

Table of contents

Preface — v

About the author — xiv

Acknowledgements — xv

1	What is this “Innovation” everyone is talking about? — 1
1.1	Technological innovation defined — 1
1.2	Non-commercial innovation — 6
1.3	Schumpeter, Solow-Swan, and innovation theories of economic growth — 8
1.4	Some examples of technological innovation — 12
1.5	Understanding innovation — 13
2	Linear models of technological innovation — 15
2.1	The “technology-push” model of innovation — 16
2.2	Degrees of technological innovation — 25
2.3	Hindsight: Where do most innovations come from? — 29
2.4	The “market-pull” and “concept-push” models of innovation — 31
2.5	Success rates in technological innovation — 34
3	Some non-linear models of innovation — 39
3.1	The coupling, integrated, and systems integration and networking models — 39
3.2	Technology “S curves” — 43
3.3	Degree of innovation S-curves — 46
3.4	Product lifecycle S-curves — 47
3.5	Families of S-curves and non-S-curves — 50
4	Inside the innovation models — 53
4.1	Who actually does innovation? — 53
4.2	Closed and open innovation — 55
4.3	Creative thinking models — 58
4.4	The product development process and the valley of death — 61
4.5	The first face of technology readiness: The technology itself — 66
4.6	Market analyses, business plans, and financing — 71
4.7	The second face of technology readiness: The customers — 76
4.8	Managing the NPD process — 84
4.9	Risks and paradoxes of innovation — 89

5	Innovation ecosystems — 91
5.1	Innovation ecosystem and multi-dimensional innovation models — 92
5.2	Innovation ecosystem entities — 101
5.3	Government innovation strategies, accelerators, clusters, and innovation parks — 112
6	Eras and waves of innovation — 117
6.1	Industry waves of innovation — 118
6.2	Societal waves of innovation — 119
7	The management of innovation — 127
7.1	How much innovation, if any, does an organization need? — 127
7.2	Key success factors for innovation in organizations — 130
7.3	Innovation strategy — 133
7.4	Innovation culture — 142
7.5	Innovation and managing operations — 144
7.6	Some innovation barriers — 153
7.7	Some icons of technological innovation — 157
8	Can innovation be measured? — 163
8.1	Regional and national innovation indicators — 165
8.2	Innovation indicators for commercial enterprises — 172
8.3	Innovation indicators for intermediaries (Including RTOs) — 176
8.4	A cautionary note — 181
9	Looking forward — 183
9.1	Evolving technological innovation models and systems — 184
9.2	Some emerging frontiers in technological innovation — 185
9.3	Technological innovation in the future — 186

References — 191

Index — 211