Clients Driving Innovation
Clients Driving Innovation

Edited by

Peter Brandon
Director of Salford University Think Lab and Director Strategic Programmes
School of the Built Environment
University of Salford, UK

Shu-Ling Lu
Research Fellow
School of the Built Environment
University of Salford, UK
Contents

Note on editors  viii
List of contributors  ix
Note on CIB  xii
Note on Think Lab  xiii
Acknowledgements  xiv
Preface  xv

Peter Brandon

PART 1  THE CONTEXT FOR INNOVATION  1

1 A global agenda for revaluing construction: the client’s role  3
Peter Barrett

2 Revaluing construction: implications for the construction process  16
Graham M. Winch

3 Is the client really part of the team? A contemporary policy perspective on Latham/Egan  26
John Hobson and Kenneth Treadaway

4 Enabling clients to be professional  33
Roger Courtney

5 Challenging the illusion of the all powerful clients’ role in driving innovation  43
Martin Sexton, Carl Abbott and Shu-Ling Lu

6 Reifying the client in construction management research? Alternative perspectives on a complex construct  49
Mike Bresnen

7 A proposed taxonomy for construction clients  58
Patricia Tzortzopoulos, Mike Kagioglou and Kenneth Treadaway

8 Clients’ roles and contributions to innovations in the construction industry: when giants learn to dance  69
Charles Egbu

9 Setting the game plan: the role of clients in construction innovation and diffusion  78
Kristian Widén, Brian Atkin and Leif Hommen

10 Clients as innovation drivers in large engineering projects  88
Roger Miller
vi  Contents

11 Knowing differently, innovating together? Exploring the dynamics of knowledge creation across boundaries in clients’ design teams 101
Patrick S. W. Fong

12 The role of the client in the innovation processes of small construction professional service firms 111
Shu-Ling Lu

13 Client-oriented contractor innovation 125
Jan Bröchner

14 Driving innovation in construction: a conceptual model of client leadership behaviour 137
Mohammed F. Dulaimi

15 Critical actions by clients for effective development and implementation of construction innovations 146
E. Sarah Slaughter and William L. Cate

PART 2  THE INNOVATION PROCESS 155

16 Overcoming resistance to innovation: the integration champion in construction 157
Andreas Hartmann

17 Client-driven innovation through a requirements-oriented project process 167
John M. Kamara

18 Knowledge management supports clients driving innovation: two case studies 177
Marja Naaranoja, Pitiivi Haapalainen and Heikki Lonka

19 Implementing innovations in infrastructures for the built environment: the role of project developers, customers and users 190
Marcela Miozzo and Nuno Gil

PART 3  MOVING IDEAS INTO PRACTICE 201

20 Client driven performance improvement strategies for the construction industry: development and implementation challenges 203
Aminah Robinson Fayek, Jeff H. Rankin and Ernie Tromposch

21 Public policy, clients and the construction industry 216
Eileen Fairhurst

22 Value for money versus complexity: a battle of giants in the public sector? 223
Erica Dyson

23 The role of the professional client in leading change: a case study of Stanhope plc 234
Colin Gray
## Contents

<table>
<thead>
<tr>
<th>Page</th>
<th>Title</th>
<th>Author(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>24</td>
<td>Customer focus: time, the enemy of desire – a contractor developer perspective</td>
<td>Chris Woods</td>
</tr>
<tr>
<td>25</td>
<td>The role of the client in building site innovations</td>
<td>Frédéric Bougrain</td>
</tr>
<tr>
<td>26</td>
<td>A complex systems approach to customer co-innovation: a financial services case study</td>
<td>Robert Kay</td>
</tr>
<tr>
<td></td>
<td><strong>Index</strong></td>
<td></td>
</tr>
</tbody>
</table>
Note on editors

Professor Peter Brandon DSc, DEng, MSc (Arch), FRICS, ASAQS Director, Salford University Think Lab and Director, Strategic Programmes, School of the Built Environment, University of Salford, UK.

Professor Brandon is a former Pro-Vice-Chancellor for research at the University of Salford, the only UK University to be awarded a 6-star rating in the Built Environment within the independent UK research assessment exercise. His research interests range across construction economics and management, information and knowledge-based systems for construction and more recently sustainable development. He has published widely including 18 books as author, co-author and editor plus over 250 papers worldwide. Several of the outputs of his research have resulted in commercial projects.

He has played a significant role in UK Construction Research Policy including serving as Chairman of the UK Science and Engineering Research Council Panel for Construction and Chairman of the UK Research Assessment Exercise Panel for the Built Environment (1996 and 2001).

Dr. Shu-Ling Lu PhD, MSc, BSc, Dip (Arch) Research Fellow, School of the Built Environment, University of Salford, UK.

Doctor Shu-Ling Lu PG Cert is a senior researcher within the Research Institute of the Built and Human Environment at the University of Salford in the UK. She is the Joint Co-ordinator of the International Council for Research and Innovation in Building and Construction (CIB) Task Group 65 in the Management of Small Construction Firms.

Dr Lu’s main research area includes innovation management within small construction firms (particularly within knowledge-intensive professional service firms), gender issues in construction and academia-industry engagement. Dr Lu has published 1 book, 2 book chapters, and 40 journal and conference papers. Dr Lu has been invited to provide a number of keynote addresses in the areas of knowledge and quality management.
Contributors

Carl Abbott
Manager, Salford Centre for Research and Innovation (SCRI), University of Salford, Salford, UK

Brian Atkin
Visiting Professor, Department of Construction Management, Lund University, Lund, Sweden

Peter Barrett
Professor, Construction and Property Management, Pro-Vice-Chancellor, Research and Graduate Studies, University of Salford, UK and President, International Council for Research and Innovation in Building and Construction, Rotterdam, The Netherlands

Frédéric Bougrain
Doctor, Department of Economics and Social Sciences, Centre Scientifique et Technique du Bâtiment, Paris, France

Mike Bresnen
Professor, Organisational Behaviour, School of Management, University of Leicester, Leicester, UK

Jan Bröchner
Professor, Organization of Construction, Department of Technology Management and Economics, Chalmers University of Technology, Göteborg, Sweden

William L. Cate
The Cate Group, Miami, FL, USA

Roger Courtney
Professorial Fellow, Construction Innovation, University of Manchester, Manchester, UK

Mohammed F. Dulaimi
Doctor, Construction Management and Innovation, Institute of Engineering, The British University in Dubai, Dubai, United Arab Emirates

Erica Dyson
Visiting Professor, Healthcare and Regeneration, School of the Built Environment, University of Salford, Salford, UK and Director, Development and Redesign, Trafford Healthcare NHS Trust, Manchester, UK

Charles Egbu
Professor, Project Management and Strategic Management in Construction, School of the Built Environment, University of Salford, Salford, UK
List of contributors

Eileen Fairhurst
Professor, Health and Ageing Policy Studies, Manchester Metropolitan University, Manchester, UK and Chairman, Salford Teaching Primary Care Trust, Salford, UK

Aminah Robinson Fayek
Professor, NSERC/Alberta Construction Industry Associate Research Chair in Construction Engineering and Management, Department of Civil and Environmental Engineering, University of Alberta, Edmonton, Alberta, Canada

Patrick S. W. Fong
Associate Professor, Department of Building and Real Estate, The Hong Kong Polytechnic University, Kowloon City, Hong Kong

Nuno Gil
Senior Lecturer, Deputy Director, Centre for Research in the Management of Projects (CRMP), Manchester Business School, University of Manchester, Manchester, UK

Colin Gray
Professor, Management and Production Engineering, Academic Director, Health and Care Infrastructure Research and Innovation Centre (HaCIRIC, Reading Team), School of Construction Management and Engineering, University of Reading, Reading, UK

Päivi Haapalainen
PhD Researcher, Production Department, University of Vaasa, Vaasa, Finland

Andreas Hartmann
Assistant Professor, Department of Construction Management and Engineering, University of Twente, Twente, The Netherlands

John Hobson
Visiting Professor, School of the Built Environment, University of Salford, Salford, UK and Independent policy analyst, Construction Director (Formerly), Department of Trade and Industry, London, UK

Leif Hommen
Associate Professor, Research and Competence in the Learning Economy (CIRCLE), Lund University, Lund, Sweden

Mike Kagioglou
Professor, Process Management, Co-Director, Salford Centre for Research and Innovation (SCRI), University of Salford, Salford, UK and Academic Director, Health and Care Infrastructure Research and Innovation Centre (HaCIRIC), University of Salford, Salford, UK

John M. Kamara
Senior Lecturer, Director of Postgraduate Research, Coordinator, Applied Research in Architecture (ARA) Group, School of Architecture, Planning and Landscape, Newcastle University, Newcastle upon Tyne, UK

Robert Kay
Head, Strategic Innovation, Westpac Banking Corporation, Sydney, Australia

Heikki Lonka
Deputy Mayor, Vaasa town, Finland
List of contributors

Shu-Ling Lu
Research Fellow, School of the Built Environment, University of Salford, Salford, UK

Roger Miller
Jarislowsky Professor, Innovation and Project Management, Department of Mathematics and Industrial Engineering, École Polytechnique, Montreal, Quebec, Canada

Marcela Miozzo
Professor, Economics and Management of Innovation, Manchester Business School, University of Manchester, Manchester, UK

Marja Naaranoja
Director, Masters Program in Construction Engineering, VAMK, University of Applied Sciences, Vaasa, Finland and Adjunct Professor, University of Vaasa, Vaasa, Finland

Jeff H. Rankin
Associate Professor, M. Patrick Gillin Chair in Construction Engineering and Management, Department of Civil Engineering, University of New Brunswick, Saint John, New Brunswick, Canada

Martin Sexton
Professor, Construction Management, School of the Built Environment, University of Salford, Salford, UK

E. Sarah Slaughter
Senior Lecturer, Sloan School of Management, Massachusetts Institute of Technology, Cambridge, MA, USA

Kenneth Treadaway
Visiting Professor, School of the Built Environment, University of Salford, Salford, UK

Ernie Tromposch
Program Leader, Construction Management, Project Management Office, Nova Chemicals Corporation, Calgary, Alberta, Canada

Patricia Tzortzopoulos
Academic Fellow, School of the Built Environment, University of Salford, Salford, UK

Kristian Widén
Assistant Professor, Division of Construction Management, Lund University, Lund, Sweden

Graham M. Winch
Professor, Project Management, Director, Centre for Research in the Management of Projects, Manchester Business School, University of Manchester, Manchester, UK

Chris Woods
Professor, R&D, Wates Group Ltd, Surrey, UK and Visiting Professor, School of the Built Environment, University of Salford, Salford, UK
Note on CIB

CIB – the International Council for Research and Innovation in Building and Construction – is an association that provides a worldwide network for exchange concerning all aspects of buildings and the built environment during all stages of their life cycle. CIB Members are companies, organisations and individuals active in the research community, industry, government and education who cooperate in a programme of over fifty scientific commissions. This book is an outcome from the work of CIB Task Group TG85 – Clients and Construction Innovation.
Note on Think Lab

This book arises from debate within the internationally leading University of Salford ‘Think Lab’. This state-of-the-art facility has been developed for research into Information and Communication Technologies (ICTs) in many fields including design and construction. It provides a forum for leading figures across the world to participate, both in person and through virtual collaborative technologies, to discuss topics relating to future developments in ICTs applied to various topic areas. For further information visit www.thinklab.salford.ac.uk.
Acknowledgements

First and foremost, the editors of this book would like to thank all the authors for sharing their knowledge and insight. Without their support, this book could not have been produced.

We received great encouragement from the International Council for Research and Innovation in Building and Construction (CIB) for the organisation of the ‘Clients Driving Innovation’ workshop (which initiated and then provided the motivation for the creation of this book) and we would like to acknowledge their prominent role.

We would like to thank and acknowledge the valuable assistance of Hanneke van Dijk for her expertise in the managing of correspondence and for her time given to proof-reading. Her enthusiasm and commitment have proved invaluable.

The editors and publisher gratefully acknowledge those who have granted permission to reproduce material in this book. Although every effort has been made to secure permission to publish prior to publication, we take this opportunity to offer our apologies for any errors and omissions. If notified, we will endeavour to correct these at the earliest opportunity.
Preface – Clients driving innovation?

Peter Brandon

The role of the client in driving innovation

In recent years the construction industry, and the professions associated with the built environment, have been criticised for their lack of innovation compared with the revolutionary developments that have been seen in many other major industries. This is, of course, a relative judgement as the industry has indeed innovated and evolved over many centuries from the time when human kind decided to create its own shelter. The dependence on the materials derived from the land, whether renewable or not, meant that the industry was largely local and regional and its development depended on craft processes handed down from generation to generation. The degree of innovation was limited by the nature of the labour skills, technology and materials that were available. Other manufacturing industries are a more recent phenomenon, have tended to be global, and have been forged from a strong technical base that in the last century has required a rationalisation of the process supported by technical development to remain competitive. It appears that construction has not previously had to respond to these pressures.

Nevertheless, the question of why construction has not been seen to innovate to the same extent is being raised in many quarters across the world. There has even been a book written that asks the question ‘Why is Construction so Backward?’ (Woudhuysen and Abley, 2004). This has created concern among many involved with construction and property as to where should the motivation and drive for innovation in one of the world’s largest industries come from? In other industries, it seems that it is the competitive nature of the market that has driven firms to find new solutions to the problems faced by all those engaged, from the clients to the professional consultants to the contractors through to the supply chain. In fact, many of them have looked to changing the process to make sure that they remain competitive in the market that they address. Construction has remained stubbornly immune from these pressures possibly because of the localisation of its markets until comparatively recently. A change has occurred that may be the result of the growing internationalisation of the construction firms (at the time of writing six of the largest construction firms in the UK are foreign owned) whereby the firm has to compete in a faster moving market in which the supply chains may be stretched across the world. It may also be a function of the changes in corporate leadership whereby chairmen and chief executives may come from other industries and find the construction sector rather primitive in its approach to the process it is trying to enact. The prime example in the UK would be Sir John Egan, who came from Jaguar Cars to take the Chair of British Airports Authority (BAA) and who then led
a client drive to improve construction industry performance. He started with his own company and then extended the principles to the rest of the industry culminating in a major report (Egan, 1998) that led to considerable new thinking within the construction team. It will be interesting to see whether these ideas continue to develop without the government funding that encouraged these innovative approaches.

Client innovation – a challenge to the industry?

Whilst it can be said that clients have made an impact in this industry and there are clear examples in this book, the industry itself seems divided as to whether it is the role of clients to drive innovation. On the one side, there is the argument that only the client knows what innovation he or she requires and often he or she is the only person able to take an overview across all aspects of the process from inception through design, assembly and then occupation of the final artefact. Since much of the innovation is likely to come from the integration of processes then who else, it is argued, can have the vision for change and encourage innovation across all the actors in the process. On the other side, members of the industry and others query whether this is just a failure of the industry itself to resolve its own problems. What other industry, it is argued, demands that the client take the leading role. If firms do not innovate they die. It does not require the recipients of innovation to drive the process of beneficial change! To suggest that the client should take this role is a ‘cop out’ for the industry and discourages it from investing in its own development. A review of many products will show that from motor cars to electrical goods and from steel production to ship building it is the producers of the goods who create the innovation and they survive and thrive because of it. Where they do not, and you only have to look at the automobile and motor cycle manufacturers in the UK during the latter part of the 20th century, they die or are taken over by others who will innovate.

This raises, of course, all sorts of interesting questions as to why innovation has not been a high priority in the construction and property industry. Many different reasons have been given including the following:

- The structure of the industry (and particularly the large number of small firms) militates against change as none can give the time and investment required to change not only their own practice but also the change in others to which they relate. There are a huge number of interfaces in construction, each of which discourages change. However, other industries such as the aircraft industries have similar structures but can change process to suit.
- The education of a large proportion of the industry outside the professions is not sufficient to take up new technologies. This may be true but it may mean shedding low-level labour and replacement by machine as has happened elsewhere.
- The local nature of the industry markets prevents a global brand or product to be developed around which the technology can be developed. However, this is changing as more components are manufactured off-site (and off shore!) and the competition is becoming more globally competitive.
- There is no incentive for innovation. In the past, this must have been true as price became the determinant between firms and not their ability to improve the practice. However, it is increasingly true to say that innovation does create competitive advantage in aspects such as design and manufacture and this expertise is providing
a greater demand for the services that achieve it. Just look at some of the major designers around the world and the engineering firms who succeed in making new designs possible and you see the growth of firms based on their innovative methods.

- The ‘lowest cost wins’ approach denies the firms the capital to invest in research and innovation. There are not many industries in the world that exist on ‘highest cost wins’ of course! It is often argued that value is the key and not cost but innovation should try and create increased value that is a balance between cost and performance.

This book begins an investigation as to whether clients have a role in overcoming these perceptions of why the industry is not innovating at the same pace as its compatriot industries. In order to do this, it needs to call on the knowledge and experience of industrialists, clients, academics and research bodies to establish a line of enquiry that will test the thesis that clients do have a part to play but just as importantly what are the building blocks of knowledge that are necessary to build the thesis. Like all topics that emerge over time, in their inception they are largely unstructured and lack coherence. It takes time for the components to emerge in a structured way so that others can build on what has gone before and begin the painstaking business of formulating theory and practice that will lead to new insights and improved behaviour. Whilst management science has explored the role of clients in many industries and particularly manufacturing, the role of clients in construction and property is largely virgin territory.

**Starting assumptions**

In considering a topic as broad and unstructured as clients and innovation in the construction and property industry, it is advisable to identify the starting assumptions on which a study can take place. These include the following:

- The starting assumption must be that clients have a role to play in driving innovation but this is a hypothesis that needs to be tested in the arguments that are presented.
- There is a generally accepted definition of both client and innovation so that a useful discussion can take place based on mutual understanding.
- The structure of the industry will not change overnight and, therefore, the professional boundaries, size of firms and other attributes that we take for granted may change in the longer term and be encouraged by the innovation but they provide the framework within which we work at the present time.
- Risk distribution is fair to all parties so that the innovation is not seen as something that is detrimental to the health of one sector or to the whole of the industry. However, in large scale innovation it is often found that one group can suffer at the expense of another.
- The technological, economic and cultural environment is changing rapidly and all firms and clients must adjust to this external stimulus to innovation. The industry does not exist in isolation to those it serves.

Some of the issues we need to address may seem obvious but they may be those that need challenging. Over time, we begin to accept assumptions without challenge because we have been educated to accept them, have used them successfully, and they have provided a language within which we can work with others. They provide the
Norm’ that enables us to go about our daily business without resorting to the tiresome task of going back to first principles. They provide ‘rules of thumb’ or heuristics by which we can operate efficiently and effectively. These assumptions range from the definitions of things, to the methods we adopt, to the specialised vocabulary that we use to convey our thinking and the models of the world that we employ.

The definition of client and innovation

At first glance, this would seem to be the most obvious piece of shared knowledge to which we could all agree. As it is at the root of the study of clients driving innovation, it must be central to our understanding of the topic. However, it is not always that easy.

Definition of the client

The Penguin English Dictionary (2002) gives the following general definition:

Somebody who receives the advice or services of a professional person or organisation; a customer.

It then goes on to give the special meanings related to medicine and computing, for example. This seems to be typical of all dictionaries and it provides a useful starting point for a definition for the construction client.

At a meeting of Task Group 58 of the International Council for Research and Innovation in Building and Construction (CIB) in Helsinki in 2005, the following definition was proposed:

A client is a person or organisation, who at a particular point in time, has the power to initiate and commission design and construction activity with the intention of improving the performance of an organisation’s social or business objectives.

This definition tries to take into account that there may be different clients at different points in time who have the role of commissioning construction. It is doubtful whether the intention is necessary as presumably all clients undertake such a commission to provide for improvement but, nevertheless, it reinforces the positive nature of the clients’ role. Another issue is that one person may well be a client to one organisation and at the same time be a contractor to another, sometimes for the same piece of work. The supply chain in construction often has many such relationships. However, in this book we are focusing on the major clients who initiate and commission the whole building.

In discussion at international symposia, both in the UK and abroad, it has been stated that the definition above is largely Anglo Saxon and that in other countries the word ‘client’ might have a slightly different meaning (see Chapter 7 for a fuller discussion). For the purposes of this volume, the focus will be on the organisation or person who is the prime initiator of construction activity.

Definition of innovation

Innovation, on the other hand, is now well documented in many books, as the subject has become an active area in management research in recent years. Dictionaries have various insights of which the following are a few examples:
To make changes by introducing something new (New Webster’s Dictionary, 1992).
Any action that occurs spontaneously in a new situation rather than as a result of trial and error learning (Chambers Dictionary of Science and Technology, 1992).
Bring in new methods, ideas, make changes (The Reader’s Digest Oxford Complete Word Finder, 1993).
To begin or introduce something new, be inventive (The Reader’s Digest Universal Dictionary, 1987).
To make changes by introducing something new, e.g. new practices or ideas (The Penguin English Dictionary, 2002).

It is clear from the above that it is the newness of something in an existing situation that determines whether something can be defined as innovation. The new item may be new to that situation but not necessarily to all situations. For example, a new information technology system may be new to a firm or system but it might well have been applied by another firm and in a different context. Innovation is not necessarily invention although invention will nearly always be innovative. Clients are not, therefore, expected to invent something new but rather to introduce something new possibly from another domain. Those construction clients who have come from other industries and bring to construction new ideas from their previous industrial experience are, therefore, being innovative whilst not being inventive.

Many of the texts on innovation explore this matter in greater depth (Chesborough, 2003; Drucker, 1985) and construction has been addressed by several authors including Miozzo and Dewick (2004); Dodgson et al. (2005); and Brown et al. (2005, 2006).

It is clear, therefore, that there is a consensus around the person commissioning construction introducing something new to the process or practice or physical artefact that was not previously seen in that situation. This provides the context for this book.

To what degree can the client innovate?

As with most aspects of decision making there is a spectrum of potential input from, in this case, the client. At one end of the spectrum, a client has the opportunity to impede innovation. This happens quite often when the client does not wish to take what he or she perceives is the extra risk of introducing something new into a well-established practice. At the other end, the client may insist that innovation takes place because the current situation is untenable. To continue might endanger life or risk contravening a regulation or legal requirement. Between these two there are a variety of possible interventions.

Figure 1 demonstrates the changing spectrum of how clients could potentially respond to innovation and their willingness or reluctance to drive the innovation process. From left to right the possibilities are as follows:

- **Impede.** Some clients will be ‘risk averse’ to innovation and will not want to be used (as they see it) as experiments in the construction process. For them the comfort of knowing that traditional processes are being followed with a team that is experienced in such matters is the key issue. Anything else may result in costs to them. Only when others have shown that the innovative system works will they be
Preface

A client’s interest in innovation

Figure 1  The spectrum of a client’s attitude to driving innovation.

willing to adopt the same system for themselves. This is quite a familiar attitude particularly in some government circles where public accountability is an issue.

- **Impede**. Here the client is not driving the innovation but is willing to listen to those he/she respects if they feel that a new approach will yield advantage. There is no sense of driving the innovative process but merely one of response to suggestion. This can often happen where the client is inexperienced and places more faith and trust in his design/constructor team to produce the product or service required.

- **Impartial**. Here the client is not driving the innovation but is willing to listen to those he/she respects if they feel that a new approach will yield advantage. There is no sense of driving the innovative process but merely one of response to suggestion. This can often happen where the client is inexperienced and places more faith and trust in his design/constructor team to produce the product or service required.

- **Interest**. There are some clients who are naturally inquisitive about new methods or new technologies but may not have the experience to drive innovation. They show interest in new methods where they see there may be advantage and by showing interest they encourage an environment of improvement not necessarily weighed down by the methods of the past. In addition, they listen to their advisers and respond to their suggestions in a positive manner. Those clients who sometimes come from other industrial/commercial sectors that are naturally more innovative can often be in this category. They do not have the knowledge to drive innovation but they do want to see the best processes and products used for their benefit.

- **Influence**. Although most clients do not build on a regular basis, some do have a stream of work that allows them to understand and encourage new processes or improved performance through their own experience. They can observe the process from a distance and often this allows them to suggest new ways forward. Often these clients have an in-house team of professionals acting on their behalf and they can influence the external team to try new options. In these cases, they do not inaugurate the new method but they have a major impact on the way the external team behaves.

- **Inaugurate**. This is an approach that is a natural extension from influence and it occurs where the client is much more confident about his/her knowledge of the process. This can often happen where an in-house team is building on a regular basis, often with similar types of buildings, and they have the power to adapt and change the design and approach to the total procurement process. Many of the national/international retail and hotel/restaurant chains fall into this category. In addition, it may be that time is of the essence in these developments and the cost risk in construction is not as great as the potential for missing a retail opportunity. If the innovation can speed things up and the revenue can flow earlier, then the saving can often outweigh any additional risk.

- **Insist**. There exist a small but very influential group of clients for whom innovation is the key to their status and success and who genuinely adore the chance to be different to others particularly in the properties that they design. In this category come the clients of large cultural buildings such as opera houses, museums, art
galleries, etc., where the design is part of the whole marketing and enjoyment of the cultural experience. They appoint architects who do not conform to tradition and who produce exciting ‘free form’ designs with innovative methods and materials. These are the innovations that are given so much attention and that produce the ‘shock of the new’. Of course, there will be others who also have agendas to innovate, e.g. for the production of sustainable construction, and these too will demand a high level of new thinking and application.

The above outline, the six ‘I’s of clients’ attitudes to innovation, provides a framework for understanding how clients might react to innovative suggestions. This is a starting point that now needs to be developed in order for a foundation of knowledge to be established for future research to build a thorough understanding of the subject.

This book attempts to provide some clues as to how this foundation might develop. It does not pretend to be a comprehensive volume of chapters that deal with all aspects of the subject. It does not try to establish a thorough and rigorous expose of the topic as this will follow later. It does not try and encapsulate the thinking of clients in all sectors of the industry as this would be a massive tome and again it is likely that much more research will be needed to even touch on one industry sector.

What it does do is provide insights into what is required to build a base of knowledge from different perspectives. It is exploratory rather than authoritative as this is a subject that is just opening up in the construction sector. It includes work by those involved in government policy. It takes the work of academics who have explored the theory behind the concept of clients driving innovation and it uses case studies to show where successful innovations have taken place that are client driven and looks for the reasons for this success. The reader can select which chapters are most relevant to him or her.

The structure of the book

In order to lead the reader through the subject, the book has been arranged in three main sections:

- Part I (the context for innovation) examines the context for clients driving innovation. This includes a commentary on the theory supporting the idea and the environment in which clients can undertake this role. These issues are so important in building knowledge and placing that knowledge within a framework that allows further development. It is, of course, very broad and in many cases the knowledge is generic. It provides debate on issues that are still open to challenge and it suggests ways forward for further examination. It suggests a taxonomy that could allow a classification for clients, which could allow a different perspective on the approach to be taken for each, and it explores the tools and barriers to the implementation of innovation in practice. These are all important issues when trying to understand the topic and the methods and approaches that are likely to be most successful.

- Part II (the innovation process) is concerned with the innovation process and addresses the important issue of how interventions in the processes of design and construction can yield substantial innovation. If we do not understand when and where to intervene, we will not be able to be effective in improving the clients’ role. Case studies are used to illustrate some points from real life projects and research.
Preface

- Part III (moving ideas into practice) concerns itself with how the ideas for innovation can be pushed through into practice. This includes some authors who have been involved in policy, some who have had to battle with government, some who have experienced real innovation in the private sector for substantial gain.

The editors are indebted to all those who have contributed and for their willingness to enter into debate and spend the time to put their views down on paper. No attempt has been made to control these views and, in fact, diversity of thinking has been encouraged to provoke new insights into the area. It really is a start to the exploration and there is the potential for this subject to grow in stature for many years to come. One area where more work could be done is the psychology of clients and their behaviour patterns. This is, of course, not just restricted to single clients but also organisations and their corporate culture. It is a rich area for exploration and we would encourage young researchers to enter this arena.

The aim is to improve the construction industry for all its stakeholders whether it is the client or the multitude of participants in the design/construction process. The benefit should also be seen by the public at large, who often have to enjoy or endure the results of the process for many years to come. Indeed, it could be argued that it is the user and the public who are the ultimate ‘client’ and it is they who should be central to the thinking in this important area. To all who read and all who follow we wish you the very best of luck!

References


Part 1
The context for innovation
1 A global agenda for revaluing construction: the client’s role

Peter Barrett

1.1. Introduction

Construction is often seen as an embattled industry. The repeated critique of numerous reports questions the ability of the construction industry to innovate and manage change to improve its practices. In response to this, a priority theme for re-engineering construction was initially settled upon within the International Council for Research and Innovation in Building and Construction (CIB) in 1997 at the CIB board meeting in South Africa. However, it did not really get off the ground until 2001 when work was put in hand to create a strategy for the development of the theme. This was carried out by Courtney and Winch (2002) and led to a re-orientation around the notion of ‘revaluing construction’ and a stream of activities that are summarised in Barrett (2007). This latter work involved five workshops, each in a different country, namely Australia, Canada, Singapore, the UK and the US. A postal questionnaire survey (Lee and Barrett, 2006) to the five countries also provides important underpinning.

The main thrust of results of this work on revaluing construction is encapsulated in seven areas for change. Each of these is not in itself extraordinary, but when dynamically linked these have the potential to fundamentally change construction for the good of those involved, their customers and for society. The ‘infinity’ model given in Figure 1.1 outlines these seven areas and suggests how they must be connected to make progress.

1.2. Infinite options!

The following sections explore the seven areas of the infinity model for revaluing construction with particular reference to the client’s role.

1.2.1. Holistic idea of construction

There are starkly different ways of conceiving of construction. The standard industrial classification (SIC) system is the basis of the normal economic perspective and places construction within F45 (construction), a cluster of activities that includes site preparation, building of completed constructions or parts thereof, civil engineering, building installation, building completion, and renting of construction or demolition equipment with operator. The focus is entirely on the physical construction activities. As a consequence, as Winch (2003) points out, ‘the bundling of “construction” goods and services used for the SIC is systematically different from that in all other sectors’ (p. 652). It
The context for innovation

Figure 1.1 Global agenda for revaluing construction.

draws a line between these and intimately linked, value adding activities, such as even the parallel work of architectural and technical consultancies. Crucially, downstream activities such as real estate activities and facilities management concerned with the use phase of buildings are also left out (Ruddock and Wharton, 2004).

An alternative stance starts with the proposition that construction is a change agent for the creation, development, maintenance and operation of the built environment so that it supports the quality-of-life and competitiveness requirements of society. That is, ‘construction is a means to a means to an end’ (Barrett, 2003). This makes a broader conception of construction entirely logical so that its full contribution to society can be understood. This type of thinking is central to the work of Jean Carassus of CSTB in Paris, who with a group of international colleagues developed and populated a shared economic framework within Task Group 31 of the CIB (Carassus, 2004).

The framework takes the full building life cycle of new construction, management of the service provided by the built environment and demolition. Included in the middle phase are maintenance, major repairs and refurbishment. Taking a vertical view of the framework (from top to bottom) leads from the stream of activities required to create and sustain the built environment, to the panoply of actors or stakeholders with varying degrees of involvement. This ranges from real estate agents and property and facilities managers with an on-going involvement with the asset to those with a short-lived involvement via projects, such as developers, project managers, architects and contractors. Underpinning their activities are the associated contributions of manufacturers and distributors. Lastly, contextualising the whole sector are the institutional actors at various geographical levels together with professional representative organisations and user associations themselves. These together infuse the sector’s norms, regulations and expectations.

The thrust of Carassus et al.’s is to shift thinking from an ‘industry’ focus on simply building buildings to a ‘construction sector system’ approach with the emphasis on producing and managing the services rendered by these structures throughout their life cycle to support an efficient and sustainable economy. Positively, in the UK the Strategic Research Agenda published by the recently created National Platform for
the Built Environment (2006) has already drawn from this aspect of the revaluing construction work, doubling its estimate of the size of construction from 10% to 20% of gross domestic product and focusing broadly on the built environment, including the use phase.

Within this service-orientated view, clients, users and facilities managers hold a vital position in driving for the type of built environment they want and need and so defining the capabilities of the construction industry required to bring this about. Of course, clients vary considerably and so it should be expected that complex, sometimes contradictory, views will emerge, but this does not undermine the centrality they must take in any analysis.

1.2.2. Shared vision amongst stakeholders

The broader conception of construction set out above can inform the creation of a shared vision amongst key stakeholders for the maximising of value across the whole life cycle of constructed artefacts. It is suggested that a re-valued industry will maximise the initial creation of potential value in a particular building/project through pre-design and design activities, its delivery through construction, realisation in use and synergies with other developments at an urban level.

To inform the wide-ranging scope of this conception of construction, it is clear that a broad constituency of stakeholders needs to be engaged to develop and sustain a vision for construction. Moving beyond the construction industry itself defining a strategy, it is clear that without the manufacturers and suppliers involved many opportunities for improved efficacy and efficiency would not surface, without active involvement from clients and users effectiveness is likely to be inadequately addressed, and without societal representation in terms of planners and representative groups the ethicality of proposals is likely to be underdeveloped.

Lastly, without some design input the competing demands of the multitudinous and diverse stakeholders are unlikely to resolved into elegant solutions. On this last point, two aspects need clarification. First, the term ‘elegant’ is meant conceptually and practically in that the solutions involve sufficient complexity, but are as simple as they can be. Second, ‘designers’ here are not building designers, but rather ‘leaders as designers’ (Senge, 1990, pp. 341–345) at various levels who understand the complexities of the ‘system’ and put together the ideas and the infrastructure in ways that enable the industry to perform to its full potential. At the top level come shared visions held jointly by key national, leading, stakeholders; here the client influence is key.

Bringing together the relevant groups and engendering productive co-working is a complex political process. The form of the Danish clients’ association raises an issue that moves the discussion onto a different level. In the UK, the creation of CRISP (Construction Research and Innovation and Strategy Panel) was seen as the solution with a single forum within which the main players in the industry could generate a strategic view. The Danish clients’ forum is strongly independent, and linking this point to the wide range of stakeholders with something to offer, indicated earlier in this section, the notion of a dialectic among various stakeholder voices seems a looser, but arguably a more dynamic and richer way is to imagine creating a consensus around a meaningful shared vision. Ideally, the scope of such an arrangement would have a strong role for clients and service providers, but with a clear axis with government policy leadership
The context for innovation

The context for innovation
for the necessary motivation and action to occur. It is common to say that the industry is
unduly fragmented, but it is common too for the government interests in construction,
such as planning, housing, construction itself, etc., to be located in different ministries
and to have diverse remits and concerns. So, it is reasonable to suggest that the leadership
provided by governments at a policy level often needs to be harnessed collectively
so that a clear dialogue can be held with the other actors. The third axis is to education
and research, primarily through universities. There is available a wealth of relevant
knowledge about practices worldwide, robust conceptual models, experience in other
sectors, and educational solutions for long-term change. This dimension completes a
balanced set of groups that represent different perspectives and that can through a
debate, not devoid of tensions, fashion a robust, shared vision.

Creating a vision is one thing, but VTT (2005) reviewed 16 construction industry
strategies from around the world and found that ‘implementation is barely covered’
(p. 10). For a sustainable vision to robustly underpin medium-term transformation,
the workshops highlighted the importance of emphasising equitable returns to all
stakeholders, as well as the sheer maximisation of the collective value created. Being
fully inclusive is a good first step though. If parties are left out, as has often been the
case in the past, then they will not be harnessed as advocates. It is interesting to note
in this context that an international postal questionnaire survey about innovation in
construction (Lee and Barrett, 2006) highlighted that institutional bodies ‘protecting
their own interests’ were the second highest rated inhibitors of the adoption of new
practices, but the highest were clients ‘protecting their own interests’. Thus it is crucial
that a client voice is actively encouraged and engaged with.

1.2.3. Balance of markets and social capital

Clients have a key role in how the market for construction work operates. Cut-throat
competition, unscrupulous low bidders, lack of trust and poor risk management are
very commonly quoted characteristics of construction. These are implicitly reinforced
by standard contracts, custom and practice and the sheer confrontational nature of the
industry. Do the benefits accrued justify the direct and opportunity costs involved?
The generic question about the ‘pay-offs’ associated with the pursuit of short-term
personal gain is addressed in the ‘prisoner’s dilemma’ experiments with their roots in
game theory (Kay, 1993, pp. 35–49). The main features of the successful cooperative
strategies in iterated games are as follows: the participants begin by expecting the other
player to cooperate, not that he or she will cheat; they respond to bad behaviour and
punish it, but not too severely; and they are forgiving. Interestingly at the broader
societal level, Sacks (2002) makes a parallel argument for valuing relationships borne
of on-going interactions (pp. 149–160). These, he argues, will be created at a local level
within groups of people that share a bond that goes beyond individual transactions
and could be called ‘social capital’ or the level of trust in a society. Sacks (2002) takes
the argument beyond the benefits for contractual dealings and distinguishes these from
what he terms ‘covenantal’ relationships. These are often evident in family life, but in
broader life are sustained by loyalty, responsibility, fairness, compassion – professionalism at its best. Without these trust-based, reciprocal relationships and the institutions
that support them, ‘markets and states begin to fray… social life itself loses grace and
civility’.
A global agenda for revaluing construction

So, how does this relate to construction? The commercial environment for construction has been typified as ‘competition is good; more competition is better’ (Ang, 2004). This resonates with Hendriks’ (2004) phrase ‘the poison is the dose’, that is, something that in moderation can be beneficial, in too great a quantity can be fatal. Given these aggressive conditions, it is hardly surprising that ‘lock in’ is felt by the individual players. Who can afford to move first?

Well maybe the answer is the clients, but why should they? Some interesting work has been carried out by Zaghloul and Hartman (2003) in which the effect of ‘disclaimer clauses’ in contracts between clients and contractors was studied. These clauses are extensively used in traditional and new partnering style contracts to shift risks to the contractor on issues such as delay and uncertainty of work conditions. The study was based on a survey of more than 300 industrialists in North America. It revealed that contractors assess the five most commonly used of these clauses such that a premium of between 8% and 20% is added to their price in a seller’s market. This is a very clear and tangible measure of the significant cost of risk within construction relationships. Interestingly, the authors found that low levels of trust were typical, but that where a high level of trust did exist the impact on the premiums was profound. The premiums in these circumstances were ‘very low’ because the perception of the shift in risk was from around 4.4 to only 2.2 (on a five-point scale). The benefits of a high level of trust were found to be facilitated if the parties had previous experience of working together such that they felt the other party displayed competence, integrity and, more generally, a good reputation within the industry. In ideal, but rare, circumstances the risks were intelligently and equitably distributed without recourse to blanket clauses. So, for clients the value of building trust is clear and the route forward through some form of on-going relationship has been highlighted as a significant practical variable.

The consensus from the workshops in five countries was that the key objective was to procure flexibly, optimally and appropriately. This is a complicated way of saying that just using the ‘normal’ approach, because one always does, is not good enough. Procurers need to assess each situation and be flexible enough to establish the optimal approach that is appropriate for the given situation. This will be conditioned by many things, but is likely to take into account the value of long-term relationships. This can be realised through pre-qualification using a range of key performance indicators, which can include the track record or capacity of the players to work well as a team. Selection based on broader criteria than simply price is becoming quite prevalent, albeit in two-stage tendering price is likely to dominate in the second stage.

Partnering/alliancing arrangements are a move in this direction, but a move to less contractual, more fundamental shared social norms, rooted in professionalism and codes of ethics, is an area that deserves more attention. Practical outcomes are likely to be the selection of project participants based on all-round performance, not simply lowest price, and an equitable allocation and management of risk. For this to happen, accessible and appropriate norms, metrics and contracts will be needed. However, it should be remembered that it is quite possible to move too far in the direction of cooperation as the recent problems of collusion, or ‘horizontal integration’, in the Netherlands (PSIBouw, 2004) have illustrated. This issue has also been picked up at the generic management literature in terms of the ‘dark side of close relationships’ (Anderson and Jap, 2005); thus, the emphasis in the title of the section on ‘balance’. It is, however, only really the clients who have the power to shift this balance.
1.2.4. Dynamic decisions and information

In tandem with the above market considerations, there is a need for dynamic decisions and information throughout the building life cycle. Currently, there are huge gaps in the process through which information and understanding are lost at very great cost. Decision-making is undermined and this is compounded by the combative culture of the industry. However, it was clear from the revaluing construction workshops that, without a conducive procurement context, those working at the project level are almost certain to adopt defensive routines that minimise their risk, but close down opportunities to maximise the joint value created. However, once these conditions have been realised in whole or in part, significant progress can be sought through increased integration using ICTs and the adoption of an appropriate team value management (VM) approach. The common theme to these two foci is seamless integration, focused on, respectively, information/technology and people/decisions.

In the area of information and technology, a report by the National Institute of Standards and Technology (NIST) (Gallaher et al., 2004) dramatically highlights the potential for improvement by assessing the costs of inadequate interoperability in the US capital facilities industry. The headline figure revealed is $15.8 billion ‘lost’ every year, or 1–2% of industry revenue. The report covers only commercial, institutional and industrial facilities, but the analysis extends for the whole life cycle, from planning and design, through construction to operations, maintenance and decommissioning. Interestingly, the results indicate that two-thirds of the ‘unnecessary’ costs are met by owners and operators of buildings, whereas architects and engineers are only associated with about a tenth of this impact. The balance of around a quarter of the costs is met by the industry in terms of contractors, specialists and suppliers. The clear implication raised in the report is that ‘interoperability costs during the O+M phase [result] as a failure to manage activities upstream in the design and construction process’ (Gallaher et al., 2004, p. 25). The figures of course also indicate that motivation to move on the issue is skewed in that the greatest potential to change things is in the area where the least cost is experienced. This is an open invitation to sophisticated clients to demand better use of data models so that the downstream benefit can be released.

Briefing needs content as well as a data structure and Horgen et al. (1999) describe a rich, team-based approach to briefing that highlights various challenges, including keeping existing organisational processes ‘unfrozen’ long enough to allow the optimal built solution to emerge. Luck (2002) has worked on a close analysis of the language used during interactions with users in briefing and concludes that ‘design knowledge cannot be completely represented in a prepositional, non-contextual form’ (p. 16). Barrett and Stanley (1999) argue for the necessity of allowing time for trust to develop so that there is time for co-learning through linked processes of disclosure and feedback. So, briefing has to be a dialogue. How extended and open-ended this is will depend on the novelty of what is intended, but also the knowledge, experience and degree of mutual understanding of the main participants. It is, of course, essential that the above is not used as an excuse for procrastination. So defined, the briefing process articulates strongly with the building production phase, which is the next area for discussion.

The benefit of VM in the production phase was often mentioned at the workshops in five countries. However, it is necessary for VM to impact during the whole of the construction process and this is reinforced by Neff (1998) in his advocacy of the STEPS approach, where the usual political, economic, social and technological factors are