Chapter 60
Healthy 3.0:
Healthcare Digital Dimensions

Maria Teresa Borges Tiago
University of Azores, Portugal

Flávio Tiago
UAC, Portugal

Francisco Emanuel Batista Amaral
University of Azores, Portugal

Sandra Silva
Unidade de Saúde de Ilha de S. Miguel Azores, Portugal

ABSTRACT

Over the past few years, healthcare practice has evolved to include new forms of information and communication technologies, and healthcare providers have begun to leverage IT solutions and the internet to reach consumers in transformative ways. There is a common thought both in business and academia that the technology adoption process is a key component of success and allows firms to achieve and sustain competitive advantages. Therefore, this research attempts to reinforce the assessment of ICT impacts on healthcare, analyzing it from two different perspectives: 1) firm performance, which is measured as a combination of induced and intangible benefits beyond the traditional financial benefits; and 2) healthcare providers' acceptance and adoption of ICT tools. To assess the first perspective, a structural equation model was applied to a large database sample covering firms from 17 European countries. The results reinforce the importance of induced and structural benefits in firms' overall performance. The second perspective was analyzed only for the Portuguese healthcare providers sample. These results can be a starting point for rethinking the healthcare models emphasizing the perspectives of Healthy 2.0 and considering that patients' technological pattern evolution will lead to Healthy 3.0 in the short term. Nevertheless, some questions remain unanswered regarding the impacts of the ICT acceptance process on overall benefits; therefore, future research will focus on this domain.

INTRODUCTION

It is no longer enough to consider the impact and role of information and communication technologies (ICTs) at firm and industry levels. Much has been written about these matters (Inklaar, O'Mahony, & Timmer, 2005; Jennings, Clifford, Fox, O'Connell, & Gardner, 2015; Pilat, 2004; M. B. Tiago & Tiago, 2013; Van Ark, Inklaar, & McGuckin, 2003), but the vast technological changes that occurred require that the scope of these researches be broadened.

Traditionally, and taking into account the results found in previous studies, the impact of ICT can be perceived as detailed in: 1) the contribution of ICT investment to capital intensity; 2) the contribution of the technological adoption model to a firm's performance; 3) the spillovers of rapid innovation by the use of ICT; 4) the competitive and dynamic effects of ICT on a firm's turbulence in terms of entry, exit, and the mobility of market shares of incumbents; and 5) the empowerment of strategic dimensions through the use of ICT tools (Fracolli et al., 2014). Nowadays, there needs to be the added consideration of the role and impact of ICT in the communication flows of the firms, regardless of internal or external context. In these contexts, the web developments influenced the flows of information creation and sharing. Additionally, the initial Web evolved into Web 2.0, reflecting a gradual growth in terms of popularity and resources and the emergence of new tools that meet users' need for interactivity with information (Tekli et al., 2013).

ICT-related sectors are often characterized as high-tech and knowledge-intensive industries, since they rely deeply on the use of ICT tools to leverage an internal innovation process When approaching other service sectors, the impacts of ICT adoption are perceived as lower (I. Chang, 2007). There has been much discussion of the role that recent advances in ICTs could play in improving health service systems in developing countries, as well as other services industries with traditionally lower levels of technology connected to healthcare (Hadgkiss & Renzaho, 2014).

Drawing on the existing literature, this chapter attempts to analyze: 1) the impacts of ICT in healthcare services firms' performance; 2) the adoption and acceptance of ICT patterns of physicians and nurses; and, 3) to unveil some of the trends in the healthcare sector driven from ICT use in European countries. Therefore, a conceptual model was developed for understanding and investigating the different contributions achieved by the adoption of ICT in this sector.

The data used in this research came from the 2006 e-business watch survey, covering 834 health services firms in 17 countries (Belgium, Bulgaria, Czech Republic, Denmark, Finland, Greece, Spain, France, Hungary, Ireland, Italy, Latvia, The Netherlands, Norway, Poland, Sweden, and the UK). The survey was enlarged with data gathered in Portugal regarding physicians' and nurses' use of technology-based systems.

In general, our findings support the conceptual framework presented and the results obtained can be used as a support tool in ICT decision makers' processes, since it clearly states the overall benefits of ICT successful implementation as well as presents the global performance impacts achieved with an integrated IS framework. Some useful preliminary insights are produced, however, leaving a considerable number of issues for future research, including the possibility of extending the research to include new tools and perspectives.

This chapter is organized in the following manner. The next section summarizes the literature related to the adoption of ICT tools by healthcare firms. The third section of the chapter formalizes the major points presented in the conceptual model and translates them into hypotheses. In the fourth section,

Related Content

Big Data, 3D Printing Technology, and Industry of the Future

Micheal Omotayo Alabi (2017). *International Journal of Big Data and Analytics in Healthcare (pp. 1-20).*

www.irma-international.org/article/big-data-3d-printing-technology-and-industry-of-the-future/204445

Big Data Analysis in IoT

Aqeel-ur Rehman, Rafi Ullahand Faisal Abdullah (2015). *Handbook of Research on Trends and Future Directions in Big Data and Web Intelligence (pp. 313-327).*

www.irma-international.org/chapter/big-data-analysis-in-iot/137031

Data Mining Problems Classification and Techniques

Nayem Rahman (2018). *International Journal of Big Data and Analytics in Healthcare (pp. 38-57).*

www.irma-international.org/article/data-mining-problems-classification-and-techniques/209740

Health Preventive Measure as a Service (HPMaaS): An Intelligent Fog-Cloud-Based Approach for Detection of Diseases Through Smart Phone Sensors

Madhusmita Mishra, Amrut Ranjan Jenaand Himadri Biswas (2023). *Multi-Disciplinary Applications of Fog Computing: Responsiveness in Real-Time (pp. 77-94).*

www.irma-international.org/chapter/health-preventive-measure-as-a-service-hpmaas/327885

A Comparison of Transport Modes in Terms of Energy Consumption

Zafer Yilmaz, Serpil Eroland Ebru Vesile Öcalir-Akunal (2018). *Intelligent Transportation and Planning: Breakthroughs in Research and Practice (pp. 171-186).*

www.irma-international.org/chapter/a-comparison-of-transport-modes-in-terms-of-energy-consumption/197132