An Investigation of End User Development Success

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This thesis is presented for the degree of Doctor of Philosophy of Murdoch University

2002
I declare that this thesis is my account of my research and contains as its main content work which has not previously been submitted for a degree at any tertiary education institution.

(Tanya McGill)
Abstract

User development of applications provides end users with an alternative to the traditional process of systems development by allowing them to solve job related problems by developing their own software applications. User developed applications (UDAs) support decision making and organisational processes in the majority of organisations, and the ability to develop small applications forms part of the job requirements for many positions. Despite its pervasiveness, there are many risks associated with user development of applications. These risks result primarily from decreases in application quality that arise when end users have had little training and do not follow system development methodologies.

The primary aim of the research described in this thesis is to gain a better understanding of UDA success. In particular, the thesis considers the role of system quality in UDA success and the ability of end user developers to judge whether the applications they develop will have a positive impact on their performance of tasks. The research also investigates factors that might impact upon this ability.

The research objectives were addressed through two empirical studies. Two possible models of UDA success provided the starting point for Study 1. The first model is DeLone and McLean’s (1992) model of IS success, and the second model is a version of this model that was modified to address concerns about the DeLone and McLean model and to reflect current research about UDA success. The models were tested using data from a field study involving business people participating in a business policy simulation, where they developed spreadsheet applications to assist in decision making. Structural equation modelling was used to test the models. Neither of the models was well supported by the data. However, the analysis provided strong support for relationships between perceived system quality and user satisfaction, information quality and user satisfaction, user satisfaction and intended use, and user satisfaction and individual impact. It is notable that the model paths that were supported in Study 1 were primarily those that reflect user perceptions rather than objective measures. This study highlighted that user perceptions of information systems success play a significant
role in the UDA domain. The results did, however, suggest that there might be a direct relationship between system quality and individual impact.

Study 2 was a laboratory experiment and the participants were end users from a range of organisations. A revised research model was developed based on the findings of Study 1, and structural equation modelling was again used to test the model. The model paths that were supported suggest that for small to moderate applications, increases in spreadsheet development knowledge lead to increases in system quality and consequently the development of better quality spreadsheets. They also suggest that for these kinds of applications, end users have realistic perceptions of system quality and hence that user satisfaction may be an appropriate measure of UDA success. The results of Study 2 also provided insight into the role of user involvement in end user development, clarifying the process by which benefits are obtained. The study also provided insight into the importance of spreadsheet development knowledge for successful use (as well as development) of a spreadsheet application.

The results described in this thesis have practical implications for the management of user development of applications. They highlight the need either to increase end user levels of development knowledge via training so that end users can cope with applications of greater complexity, or to provide other forms of support for development. The role of organisational standards and guidelines is also be considered in the thesis and it is suggested that there is a particular need for guidelines on what kinds of applications are suitable for end user development.
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Acknowledgements

I would like to thank the many people who have provided ideas, support and encouragement during this research. In particular, I would like to thank my supervisors Val Hobbs and Jane Klobas; I benefited greatly from their expertise and support. Jane’s enthusiasm, guidance, and insight made a huge difference to the progress of this thesis. My time with her in Milan was particularly valuable and most appreciated. Val’s encouragement, friendship and confidence in my ability also all helped significantly.

Chris Klisc and Helen Rowe provided substantial practical assistance at various points in conducting the two studies. This help was invaluable. Several other colleagues also provided useful advice and support: Lanny Entrekin kindly suggested the research environment used in the first study; Sam Downes and Eve Voysey provided advice on several measurement instruments; Diana Adorno helped me grapple with thesis formatting; Tom Gedeon provided practical support and encouragement; and May Lanchbury, Glenys Hoar and Dianne McShane all helped make the experimental sessions run smoothly. I would also like to thank the many participants in my research. Their interest and cooperation made these studies possible.

Finally, I would like to thank Mike Dixon who provided much encouragement and moral support, and showed me by example that it could be done, and Debbie Street, who provided practical assistance in many phases of the project and whose friendship and moral support helped sustain me over the entire period.