The development of any decision support system (DSS) is a risky affair. The volatile task environment and dynamic nature of managerial work means that DSS projects are prone to failure. This chapter explores a number of aspects of DSS failure, first by considering the definition of success and failure and then by developing a set of critical success factors (CSFs) for DSS. This CSF set is used to understand two DSS project failures: one a small scale personal DSS, and the other a large enterprise-scale data warehouse with business intelligence applications. In addition to understanding DSS failure ex post, the CSF set could be used during a project to provide early warning of potentially fatal problems.

Keywords: Decision support systems; Failure; Success; Critical success factors; Data warehousing; Business intelligence

1 Introduction

Decision support systems (DSS) is the area of the information systems (IS) discipline that is focused on supporting and improving managerial decision making. Essentially, DSS is about developing and deploying IT-based systems to support decision processes. It is perhaps the most buoyant area of contemporary IS practice (Graham 2005) and the decisions made using these systems can fundamentally change the nature of an organization. To help define the field, Arnott and Pervan (2005) presented a history of DSS that focused on the evolution of a number of subgroupings of research and practice. These DSS types are:

- **Personal DSS**: usually small-scale systems that are normally developed for one manager, or a small number of independent managers, for one decision task;
- **Group Support Systems**: the use of a combination of communication and DSS technologies to facilitate the effective working of groups;
- **Negotiation Support Systems**: DSS where the primary focus of the group work is negotiation between opposing parties;
- **Intelligent DSS**: the application of artificial intelligence techniques to DSS;
- **Knowledge Management-based DSS**: systems that support decision making by aiding knowledge storage, retrieval, transfer and application by supporting individual and organizational memory and inter-group knowledge access;

- **Executive Information Systems (EIS)/Business Intelligence (BI)**: data-oriented and model-oriented DSS that provide reporting about the nature of an organization to management;

- **Data Warehousing (DW)**: systems that provide the large-scale data infrastructure for decision support.

It is well known in the DSS literature that all types of DSS projects are high-risk and prone to failure (Rainer and Watson 1995, Poon and Wagner 2001, Fitzgerald and Russo 2005). Some studies have even reported failure rates as high as 80% (Hurst et al. 1983). In addition to the general issues that all IT projects face, such as cost and time overruns, DSS are also susceptible to some specific problems due to their unique nature. For example, developers must embrace changing system requirements that occur as a result of executives’ changing information needs and the ill-structured nature of the problems that DSS typically support (Keen 1980). Also, with the increase in decision support scale brought about by data warehousing and business intelligence, developers must adapt their methods and techniques while remaining responsive to managerial needs (Arnott 2006). In addition to these development challenges, the fact that DSS use is not usually mandatory also exposes them to failure through non-use.

This chapter is structured as follows: first the nature of success and failure in DSS projects is discussed. The critical success factor (CSF) approach to DSS success and failure is then addressed in detail and a set of ten CSFs that should be relevant to all types of DSS is developed. Two case studies of DSS failure are then presented. One case examines a small personal DSS project and the other a large corporate DW project. The ten-CSF set is used to analyse the two DSS failure cases. Finally, some concluding comments about DSS failure are made.

## 2 Success and Failure in DSS Projects

Before addressing the reasons why DSS failures occur, it is first necessary to examine what is meant by failure. That is, in an area that rarely makes use of formal evaluation processes (Watson et al. 1991), how are projects deemed a success or a failure? Previous attempts to define failure have included Sauer’s (1993) definition that failure occurs when the level of dissatisfaction with a system is such that there is no longer enough support to sustain it. In the escalation literature, “failure is defined as occurring when it becomes obvious that expectations cannot be met” (Drummond 2005, p. 174). However, Markus and Keil’s (1994) definition takes failure to mean an unused system, not simply a system that does not meet expectations. Likewise, at the other end of the spectrum, success is also a multidimensional construct, and one that is difficult to define (DeLone and McLean 1992).