyzing Internet adoption among health professionals are scarce (Sands, 2003). A recent report by the Boston Consulting Group offers one of the most detailed examinations of Internet usage by European physicians (Flanagan, Guy, Larsson, & Saussois, 2003). The main conclusions of this report include: (1) Most of physicians use the Internet for professional purposes, and it has an increasing impact on their professional knowledge, diagnoses, and prescriptions; (2) European physicians perceive the Internet as a very suitable medium for the acquisition of health information, continuous medical training, and complementary source of information for patients; (3) Physicians perceive that Electronic Health Care Records and Electronic Prescribing Systems contribute to an increased efficiency in their professional activities; (4) There is a trend towards more sophisticated Internet uses for increasing the quality of patient care services in the near future.

The review of previous studies evidences that further research is needed, especially empirical studies into the antecedents, current behavior, main purposes, and consequences of Internet usage for health purposes. The results of such studies should be taken into account by European, national, and regional authorities, in order to develop the suitable promotion strategies, aimed at further integrating new information technologies into patient care services.

## **RESEARCH OBJECTIVES**

This research will draw on the main uses of Internet services and dedicated healthcare networks for physicians' professional purposes, in order to identify different segments of Internet users among European

General Practitioners. Given the potential to improve doctor-patient relationships and health professionals' daily work, this article strives to clarify the extent to which general practitioners are taking advantage of Internet-related technologies in the European Union.

The following specific purposes have been set for this article:

1. Segmentation of European general practitioners, based on their adoption and actual professional uses of the Internet and General Practitioners networks. Behavioral variables have been selected for the characterization of segments.
2. Analysis of the effects of external variables (country, gender, age, location, and size of the medical practice) on the previously identified groups of Internet users.

The findings of the empirical analyses will clarify the existence and behavioral characteristics of the different segments (more vs. less advanced Internet users). Due to current national and regional differences in Internet adoption, these segments are expected to be differently distributed between European countries. The other co-variables included in the study are not expected to exert significant effects on the identified segments.

## **METHODS**

### **Sample**

The empirical investigation is based on the survey "Flash-Eurobarometer N° 126 – General Practitioners and the Internet" (2002), conducted on a sample of European general practitioners. The Eurobarometer surveys have been regularly carried out on behalf of the European Commission in all EU-countries. Table 1 shows the characteristics of the sample and the sampling procedure.

### **Statistical Analyses**

The following methodology has been selected, according to the purposes of this study:

1. Latent Class Cluster Analysis has been applied, in order to identify homogeneous segments of Internet users among European physicians.

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