Chapter 13
An Empirical Investigation into the Adoption of Open Source Software in Hospitals

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ABSTRACT

Open source software (OSS) has gained considerable attention recently in healthcare. Yet, how and why OSS is being adopted within hospitals in particular remains a poorly understood issue. This research attempts to further this understanding. A mixed-method research approach was used to explore the extent of OSS adoption in hospitals as well as the factors facilitating and inhibiting adoption. The findings suggest a very limited adoption of OSS in hospitals. Hospitals tend to adopt general-purpose instead of domain-specific OSS. We found that software vendors are the critical factor facilitating the adoption of OSS in hospitals. Conversely, lack of in-house development as well as a perceived lack of security, quality, and accountability of OSS products were factors inhibiting adoption. An empirical model is presented to illustrate the factors facilitating and inhibiting the adoption of OSS in hospitals.

INTRODUCTION

The open source software (OSS) phenomenon has become an important area of interest in information systems research due in part to the large and fast-growing number of OSS users and software products in a large variety of domains. OSS is already being adopted and used as a software platform in a number of fields other than healthcare (Dedrick & West, 2003; 2004; Norris,

2004; Waring & Maddocks, 2005), and it has the potential to be equally promising for the hospital industry (Fitzgerald & Kenny, 2004). Studying OSS adoption in any domain can help reveal patterns and phenomena that are applicable to adoption in general, in addition to revealing insights into the domain being studied. In particular, the adoption and use of OSS in a hospital context remains a poorly understood phenomenon; only a handful of researchers have addressed the factors inhibiting or facilitating such adoption. Such an understanding is important in helping hospitals make better decisions about whether and how adoption of OSS could benefit them.

The first step in developing a better understanding is to explore the current state of OSS adoption, and the factors inhibiting and influencing it in hospitals. Such an exploration is the goal of this study. Once this current state is well described, it will be possible to seek answers to higher-level questions about the pros and cons, the costs and benefits, the advantages and disadvantages of OSS adoption in this domain, which is the second goal.

Therefore, the present study is of considerable interest for both practitioners and researchers. It will provide hospitals and healthcare organizations that are considering the adoption of OSS technologies with an understanding of how technological, environmental and organizational factors affect the adoption process. This way hospital IT practitioners, or others attempting to introduce OSS technology into hospitals, can prepare against the expected barriers and can utilize the facilitators for successful adoption. This research also provides scholars with an empirical model for better understanding facilitating and inhibiting factors, as well as providing the foundations for further research that may validate and expand on the empirical model in other healthcare organizations and other domains.

The main objective of this investigation was to explore and analyze the extent of OSS adoption in hospitals, along with the factors influencing or inhibiting this adoption process. Hospital IT managers were chosen to represent the hospitals' perspective on this topic. The following three questions guided this investigation:

1. What are the types and names of OSS products that hospitals choose to adopt?
2. What is the extent of OSS adoption for these products in hospitals?
3. What are the factors facilitating and inhibiting the adoption of OSS in hospitals?

To research these questions, a survey and interviews were used to acquire both breadth and depth of understanding. The purpose of the survey was to answer the first two questions—to explore and characterize the types of OSS products adopted in hospitals and to discover the extent to which these products have been adopted. The interviews were used to answer question three to attain a deeper understanding of the factors that are facilitating and inhibiting the adoption of OSS in hospitals.

In the following sections of this article, we first present the related work in this area. Then, we introduce the methodology for our survey and interview studies. After that, we present our data analysis and results. Then, we introduce our empirical model of the adoption of OSS in hospitals. Finally, we present our conclusions and the implications of our work.

LITERATURE REVIEW

Open Source Software Adoption in Healthcare

Over the past few years, a small number of researchers have focused on the study of the potential advantages and risks of adopting and implementing OSS in the healthcare domain. Prior research encouraged the adoption and use of OSS in healthcare organizations because of OSS's potential to both enhance healthcare delivery and lower software acquisition costs (Carnall, 2000;

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