A STUDY OF UNCERTAINTY AND RISK MANAGEMENT PRACTICE RELATIVE TO PERCEIVED PROJECT COMPLEXITY

A thesis submitted for the degree of Doctor of Philosophy

by

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Abstract

The project management literature is extensive with reference to continued project failures and the notion that over the years projects have increased in complexity. This is accompanied by concern that prescribed industry risk management standards are not effective enough in managing uncertainty and risk, especially in complex project environments. Leading risk and project management researchers have proposed a number of approaches that they consider to have the potential to improve the management of uncertainty and risk in these environments, including the uncertainty management paradigm; explicit opportunity management; an improved approach to the evaluation and interpretation of estimates; complexity theory concepts and the explicit management of individual and organisational risk attitudes. Other researchers suggest an even wider approach to managing uncertainty and risk, such as scenario planning or frameworks that include fundamental uncertainty, ignorance and fuzziness.

The primary purpose of this research is to contribute to the understanding of the practices used by Project Managers to manage uncertainty and risk on projects of high complexity. The research questions explore the relationship between uncertainty and risk management approaches and processes and perceived project complexity; the prevalence of risk management approaches and processes considered to be ‘in advance’ of general prescribed industry risk management standards; and perceptions of project success in relation to uncertainty and risk management.

A post-positivist research approach was taken. The value of phenomenological elements to supplement the quantitative data in this research was considered important. Post-positivism enables this by rejecting the relativist idea of incommensurability of different perspectives. Results obtained from a survey of 73 Project Managers
revealed that Project Managers implement higher level (in accordance with a framework developed for this research) uncertainty and risk management approaches and processes on projects perceived to be of greater complexity. However, most Project Managers, on projects characterised by high complexity, implement uncertainty and risk management approaches and processes at lower than the ‘optimal’ levels recommended by general prescribed industry risk management standards. A minority of Project Managers on projects perceived as complex are implementing uncertainty and risk management approaches and processes considered to be ‘in advance’ of general prescribed industry risk management standards. A positive correlation was found between uncertainty and risk management approaches and processes implemented and perceived project success on projects of high complexity. These results support findings in the literature that enhanced uncertainty and risk management approaches and processes appear to be related to project success. The empirical investigation also explores the nature of uncertainty and risk management approaches and processes considered to be ‘in advance’ of general prescribed industry risk management standards, together with qualitative perspectives from participating Project Managers, highlighting issues and recommendations for improving uncertainty and risk management, particularly in complex project environments.
Declaration

This thesis is submitted to Bond University in fulfillment of the requirements of the degree of Doctor of Philosophy. This thesis represents my own original work towards this research degree and contains no material which has been previously submitted for a degree or diploma at this University or any other institution, except where due acknowledgement is made.
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Conducting this research has been a long, challenging, exciting and knowledge gaining experience. Throughout this journey there have been many others who have been supportive. I’d especially like to thank those organisations and Project Managers who took the time to participate in the research. I trust that the findings will be of benefit to you and the project management discipline and that they will provide insights for further investigation into the intricacies of managing uncertainty and risk in complex project environments, to continually improve project delivery into the future.
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