Chapter 2.7
Conceptual Framework for Mobile–Based Application in Healthcare

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ABSTRACT

The significance of aligning IT with corporate strategy is widely recognised, but the lack of an appropriate framework often prevents practitioners from integrating emerging Internet technologies (like Web services and mobile technologies) within organisations' strategies effectively. This chapter introduces a framework that addresses the issue of deploying Web services strategically within a mobile-based healthcare setting. A framework is developed to match potential benefits of Web services with corporate strategy in four business dimensions: innovation, internal healthcare process, patients' pathway, and management of the healthcare institution. The author argues that the strategic benefits of implementing Web services in a healthcare organisation can only be realized if the Web-services initiatives are planned and implemented within the framework of an IT strategy that is designed to support the business strategy of that healthcare organisation.The chapter will use case studies to answer several questions relating to wireless and mobile technologies and how they offer vast opportunity to enhance Web services. It also investigates what challenges are faced if this solution is to be delivered successfully in healthcare. The healthcare industry globally, with specific emphasis on the USA and United Kingdom, has been extremely slow in adopting emerging technologies that focus on better practice management and administrative needs. The chapter elaborates on certain emerging information technologies that are currently available to aid the smooth process of implementing mobile-based technologies into healthcare industry.

INTRODUCTION

This chapter is based on research—using a longitudinal case study—into the National Programme for Information Technology (NPfIT). NPfIT is an initiative that has been budgeted to cost the UK government £6.3 billion for the purpose of improving the information systems in the National Health Service (NHS), with emphasis on IT infrastructure and the creation of a nationwide patient database.

The significance of aligning IT with corporate strategy in healthcare organisations is widely recognised, but the lack of an appropriate framework often prevents medical practitioners from integrating emerging Internet technologies (like Web services and mobile technologies) within healthcare organisations' strategies effectively. This chapter introduces a framework that addresses the issue of deploying Web services strategically within a mobile-based healthcare setting. A framework is developed to match potential benefits of Web services with corporate strategy in four business dimensions: innovation, internal healthcare process, patients' pathway, and the management of healthcare institution. The author argues that the strategic benefits of implementing Web services in a healthcare organisation can only be realized if the Web-services initiatives are planned and implemented within the framework of an IT strategy that is designed to support the business strategy of that healthcare organisation.

The chapter will also consider certain essential issues regarding the deployment of any mobile data solution (i.e., reliability, efficiency, and security) in the healthcare industry and how such deployment can support healthcare professionals in saving patients' lives. Using case studies, the chapter will answer the following questions:

- Wireless and mobile technologies offer vast opportunities to enhance services, but what challenges are faced if this solution is to be delivered successfully in healthcare?
- Why has the global healthcare industry, with specific emphasis on the USA and United Kingdom, been extremely slow in adopting technologies that focus on better practice management and administrative needs?
- How complacent can IS strategists be to the productivity paradox in the wake of HIPAA (Health Insurance Portability and Accountability Act in USA) and NPfIT (in UK)?
- What emerging information technologies

are there to aid the smooth process of implementing mobile-based technologies into the healthcare industry?

The existing economics and IS literature on information-technology adoption often considers network externalities as one of the main factors that affect adoption decisions (Brown & Venkatesh, 2003). It is generally assumed that potential adopters achieve a certain level of expectations about network externalities when they have to decide whether to adopt a particular technology. However, there has been little discussion on how the potential adopters reach their expectations. This chapter attempts to fill a gap in the literature on the adoption of mobile healthcare technology by offering an optimal control perspective motivated by the rational expectations hypothesis and exploring the process dynamics associated with the actions of decision makers in the healthcare industry. They must adjust their expectations about the benefits of a mobile healthcare technology over time due to bounded rationality. The model posed in this chapter addresses mobile healthcare technologies that exhibit strong network externalities. It stresses adaptive learning to show why different healthcare organisations that initially have heterogeneous expectations about the potential value of a mobile healthcare technology eventually are able to arrive at contemporaneous decisions to adopt the same technology, creating the desired network externalities. This further allows these organisations to become catalysts to facilitate processes that lead to healthcare industry-wide adoption.

BACKGROUND

The NHS has been responsible for the provision of healthcare and services in the United Kingdom for the past 56 years on the basis of being free for all at the point of delivery. The traditional perception of the NHS is one of a healthcare system

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