

# Chapter 4.18

## Open Source Software Adoption: Anatomy of Success and Failure

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### ABSTRACT

Current estimates suggest widespread adoption of open source software (OSS) in organizations worldwide. However, the problematic nature of OSS adoption is readily evidenced in the fairly frequent reports of problems, unforeseen hold-ups, and outright abandonment of OSS implementation over time. Hibernia Hospital, an Irish public sector organization, have embarked on the adoption of a range of OSS applications over several years, some of which have been successfully deployed and remain in live use within the organisation, whereas others, despite achieving high levels of assimilation over a number of years, have not been ultimately retained in live use in the organization. Using a longitudinal case study, we discuss in depth the deployment process for two OSS applications – the desktop application suite whose deployment was unsuccessful ultimately, and the email application which was successfully deployed. To our knowledge, this is the first such

in-depth study into successful and unsuccessful OSS implementation.

### INTRODUCTION

Open source software (OSS) has elicited a great deal of research interest across a range of disciplines since the term was introduced in 1998. Much of this research, however, has focused *inward* on the phenomenon itself, studying the motivations of individual developers to contribute to OSS projects, or investigating the characteristics of specific OSS products and projects, for example. Far less has been done in looking *outward* at the process of OSS adoption and implementation in organizations. The need for rigorous research into this process is important for several reasons: Firstly, recent estimates suggest widespread adoption of OSS: A survey of public administrations in 13 European countries reported that 78% were using open source (Ghosh and Glott,

2005). Similarly, a large-scale survey in the US estimated that 87% of organizations were using open source software (Walli et al., 2005). However, these surveys did not distinguish between primary adoption (the initial decision to adopt at the organizational level) and secondary OSS adoption (the actual implementation process which involves adoption by individuals throughout the organization). Primary and secondary adoption have been identified as quite different scenarios (Gallivan, 2001; Zaltman et al., 1973). This distinction and the problematic nature of OSS adoption is readily evidenced in the fairly frequent (and somewhat controversial) reports of problems, unforeseen hold-ups, and outright abandonment of OSS implementation over time (e.g. Birmingham City Council (Thurston, 2006); Crest Electronics (Turner, 2005); Scottish Police (Niccolai, 2005), Newham Council (McCue, 2004).

Here we present the case of Hibernia Hospital, an Irish public sector organization, who embarked on the adoption of a range of OSS applications. Some of these applications have been successfully deployed and remain in live use within the organisation, whereas others, despite achieving high levels of assimilation over a number of years, have not been ultimately retained in live use in the organization. Using a longitudinal case study, we discuss in depth the deployment process for two OSS applications—a desktop application suite whose deployment was ultimately unsuccessful and abandoned, and an email application which was successfully deployed. To our knowledge, this is the first such study into successful and unsuccessful OSS implementation, although there have been several studies of OSS adoption (e.g. Lundell et al., 2006; Rossi et al., 2006; Ven et al., 2006; Zuliani and Succi, 2004).

As a starting point, we drew on Gallivan's (2001) process framework for studying secondary adoption of technology. This framework extends the classical diffusion of innovation theory of Rogers (1962-2003) by drawing on critiques of this theory (e.g. Fichman, 1992; Fichman and

Kemerer, 1999; Moore and Benbasat, 1991). Our goal in this study was not to test a factor model of OSS deployment but rather to provide a rich description of the process of successful and unsuccessful OSS adoption in a single organizational context, with a focus more on theory development rather than theory testing.

Furthermore, researchers have identified a tendency in traditional innovation adoption research towards a pro-innovation bias (Fichman, 2004; Rogers, 2003). As a result, innovation is invariably seen as beneficial and positive for all participants, and, indeed, more has been written about successful adoption than rejection. Thus, our study here of the successful and failed adoption of OSS products can provide useful insights and contrasts which can contribute to theory development in this area.

The remainder of the paper is structured as follows. In section 2, we discuss the process model approach adopted here and present the conceptual framework we use in the study. Following this, section 3 discusses the research approach adopted. Section 4 presents the adoption process trajectories for both OSS applications in Hibernia. Following this, in section 5 we discuss this deployment using the framework derived in Section 2. Finally, the conclusions and the implications of the study for a theory of OSS deployment are discussed.

## CONCEPTUAL GROUNDING

### Process versus Factor Research Models

Process and factor approaches have been identified as alternative but complementary approaches to research (e.g. Markus and Robey, 1988; Mohr, 1982). Briefly summarising, factor research is concerned with identifying predictor and outcome variables. These are cast as independent and dependent variables and the research focus tends towards rigorous measurement of the variables

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