

## Chapter 1.18

# A Classification Analysis of the Success of Open Source Health Information Technology Projects

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### **ABSTRACT**

As the number of open source software (OSS) projects in healthcare grows rapidly, researchers are faced with the challenge of understanding and explaining the success of the open source phenomenon. This article proposes a research framework that examines the roles of project sponsorship, license type, development status and technological complements in the success of open source health information technology (HIT) projects and

it develops a systematic method for classifying projects based on their success potential. Drawing from economic theory, a novel proposition in the authors' framework suggests that higher project-license restrictiveness will increase OSS adoption, because organizations will be more confident that the OSS project will remain open source in the future. Applying the framework to a sample of open source software projects in healthcare, the authors find that although project sponsorship and license restrictiveness influence

project metrics, they are not significant predictors of project success categorization. On the other hand, development status, operating system and programming language are significant predictors of an OSS project's success categorization. Application implications and future research directions are discussed.

## **INTRODUCTION**

“Rapidly rising healthcare costs and an epidemic of inferior healthcare quality over the past decade” (Brailer, 2005) call for an urgent and aggressive adoption of health information technology (HIT). HIT has the potential to transform the healthcare industry by increasing productivity, reducing errors and costs, facilitating information sharing and improving the quality of healthcare services (Brailer, 2005), effectively transforming the healthcare system. Yet, adoption of HIT has been slow and appears to lag the effective application of IT and related transformations seen in other industries (Goulde & Brown, 2006).

With the renewed urgency to adopt HIT, open source approaches are gaining attention (Goulde & Brown, 2006, Kantor et al, 2003, McDonald et al, 2003, Raghupathi & Gao, 2007). For example, under development in Europe is the open source project Care2X, an application with four components: hospital information system, practice management, a central data server and a health exchange protocol. The software is distributed under the GPL license. Another initiative, OpenEHR, funded primarily by the U.S. Department of Health and Human Services, is an open source application that will support health record exchange and access control services in rural Mendocino County, California. These and other similar initiatives have the potential to create low cost tools for physicians.

On a larger scale, government agencies (the predominant payers of healthcare bills) are looking for open source to meet their primary objectives of lowering costs and enabling connectivity.

Canada Health InfoWay, funded by federal and provincial grants, started an open source initiative in 2005 to develop software that hospitals and HIT developers could use to ensure the reliable exchange of patient health records among various entities. The U.S. government already has placed its VistaA integrated hospital software package in the public domain to provide adopters with open source software (Goulde & Brown, 2006).

The most significant open source healthcare application is OpenVista, the open source version of Vista, developed and used by all medical centers of the U.S. department of Veterans Affairs. The Vista software and its EMR module can be purchased for \$25.00 or less<sup>1</sup>, are open source by virtue of the Freedom of Information Act, and are being actively marketed by new vendors. Other open source applications include TORCH, a web-enabled EHR application believed to be usable in single practitioner offices and scalable to multi-site practices. Written in an interpreted language, TORCH is therefore operating system independent. Another clinical medical records type application is tkFP, which was implemented using a number of languages including C, C++, Python and Perl. OSCAR, an application from McMaster University, Canada, comprises several modules including an electronic patient record system, billing, referrals and secure messaging. The system requirements include Linux, Java2 SDK, MySQL and Jakarta Tomcat. GnuMED is yet another EMR built using a cross platform WxPython GUI and the Postgres relational database. FreeMed, on the other hand, uses the popular LAMP (Linux, Apache, MySQL and PHP) platform, to provide web browser-based interface.

These advances suggest that the open source development approach is a viable means to developing HIT applications. Considering these activities, OSS, itself a transformative force in the software industry, may have a significant role in this hoped-for HIT revolution, potentially affecting the development and adoption of HIT

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