

Chapter XXI

A Cost Model of Open Source Software Adoption

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ABSTRACT

A limited budget for IT may lock public bodies in obsolete inefficient solutions slowing down their process of innovation. Various actions of estimating, controlling, and reducing IT costs have been already performed at national and European levels and Open Source Software (OSS) has been often pointed as a promising alternative that may also render public services and the underlying business processes more transparent and accessible to citizens. In this chapter, we propose a model of cost of a migration to OSS as a decision making instrument that helps public bodies being autonomous and independent in the IT adoption. The model is empirically validated in the real daily operations of more than 3,500 users. If adopted systematically our model might be a powerful tool to support transformational government and to establish an empirical open knowledge base on the economic advantages of OSS on which to found future strategies of OSS adoption.

INTRODUCTION

Transformational governance supports new technologies that better increment the quality of the services and save resources¹. In this perspective, Open Source Software (OSS) appears to be an appealing solution. It is a technology free of

charge, easy to get, transparent to the user, and ready for first use. As such, it has a big potential to support shared services (Janssen, Joha, & Weerakkody, 2007) within and among public bodies. Namely, shared services can benefit of open common standards and community development for interoperability, easy access, and maintenance.

Furthermore, OSS is readily available with little initial expense and therefore it is an opportunity for public organizations that have limited budget and resources.

Embedding OSS in an existing system / environment is not always an easy task tough. Selection of the appropriate OSS, data conversion, and software configurations and customizations for a given operational environment are time-consuming activities that often result impracticable in public bodies by the limited resources. Furthermore, at our knowledge, there is still no established process with a clear sequence of steps that guides to a successful deployment of OSS. Altogether, the assimilation gap (Fichman & Kemerer, 1997) between the acquisition and making a system really operational could be quite significant in the case of OSS. Therefore moving towards OSS becomes a risky decision that requires a deep investigation on the future financial engagement of an organization (Arthur, 1989; Federal Financial Institution Examination Council, 2004; Katz, 1994).

In addition, like for any adoption of a new technology, migrating to a new software solution increases the uncertainty of the future economic asset of an organization. Costs of adoption, assimilation, and ownership are hard to forecast, may drastically vary over time and tend to stabilize only in the long term². In the specific case of a migration to OSS, the uncertainty is further amplified by the lack of empirical evidence of any positive return (Chau & Tam, 1997). The little understanding of the effects of a transition to OSS adds variability and unpredictability to any decision making process based on a direct economic evaluation. For these reasons, a migration toward OSS often does not follow a proper strategy of IT innovation but rather it is initiated by a need of compliance with new regulations and it is then let to the initiative of individual OSS promoters.

Moving to a new software configuration has further critical economic aspects. The theory of

the increasing returns (Arthur, 1989) explains that the success of a product does not depend only on its technical superiority. A network effect occurs when the value of a product depends not only on its intrinsic technical value but also on the number of identical or compatible products already in use. A typical example of a network effect is the telephone—having the only telephone in the world would have been less valuable (who one could call?) than having a telephone in a network of 1 billion telephones already installed. In particular “network effects,” often cause “lock-in” situations (Katz & Shapiro, 1994; Economides 2000). More generally, an organization is locked into using a product by a complex combination of technical connectivity issues and liability and contractual agreements that bind it to a specific supplier, brand, or vendor even for future investments. An organization experiences software switching costs when is locked in a specific software configuration and decides to break it to move to a different solution.

Switching costs may become evident for a long time after a transition. As a migration to a new technology does not take place in isolation, switching costs are also experienced maintaining and supporting the infrastructures throughout its lifecycle.

Therefore, to determine whether migrating to OSS paybacks, we need to consider not only the zero costs of licenses purchasing, but also all the costs occurring in the adoption and maintenance of this software. Typical questions are “How much does it cost to make the open source system integrated in existing proprietary software? Will the open source solution work also with the new versions of the operating system? Are training materials and technical support available now and will they be available in the future? Will my staff suffer a loss of productivity due to the introduction of OSS? Are there hidden costs in the migration to OSS? After all, if all the previous answers encourage migrating to OSS, how do I perform an effective transition?” Clearly,

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