

PETER J EDWARDS | PAULO VAZ SERRA | MICHAEL EDWARDS

MANAGING PROJECT RISKS

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Managing Project Risks

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This edition first published 2020
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Editorial Office

9600 Garsington Road, Oxford, OX4 2DQ, UK

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Library of Congress Cataloging-in-Publication Data

Names: Edwards, Peter J. (Peter John), 1940- | Vaz Serra, Paulo, 1966-
author. | Edwards, Michael, 1969- author.

Title: Managing project risks / Peter J. Edwards, Paulo Vaz Serra, Michael
Edwards.

Description: Hoboken, NJ : Wiley-Blackwell, 2020. | Includes bibliographical
references and index. |

Identifiers: LCCN 2019010837 (print) | LCCN 2019016405 (ebook) | ISBN
9781119489764 (Adobe PDF) | ISBN 9781119489733 (ePub) | ISBN 9781119489757
(hardcover)

Subjects: LCSH: Risk management. | Project management.

Classification: LCC HD61 (ebook) | LCC HD61 .E3744 2019 (print) | DDC
658.4/04--dc23

LC record available at <https://lcn.loc.gov/2019010837>

Cover Design: Wiley

Cover Image: © Vijay Patel / iStockphoto

Set in 10/12pt WarnockPro by SPi Global, Chennai, India

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Preface

If 'project' is part of your daily vocabulary, then this book is aimed at you. It is intended to appeal to practitioners of project management across a wide range of industries and professions; to people working in the private and public sectors, and those in the arts and entertainment; as well as to business organisations, service providers, and manufacturers. Students are very much included in our target readership as they pursue their academic journeys on the way to entering hopefully satisfying and rewarding careers.

An overview of the content is provided in Chapter 1. Besides offering a systematic approach to project risk management that we hope is easy to follow and understand, we have introduced topics generally not found in other books on this subject but which have an important bearing on how risks are managed, particularly those associated with today's projects. The additional matters we have dealt with include risk knowledge management, cultural risk-shaping, project complexity, and political risks. Strategic risk management is also considered. These topics are based upon our own project experiences, and reflections on how they might influence project risk management practice. Six project case studies (located as Appendices) are used to exemplify many of the points we make, together with many examples within the chapters.

We have adopted generic and multi-stakeholder perspectives of projects. This means that, whatever the types of projects in which you are involved, and whatever role you play in them, you should be able to apply the principles and processes of systematic and effective risk management in your work without constantly having to recontextualise them.

If you are a practitioner, as either a project manager or someone who specialises in risk management, we concede that you probably just want to get on with managing your projects and the risks associated with them. The inevitable time constraints for all projects will almost certainly already impact severely on the opportunities you have for reading. If this is so, then the arrangement of topics should help you. While they are predominantly sequential (in a flow process sense), the topics are distinguished as separate chapters, easily enabling you to dip in and out of them in a convenient way. The contents should meet several needs: as a refresher for your current risk management processes; as a guide to benchmarking them; or as a framework for replacing informal, reactive, and intuitive ways of dealing with project risks with a more formal, systematic, and proactive approach.

If you are a student, whatever your academic discipline, you will almost certainly be expected to take a project-oriented approach to your studies, and will also experience the pressure of time. You have to read and investigate so much about so many matters,

and to demonstrate your knowledge acquisition through examinations and assignments, that what looks to be a ‘quick fix’ solution to learning about project risk management may look very attractive. You are right – it is! The ‘dipping’ topic arrangement should also suit you, but we suggest only after you have read and reflected upon the basics of risk management in the early chapters. Risk and risk management *are* big learning topics (as is project management), so dealing with them is never going to be just a quick process. We offer no easy solutions, but rather a systematic and comprehensive approach to project risk management that will serve you well in study and eventually in practice. Our book will not only provide you with a fundamental grasp of the principles and processes of project risk management, but should also help you to maximise the value of the experiential learning you gain from your own projects, now and in the future.

Instructors will find the structure of the book useful for preparing programmed reading guides for their students.

It is fashionable these days to argue that the internet will completely replace the need for books. While the Web is a huge and useful resource, it does come with its own risks. In Chapter 18 (Computer Applications), we note the vast number of hits following the entry of a risk-related term into an internet search engine. Not only would this result impose a huge task in sifting what is relevant from what is not, but there is also a substantial risk of finding information that is simply incorrect – the Web offers no certain guarantees for accuracy, reliability, and authenticity. We hope our book satisfies all three criteria.

Our aim is to provide an introduction to, and comprehensive treatment of, project risk management that will guide and assist people and organisations tasked with dealing with those risks.

As authors, our objectives are to:

- Effectively communicate a conceptual and philosophical understanding of risk.
- Establish the nature of projects and the stakeholders involved in them.
- Present a systematic and logically progressive approach to the processes of project risk management.
- Discover the drivers of project risks and the factors which shape them.
- Emphasise the importance of capturing and exploiting project risk knowledge.
- Provide guidance about implementing and building (or improving) project risk management systems in organisations.

We are friends, colleagues, and family, coming from different generations and different backgrounds and professions. We think those differences contribute much to the strength of the book.

Peter J Edwards trained originally as a quantity surveyor in the construction industry in the United Kingdom, and holds a Master of Science degree from the University of Natal and a PhD awarded by the University of Cape Town. Although now in retirement, he is currently an Adjunct Professor at Royal Melbourne Institute of Technology (RMIT) University in Melbourne, Australia and continues to be active in research and writing. He has authored and co-authored more than 170 peer-reviewed journal and conference papers, two books, and five book chapters. Many of these publications relate to project management and risk management. He has worked in the United Kingdom, South Africa, the USA, Australia, and South East Asia, and has taught undergraduate and

postgraduate project risk management courses at universities in several of those countries. He has also undertaken consultancy work in project risk management.

Paulo Vaz Serra is a civil engineer with over 20 years of experience in construction management, including operational, research, and development responsibilities in construction companies in Portugal and Spain. He holds a Master of Science degree in Construction and a PhD in Civil Engineering with a focus on knowledge management. Paulo is currently a Senior Lecturer in the Faculty of Architecture, Building and Planning at the University of Melbourne, where he coordinates the courses Risk, Means and Methods and Procurement Methods in Construction within a Master of Construction Management degree programme. Paulo is a Senior Member of the Order of Portuguese Engineers, and a Chartered Member of the Institution of Civil Engineers (MICE) of the United Kingdom.

Michael Edwards has a Bachelor of Science degree, majoring in Mathematics, awarded by Monash University in Melbourne. Over more than 20 years, his work in a large department of the Australian federal government has involved initiating and managing projects for services, and service improvements, implemented not only within the department but also offered on a tender or fee-for-service basis to other government departments and to private sector organisations. He is thus experienced in stakeholder management.

Peter J Edwards was a co-author in an earlier book about project risk management (Edwards and Bowen 2005) which is no longer in print. While some of the material of that book has been included in this one, sufficient new material (and thinking about project risk management) has emerged over the past decade to justify describing this as a new book (with a new publisher) rather than a revised edition of the old one.

We hope this book meets with your expectations, and that it will provide a solid foundation and guidance for your practice in project risk management.

Reference

Edwards, P.J. and Bowen, P.A. (2005). *Risk Management in Project Organisations*. Sydney, NSW: University of New South Wales Press. ISBN: 0868405744.

Acknowledgements

We offer sincere thanks to the many people who have helped us with this book. Their contributions have enriched the content in ways that always exceeded our expectations.

In particular we thank Mike King, Andy Kwek, Peter Lawther, Sean McGoohan, and Gary Ullmann, not only for their willingness to contribute their knowledge and wisdom, but also for their time and patience in doing so. The information contributed by postgraduate students Moses Chiropa, Donald Matjuda, Lisalokuhle Mboho, and Dube Ndabezinhle is gratefully acknowledged.

Our gratitude is also due to Rozanne Edwards for her comprehensive text editing work and design suggestions. It was a huge support for us.

Of course, none of our writing effort would have been possible without the encouragement and forbearance of our beloved families.

Glossary

Term	Amplification	Explanation
AI	Artificial intelligence	A process whereby knowledge is generated automatically through learning algorithms incorporated into a computer-based application.
AS/NZS	Australian Standard/ New Zealand Standard	Previous joint publishers of standards for Australia and New Zealand (see their replacement, SA/SNZ).
BOO; BOOT	Build-own-operate; Build-own-operate- transfer	Building procurement system alternatives which define larger and longer project roles for the construction contractor.
CAD	Computer-aided design	Computer application with graphic design interface capability.
CPN	Critical path network	An analytic project scheduling technique.
DB	Design-build	A procurement system for construction projects (see also D & C) in which the contractor has responsibility for both design and construction.
DBFO	Design-build-finance- operate	See DB and D & C. A procurement system whereby the contractor not only has responsibility for project design and construction, but also has an equity share in the investment and will operate the completed facility.
D & C	Design and construct	A procurement system for construction projects (see also DB).
DCF	Discounted cash flow	A mathematical technique for modelling the effects of time on the cash flows occurring over the life cycle of an investment.
DTA	Decision Tree Analysis	A quantitative decision support tool.

Term	Amplification	Explanation
ECP	Elemental cost planning	A technique, based upon quantitative measures of the discrete design elements, used by professional quantity surveyors to estimate the probable tender price for a proposed construction project or to achieve a balanced distribution of element costs by comparing them to historic projects.
EMV	Expected monetary value	A quantitative financial decision support tool.
EOI	Expression of interest	Issued as an invitation to participate in a project bidding process.
EPM	Enterprise project management	Total in-house responsibility for managing the delivery of projects in an organisation (see also PMO).
ETA	Event Tree Analysis	A quantitative decision support tool.
FM	Facilities management	The ongoing management of activities relating to maintenance, repair, component replacement, and energy efficiency during the operational phase of a facility.
FMECA	Failure Mode and Events Criticality Analysis	An engineering technique used in manufacturing to analyse the causes and seriousness of component failure.
HAZOPS	Hazard and Operability Study	An engineering technique, using predetermined conditional statements, to explore operational cause and effect situations during the project design stage.
HSE	Health and Safety Executive	Quasi-government authority in the United Kingdom responsible for establishing and administering national health and safety compliance requirements.
IP	Intellectual property	Rights to the legal ownership of ideas.
IRR	Internal rate of return	A form of DCF modelling which finds the percentage rate that will discount all cash flows occurring over the life cycle of an investment to a zero net present value for the whole investment (also known as the 'yield rate').
ISO	International Standards Organisation	Publisher of worldwide standards.
IT; ICT	Information technology; information and computer technology	Technologies (usually computer-based) that deal with the processing of data and information.
KMS	Knowledge management system	The arrangement of explicit knowledge in an organisation in order to facilitate inputs and access.

Term	Amplification	Explanation
NLP	Natural language programming	The use of computers to understand and process natural language (text or speech) in order to carry out required functions.
OHS	Occupational health and safety	A term used to typify situations pertaining to the workplace health and safety of people.
OR	Opportunity risk	Uncertainty with beneficial effect upon project objectives.
ORR	Organisational risk register	An interactive collection of risk information and knowledge at the organisation level.
PM	Project manager	The person given responsibility for managing all activities and processes required to bring a project from inception to completion.
PMI	Project Management Institute	US-based organisation for professional project managers.
PMO	Project Management Office	A unit within an organisation that is made responsible for managing the delivery of its projects (see also EPO).
PPP	Public-Private-Partnership	A procurement system for integrating the delivery and operation of public infrastructure and services projects.
PRM	Project risk management	Activities at the project level pertaining to the management of project risks.
PRMS	Project risk management system	A structured, organised, and documented system established by an organisation for the purpose of dealing with project risks (see also RMS).
PRR	Project risk register	An interactive collection of risk information and plans for risk management activity at the project level.
RFID	Radio frequency identification device	A wireless-enabled electronic identification tag or marker.
RFT	Request for tender	Issued as an invitation to participate in a project bidding process.
RKMS	Risk knowledge management system	A knowledge management system separately dedicated to project risks and not incorporated with an organisation's general knowledge management systems (see also ORR).
RM	Risk manager	The person responsible for ensuring that the risks an organisation faces are managed proactively as far as possible.
RMS	Risk management system	A structured, organised, and documented system for dealing with risks (see also PRMS).

Term	Amplification	Explanation
SA/SNZ	Standards Australia/ Standards New Zealand	Joint publishers of standards for Australia and New Zealand (see also the earlier AS/NZS).
SGBB	Singapore Gardens by the Bay	Botanical gardens project in Singapore.
SHA	Safety hazard analysis	A prescribed format for analysing and recording potential threats to work safety and the responses proposed to avoid or mitigate them.
TR	Threat risk	Uncertainty with adverse effect upon project objectives.
VCE	Virtual constructed environment	A dynamic computerised graphical simulation, usually three-dimensional, of a building design or construction process.
VE <i>or</i> VM	Value engineering <i>or</i> Value management	A management technique used in the project design stage and based upon identifying required functions for project components and then speculating about alternatives that could deliver the same function at lower cost, better function at the same cost, or better function at lower cost. Value is defined as a measure of worth calculated from the delivered function and the cost to achieve it.
WBS	Work Breakdown Schedule	A project planning technique which analyses a project by the activities required to undertake and complete it.