CHALMERS

Construction Economics and Organization

2nd NORDIC CONFERENCE GÖTEBORG 24 – 25 April 2001

Department of Building Economics and Management Department of Service Management CHALMERS UNIVERSITY OF TECHNOLOGY







Published by the Department of Building Economics and Management and the Department of Service Management, Chalmers University of Technology, SE-412 96 Gothenburg, Sweden

Gothenburg, 2001

ISBN 91-631-0856-9

Printed in Sweden by Alfredssons Offset AB, Bollebygd

Cover designed by Forsman & Bodenfors AB, Gothenburg

Content

| Preface | 9 |
|---|-----|
| Keynote lectures | |
| Construction business research in a knowledge economy J. Bröchner | 13 |
| Major trends and paradoxes in managing construction projects <i>P. W. Hetland</i> | 19 |
| The Nordic Construction Industry – What can we learn from other industries <i>R. Flanagan</i> | 27 |
| Sustainable construction | |
| Towards sustainability? Green ideas in Swedish construction <i>AC. Stenberg</i> | 37 |
| Environmental action plan for the housing and building sector in Norway <i>H. Ovesen</i> | 45 |
| Environmental programmes for sustainable housing projects: four case studies <i>AC. Pettersson</i> | 55 |
| The use of "green" procurement in the Swedish building and road-maintenance sectors <i>C. Faith-Ell and E. Sterner</i> | 63 |
| From polluted airport to sustainable city through "eco-efficient" construction <i>T. Ingvaldsen</i> | 73 |
| What, and in what way, can we learn from demonstration projects? P. Femenias | 81 |
| Analysis of energy efficient and sustainable building at Bo01: first study <i>A. Nilsson</i> | 91 |
| Environmental assessment of materials and components in demonstration projects: lineout for an evaluation <i>W. Trinius</i> | 99 |
| A systematic control procedure for environmental burdens of building construction projects A Sagri | 10′ |

| How to increase environmental understanding: a case study at the Swedish National Road Administration P. Adolfsson, P. Falk, C. Häggström, L. Nyberg and AC. Pettersson | 117 |
|--|-----|
| Environmental planning strategies in commercial building renovation Å. Engwall | 127 |
| Project Management | |
| Use of project partnering in construction O. Lædre and T. Haugen | 139 |
| The use of a partnership model on construction and building projects $R. \ Hugsted \ and \ \emptyset. \ Meland$ | 148 |
| CO-Operative design build contracts in Norway T. Berg | 157 |
| Why do we communicate in building projects? B. Carlsson and PE. Josephson | 165 |
| Existing features and attributes in the concurrent engineering environment <i>M. Luedke, A. Lakka and K. Sulankivi</i> | 173 |
| New potential technologies for concurrent engineering environment K. Sulankivi, A. Lakka and M. Luedke | 183 |
| BARBi: the Norwegian building and construction industry's data reference library L. Bjørkhaug | 193 |
| Learning and innovation in project based firms: a pilot case study of Danish trade contractors H. Bang and L. Clausen | 201 |
| How to detect human errors earlier in building projects: skills, activities, routines and resources PE. Josephson and B. Larsson | 211 |
| The Construction Sector | |
| Productivity and efficiency in the construction industry G. Bergly | 223 |
| Recent developments and trends in the European construction companies A. Lakka and K. Kähkönen | 231 |
| Conditions for co-operative technical development in road operation procurement A. Nylén | 239 |

Underus

TQM band a new

Experience consulting

Life cycle

Authors

Keywords

| Understanding public private partnerships R. Leiringer | 249 |
|---|-----|
| Learning organizations in the Swedish construction area <i>F. Anheim and K. Widén</i> | 259 |
| TQM-based tools for self-assessment: comparison of the SIQ and EFQM models and a review of methods P. Samuelsson, M. Aronsson, J. Eriksson, C. Gerle and M. Ivarsson | 267 |
| Experiences from the implementation of a quality assurance system in a technical consulting firm LE. Nilsson, R. Andersson, M. Bävertoft and M. Johansson | 277 |
| Life cycle costs and affordability perspectives for multi-dwelling buildings in Sweden <i>C. Johansson and M. Öberg</i> | 287 |
| Authors | 299 |
| Keywords | 301 |

Preface

The present conference follows upon the Nordic Seminar on Construction Economics and Organization, held 12 - 13 April 1999, also in Gothenburg. The 1999 seminar proved that Nordic arrangements fill a crucial function by bringing together younger and more experienced researchers in the field. This year, the Department of Building Economics and Management at the School of Civil Engineering and the Department of Service Management at the School of Technology Management have invited their Nordic colleagues to this conference. The response has been encouraging, and preliminary abstracts of 40 contributions were received. This volume includes the 29 papers that remained after the scientific review. These contributions are preceded by three keynote lectures.

We wish to express our warmly felt thanks to all authors and especially to the invited keynote speakers. We also wish to thank the members of the Scientific Committee for the effort spent on reviewing contributions to the Conference. Our colleagues within the two departments have been both patient and helpful, and in particular we are grateful to Per Stenman for his efficient aid in preparing the conference and editing this volume.

Financial support from the Swedish Research Council for Environment, Agricultural Sciences and Spatial Planning (Formas), the Development Fund of the Swedish Construction Industry (SBUF) and the Centre for Management of the Built Environment (CMB) is acknowledged with gratitude.

Gothenburg, April 2001

Jan Bröchner

Per-Erik Josephson

Bengt Larsson

Members of the Scientific Committee

Jan Bröchner, Professor, Chalmers University of Technology, Gothenburg, Sweden Roger Flanagan, Professor, University of Reading, Reading, UK Anne Marie Wilhelmsen, Professor, Chalmers University of Technology, Gothenburg,

Sweden

Per Willy Hetland, Professor, Norwegian School of Management, Oslo, Norway Nigel Howard

Per-Erik Josephson, Associate Professor, Chalmers University of Technology, Gothenburg, Sweden

Members of the Organizing Committee

Jan Bröchner Bengt Larsson Göran Lindahl

CHALMERS UNIVERSITY OF TECHNOLOOGY SE-412 96 Göteborg, Sweden Telephone: + 46-(0)31 772 10 00 www.chalmers.se

Sustainable Construction, Project Management and the Construction Sector are the three main themes of the 2nd Nordic Conference on Construction Economics and Organization, arranged in April 2001 by Chalmers University of Technology in Gothenburg, Sweden. Strategic management, environmental management, environmental plans and programs, demonstration projects, contractual relations, information and IT, learning and quality, public/private sector, facilities management are dealt with by contributors. The Conference has been aimed at researchers, industry practitioners and others interested in management issues in Nordic construction.

