

Chapter VII

Applied Multi-Case Research in a Mixed-Method Research Project: Customer Configuration Updating Improvement

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ABSTRACT

Even though information systems is a maturing research area, information systems case study reports generally lack extensive method descriptions, validity defense, and are rarely conducted within a multi-case research project. This reduces the ability to build theory in information systems research using case study reports. In this chapter we offer guidelines, examples, and improvements for multicase studies. If information system researchers stick to these guidelines, case study reports and papers will get published more often, improving the rapidly maturing research area of information systems.

MULTIPLE CASE STUDY RESEARCH

It is our belief that IS research is quickly getting more mature and deserves more attention in the area of methods and practices. In this chapter, we

report on our experiences (Jansen & Brinkkemper, 2007; Jansen et al., 2006; van de Weerd, Brinkkemper, Souer, & Versendaal, 2006; van de Weerd, Brinkkemper, & Versendaal, 2007) with multicase studies in the area of Information Systems (IS) research. We believe that case study evidence is

fundamental for building theories in this rapidly maturing field (Darke, Shanks, & Broadbent, 1998). Case studies encourage students and researchers to train themselves in understanding large complex systems (for system maintenance) and organizations. Furthermore, case studies are generally appreciated by practitioners, and provide a popular method in IS research to disseminate and explain phenomena in the field. These case studies are, however, often reported without much validation. This chapter provides a detailed description of a multicase research project to help researchers to document their research methods, compare their research approach, and provide them with helpful experience reports. We believe such descriptions will improve the overall quality of multicase study research and reports, thus contributing to IS research at large.

Case Study Context

The experiences reported in this chapter concern a multicase research project that lasted from 2003 until 2006 and concerns the customer configuration updating practices of product software vendors.

To date, product software is defined as a packaged configuration of software components or a software-based service, with auxiliary materials, which is released for and traded in a specific market (Xu & Brinkkemper, 2005). One area that is specific to product software vendors is the fact that they have to release, deliver, and deploy their products on a wide range of systems, for a wide range of customers, in many variations. Furthermore, these applications constantly evolve, introducing versioning problems. An increasingly important part of product software development thus is customer configuration updating (CCU). CCU is “the combination of the vendor side release process, the product or update delivery process, the customer side deployment process, and the activation and usage processes” (Jansen et al.,

2006). The release process describes how products and updates are made available to testers, pilot customers, and customers. The delivery process describes the method and frequency of update and knowledge delivery from vendor to customer *and* from customer to vendor. The deployment process describes how a system or customer configuration evolves between component configurations due to the installation of products and updates. Finally, the activation and usage process concerns license activation and knowledge creation on the end-user side.

Product software vendors encounter particular problems when trying to improve these processes because vendors have to deal with multiple revisions, variable features, different deployment environments and architectures, different customers, different distribution media, and dependencies on external products. Also, there are not many tools available that support the delivery and deployment of software product releases that are generic enough to accomplish these tasks for any product. Case studies have shown (Ballintijn, 2007; Jansen, 2005; Jansen, 2006a, 2006b; Jansen, Ballintijn & Brinkkemper, 2004; Jansen, Brinkkemper, Ballintijn et al., 2005) that many issues remain unsolved. Large parts of the CCU process are still performed manually, such as quick fix distribution and deployment, license file creation, and error feedback reporting. Next to this, surveys have shown that up to 15% of deployments of products are unsuccessful due to missing components and configuration errors by the deployers. System administrators for large networked environments, too, experience many problems with respect to deployment, caused by heterogeneous environments, faulty configuration update tools, and lack of knowledge about system and software constraints. These problems require attention due to their large overhead costs (implementation, testing, configuration evolution, etc) and due to the fact that no quality guarantees can be given at deployment or update time.

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