

Note on editors

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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

THINKlab

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.



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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

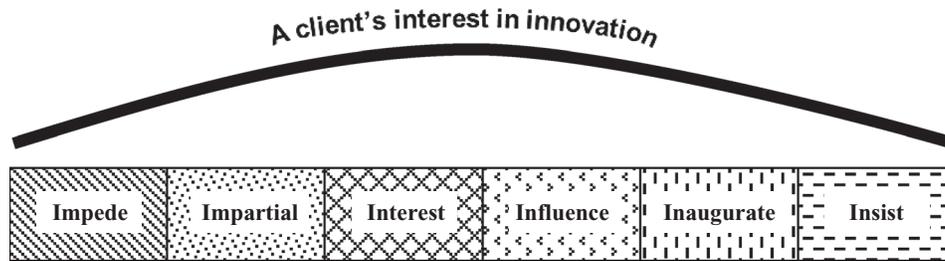


Figure 1 The spectrum of a client's attitude to driving innovation.

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.

- *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/construction 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 exposé 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.

- 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!

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