Thesis Abstract

There has been a vast expansion of data usage in recent years. The requirements of database systems to provide a variety of information has resulted in many more types of database engines and approaches (such as cloud computing). A once simple management task has become much more complex. Challenges exist for database managers to make the best choices of practices and procedures to satisfy the requirements of organisations.

This research is aimed at understanding how the management of database systems is undertaken, how best practices and procedures form a part of the management process, and the complex nature of database systems. The study examined the adoption of best practices and how the complex interactions between components of the database system affect management and performance.

The research followed a mixed methods approach, using sequential explanatory design. The quantitative research phase, using an online survey, highlighted the breadth of issues relevant to database management. It concluded that existing practices and procedures were not optimal, and revealed some of the complexities. Based on the findings from the survey the qualitative research phase that followed utilized information from the quantitative survey to seek understanding of key areas, through a number of focus groups.

As part of this research, an innovative method was developed in which thematic analysis of the resulting data was deepened through the use of systems thinking and diagramming. Taking this holistic approach to database systems enabled a different understanding of best practices and the complexity of database systems. A ‘blueprint’, called a CODEX, was drawn up to support improvement and innovation of database systems. Based on a comprehensive assessment of the individual causal interactions between data components, a data map detailed the complex interactions.