

Contents

<i>List of figures</i>	vii
<i>List of tables</i>	ix
<i>List of contributors</i>	xi
<i>Preface</i>	xii
<i>List of abbreviations</i>	xiv

PART I CONCEPTUAL ASPECTS

- 1 From path dependency to path creation: A new challenge to the systems of innovation approach 3
Gerd Schienstock
- 2 Towards a theory of social innovation and structural change 28
Timo Hämmäläinen

PART II INDUSTRIES AND FIRMS

- 3 The evolution of the Finnish ICT cluster 47
Laura Paija and Petri Rouvinen
- 4 Innovation and absorptive capability in the traditional industries: The case of the Finnish wood products industry 65
Christopher Palmberg
- 5 Knowledge services in the Finnish innovation system 85
Aija Leiponen
- 6 Nokia: A giant in the Finnish innovation system 106
Jyrki Ali-Yrkkö and Raine Hermans
- 7 The flexible production model in Finnish companies: Trends in production management, work organization and employment relations 128
Tuomo Alasoini

PART III REGIONS AND INSTITUTIONS

- 8 The emergence of a regional innovation network: BioTurku in Turku, Finland 147
Henrik Bruun

9	From the national industrial heartland towards a node in the global knowledge economy: The case of Tampere Region <i>Mika Kautonen, Pasi Koski and Gerd Schienstock</i>	169
10	Universities and science-industry relationships: Making a virtue out of necessity? <i>Mika Nieminen and Erkki Kaukonen</i>	196
11	Polytechnic reform: A response to the learning economy <i>Kari Kekkonen</i>	219
12	Education as an asset in the labour market <i>Asko Suikkanen and Ritva Linnakangas</i>	242
13	Regulation and innovation: Competition law <i>Kalle Määttä</i>	254
14	Finnish science and technology policy <i>Tarmo Lemola</i>	268
PART IV THE NATIONAL LEVEL		
15	The Finnish model of the knowledge economy <i>Gerd Schienstock</i>	287
	<i>Index</i>	315

Figures

2.1	Social innovation process	30
3.1	ICT sector value added, employment and R&D	48
3.2	ICT cluster framework	49
3.3	Development of the ICT cluster versus the economy as a whole 1990–2001	53
3.4	Export shares by industry group	53
3.5	Tekes funding to Nokia: Volume (millions of euros at 2000 prices) and share of Nokia's R&D (%)	57
4.1	Contribution of different industries to the volume of production of the Finnish manufacturing sector 1995–2001 (ETLA database)	66
4.2	The product segments of the Finnish wood products industry in 2000	70
5.1	Dimensions of organizational knowledge	92
5.2	Operationalization of knowledge in the service firm	92
6.1	Tekes funding and its share of Nokia's total R&D expenditure	108
6.2	Share of Tekes financing in all its company projects and Nokia projects	109
6.3	Nokia's R&D personnel in Finland and abroad	110
6.4	Nokia's co-operation network in Tekes' ETX and TLX programmes	115
6.5	R&D expenditures relative to GDP (%)	121
6.6	Monetary value flows between Nokia and the public sector in Finland 1995–2000 (at 2000 prices)	124
9.1	Selected indicators of regional development in Finland, 1999	171
9.2	Industrial production in various sectors in Tampere Region in 2000 (%)	173
9.3	Changes in Tampere Region's share of workforce and value added, of Finland as a whole, 1995–2000 (%)	174
9.4	Share of companies having frequent (Likert-5, values 4–5) co-operation with some selected universities or research institutes	179
9.5	Changes in R&D expenditure shares by region between 1995 and 2000 (%)	180
9.6	Domestic patent applications filed by business enterprises in Finland by inventor's address by region 1995–2001 (%)	181

9.7	Share of companies located in Tampere Region having frequent (Likert-5, values 4–5) co-operation with selected intermediary and financing organizations	184
9.8	Development of total turnover in industries belonging to the Tampere Region Centre of Expertise Programme, 1995–2000, index	186
9.9	The regional innovation system environment in Tampere Region	187
9.10	Companies' views of their own competitive strengths in Tampere Region	189
11.1	The Finnish VET reform in the 1990s	225
11.2	Finnish education system	229
11.3	A framework for network analysis of VET institutions: Actors and forms of interaction	231
11.4	Working-life-related theses	232

Tables

2.1	Structural competitiveness of nations in the new techno-economic paradigm	35
2.2	Mental and structural change in Finland during the 1980s and 1990s	41
5.1	Service firms' strategic choices	88
5.2	Descriptive statistics of main survey variables	89
5.3	Service firms' contracts with key clients	90
5.4	Knowledge resources in KIBS industries (survey means)	94
5.5	Mean indicators of Finnish KIBS industries' service development activities	97
5.6	Means of a set of variables concerning KIBS firms, for different values of the control rights variable	98
5.7	Means of independent variables for innovators, non-innovators	99
6.1	Nokia's most important partner universities by country, 2001	119
7.1	Different types of corporate co-operation agreements in Finnish industry (%)	133
7.2	Opportunities for influencing one's own work in Finland (%) (proportion of those who can influence 'a lot' or 'quite a lot')	136
7.3	Delegation of responsibility, teamwork and job rotation in the Nordic countries (%) (proportion of workplaces with 50 employees or more which responded positively)	137
8.1	Indicators of regional performance in biotechnology-related research	154
9.1	Types of innovation networks among firms in Tampere Region (%)	189
9.2	Changes in employment in different sectors 1970–1998 (%)	191
10.1	External funding of university research by source 1991–2000 (% , at 2000 prices)	202
11.1	Concepts of learning and knowledge in the framework of formal education	222
11.2	Supply of education in upper secondary and higher education in Finland 1999	230
12.1	The share of Finnish people in normal employment calculated with reference to different groups	244

12.2	The development of employment according to educational levels in the years 1988–1997 in Finland	245
12.3	The proportion of the Finnish labour force (excluding entrepreneurs) in normal employment by level of education in the years 1990, 1993, 1995 and 1998	246
12.4	The incidence of unemployment in the Finnish labour force by level of education in the years 1990, 1993, 1995 and 1998	247