1 Introduction

The worldwide construction industry embraces the sectors of building, civil engineering and the process plant industry. It includes projects of dramatically different types, sizes and complexity and requires extensive professional and trade skills. Groak (1994) suggested that the construction sector was more an agglomeration of projects than a discrete industry or a fixed constellation of firms. Winch (2002) suggested that construction is essentially a service industry. He argued that what is sold to the client is not a product but a capacity to produce.

However construction is described, it is an important contributor to the national economy; without adequate construction capacity, aspirations for economic growth cannot be achieved. Economic activity, self-evidently, is the primary driver for construction activity and the two are inextricably linked.

There is, however, an inherent dysfunction between demand and supply because of the extended time period between the initiation of the project procurement process and its eventual delivery. This period of time can encompass significant changes in economic activity and this may provoke changes to the initial rationale for the construction process.

There is constant demand for the construction sector to source the physical assets necessary to live and work in modern society. The building industry produces a diverse range of outputs ranging from products verging on mass production, in the construction of houses, through bespoke service facilities, such as schools and hospitals, and elements of production, in the form of industrial premises to house the manufacturing operations of organisations both large and small, to minor repair and maintenance work. Civil engineering, on the other hand, provides for many of our transportation needs in the form of roads, tunnels and bridges, railways, docks and airports, for our energy needs in the form of pipelines and power lines, and for the essentials of civilised life in the form of water and sewage treatment facilities, distribution and disposal systems. Indeed the capital assets of a country consist predominantly of built environment assets; in the UK, housing, infrastructure and other buildings represent 76% (£3800 billion) of a total asset base worth around £5000 billion at 2005 prices.
There is therefore no doubt that construction forms a major aspect of the economy. For example, in the UK it currently contributes approximately 7% to GDP and provides direct employment for more than 5% of the working population.

History shows that, over time, construction demand is variable and is often affected by government policy changes as well as national and local economics. In *Construction Matters* (Business and Enterprise Committee 2008), the UK House of Commons suggested that as many as 95% of clients were either one-off or inexperienced clients. A significant minority of more experienced regular clients spend very significant sums on construction but there is little evidence of the cascading of knowledge and experience from these regular buyers to the inexperienced majority. Equally there appears to be little understanding by inexperienced clients of the need for that knowledge. The result is a heavy dependence upon construction professionals who tend, in the main, to limit their exposure to risk by leaning heavily towards traditional practice.

Few construction companies employ skilled craftsmen, preferring to outsource rather than to retain and train. Most skilled tradesmen are self-employed or employed in small specialist companies because the returns are greater than employment by contractors. This scenario results in huge fragmentation and specialisation, with 99.7% of firms in the industry being SMEs, most of which employ fewer than seven people and take work on a project-by-project basis (Business and Enterprise Committee 2008). Small firms rarely feel able to afford to train new people and, consequently, there are very few young tradesmen in the industry. At the same time, the role of traditional contractors has moved from one in which they manage their own men to one in which they coordinate the activities of other (small) companies and organisations.

This fragmentation of the industry means that it tends to be a diverse supply market from which clients may source their specific needs. There are subcontractors or specialists who occupy specialised niches in order to survive by avoiding direct competition with established market-leaders. There are also firms that are spanning these ‘niches’ in the provision of complete ‘solutions’ to large organisations and who act as ‘integrators’. The end result is a very large number of specialists with which any client may do business in the delivery of his or her construction requirements.

A further consequence of fragmentation is that the industry takes little or no responsibility for seeking improvement in terms of either design or process. The inexperience of most clients of the industry means that they rely upon advice from construction professionals who, unless any improvement is tried and tested, are reluctant to use their client’s project as a test bed.

Even 18 years after Sir Michael Latham highlighted the difference between construction and other industries, investment in construction research and development is still significantly lower than in other industries. Consequently, if there is innovation it tends to be driven by legislation, by the client or by other industries’ changes in technology which can be imported to construction through specialist suppliers. Perhaps the exception is the attempts made by companies to develop new ways to deliver housing. In some cases, modern methods of construction
are proposed using off-site production. These proposals, usually adopting a pre-prepared panel system, do meet the requirements of legislation but also require a client, such as a local authority or housing association, to need a relatively large number of completed homes before the up-front investment is viable (EMDA 2011).

The construction industry is unique in the way that it responds to the need to deliver predominantly one-off products. In this sense, the industry is quite different from the manufacturing or retail sectors which have continuous demand and are thus able to construct and refine stable supply chains. These industries can focus on improving the product or streamlining their supply chain management processes. The product of construction is bespoke in nature and the supply process is more an inconsistent network than a coordinated and carefully managed supply chain. This can often cause conceptual difficulties for clients coming to the industry with a value proposition associated with the delivery of a project. Clients, who usually purchase defined and specified goods in the course of their normal business and who concentrate on price and delivery, usually need considerable assistance to purchase undefined, unspecified projects where price and delivery are both vague at the outset.

The process has been described and analysed as having six primary steps (Egan 2002), commencing with a business case rooted in the client's established need for the project. From this business case or value proposition, the client will be able to identify a multiplier from the investment. User value is usually significant as a multiplier of spend.

Whilst the benefits from the construction process can be immense in investment or business terms, the perceived performance of the construction industry appears historically poor. Many, perhaps most, projects are delivered late, over budget and with variable quality standards. Often these are unwelcome outcomes which frequently surprise the client organisation and cause significant problems.

Table 1.1 summarises the UK construction industry's performance over six years to 2011. This is based upon construction industry key performance indicators (KPIs) and indicates some improvements compared with previous surveys, such as those carried out by client groupings (CCF 1999, 2000).

At first sight, this performance does not look very good. Some improvement has been identified in relation to client satisfaction with both the product and the service and there is some evidence of improvement in project cost predictability but only a little in respect of project time predictability. Each project is, however, unique and it is very difficult to estimate the cost of a future design or when it can be delivered.

The lack of a consistent, industry-wide database of project costs and project times is a huge disadvantage and there are so many variables. Whilst the Building Cost Information Service run through the Royal Institution of Chartered Surveyors is a very useful source of information, it is limited to the extent to which data is voluntarily supplied.

It is the client who takes the initiative to start a construction project and, therefore, construction is often a customer-driven, one-off production process. Frequently the client will set targets based upon a set of expectations drawn from
his or her own experience, which may well be unsuitable for a construction project. Inevitably, construction professionals and constructors will strive to meet the client’s demands, often taking a much too optimistic approach, in the absence of a completed design, to what can be achieved for the price or in the time allocated.

The initiation of the construction process is usually aligned to the strategic or business need by the client for a constructed asset, e.g. a school, a factory or an office complex. After developing an appropriate brief for the project and establishing and prioritising parameters and priorities, a project organisation will be created to provide the necessary expertise to finalise the design and specification. Usually a tendering process will follow to select a contractor. In most cases, this contractor will take care of the employment of specialists and subcontractors and the procurement of materials. When contracts are signed and a sufficient amount of information is available, the physical execution of the construction project can start. This includes obtaining materials, manufacturing, engineering and assembly of elements, and finally construction on site. After the successful completion of the project, there will be a hand over and use will be made by the end user of the completed asset.

Construction is largely a site operation, confined to the specific location where the final assembly takes place, and it is important to note that construction takes place at the site of consumption unlike in the manufacturing industry, where products are produced in bulk for subsequent consumption at a distance.

Construction project organisations, in contrast to manufacturing organisations, tend therefore to be temporary. The participants involved with this temporary organisation experience frequent changes of membership but are totally interdependent on each other, operating through a variety of contractual arrangements and specific procedures.

In summary, it can clearly be seen that the construction industry is vital to the economy but that both demand and supply are fragmented, inconsistent and

<table>
<thead>
<tr>
<th>KPI</th>
<th>Measure</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Client satisfaction – product</td>
<td>8/10 or better</td>
<td>84%</td>
<td>82%</td>
<td>83%</td>
<td>86%</td>
<td>87%</td>
<td>87%</td>
</tr>
<tr>
<td>Client satisfaction – service</td>
<td>8/10 or better</td>
<td>79%</td>
<td>75%</td>
<td>77%</td>
<td>84%</td>
<td>82%</td>
<td>80%</td>
</tr>
<tr>
<td>Predictability of construction cost</td>
<td>% on target or better</td>
<td>44%</td>
<td>49%</td>
<td>48%</td>
<td>46%</td>
<td>47%</td>
<td>59%</td>
</tr>
<tr>
<td>Predictability of project cost</td>
<td>% on target or better</td>
<td>45%</td>
<td>46%</td>
<td>49%</td>
<td>48%</td>
<td>52%</td>
<td>63%</td>
</tr>
<tr>
<td>Predictability of construction time</td>
<td>% on target or better</td>
<td>60%</td>
<td>65%</td>
<td>58%</td>
<td>59%</td>
<td>57%</td>
<td>60%</td>
</tr>
<tr>
<td>Predictability of project time</td>
<td>% on target or better</td>
<td>44%</td>
<td>58%</td>
<td>45%</td>
<td>45%</td>
<td>43%</td>
<td>45%</td>
</tr>
</tbody>
</table>
complex. Collaboration and innovation are the exception, not the rule, and most purchasers of construction are inexperienced. Nonetheless its products are valuable, useful and serve their purpose, and the key to their successful production is effective procurement. This book aims to explore the factors that are influential on success in procurement.

References


