

## GLOBALISATION IN CONSTRUCTION

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A number of factors have been driving globalisation in the construction industry over the last two decades, and there is now a substantial body of research into firm strategy, determinants and the relationship between factors. The development of the concept of globalisation in construction is divided into three chronological periods. The first starts with the work of Strassman and Wells (1988) and includes Hawk on the formation of the new construction industry (1991) and Abdul-Aziz's (1994) comparison of Japanese and American international construction firms. These writers document the change from the transnational firm discussed by Strassman and Wells within a conventional trade theory to the mega-firm operating in a globalised market, and the works by Hawk and Abdul-Aziz together represent a quite definitive statement of the characteristics of globalisation. The second period runs from 1994 to about 2007 and the review identifies issues thought to be important in international construction by the writers at the time: competitiveness, technology and technology transfer, procurement and mergers and acquisitions. They draw surprisingly little from the previous discussion within the industry or in the general community, on globalisation, treating each issue in isolation. The third period starts about 2008 and brings together the different strands of thinking into a new, more mature, but equally footloose concept of globalisation. The review finds that there has been little progress in the appreciation of the effects of globalisation on the construction industry, which is surprising given the importance of the topic. The review concludes that there is little evidence of a global industry operating in a global market in competition against each other. There is, however, a number of mega projects that call for firms with global outlooks, capabilities and strategies. It is not a global market in the sense of global manufacturing firms, but it is the development of a new industry that has changed our concept of construction.

**Keywords:** Construction, international contractors, globalisation, markets, strategy

### INTRODUCTION

The concept of globalisation does not strictly apply to the construction industry, as construction is not a commodity that can be traded across international markets. Nor does it extend itself to internationally integrated production, as production in the construction industry takes place on site, within any number of countries (Strassman and Wells, 1988). However, there is no doubt that construction has changed in response to globalisation, and the aim of this paper is to trace these changes and the implications they have had and will have on the future of construction.

## **The Development of Globalisation**

In a discussion about strategies Ridderstrale and Nordstrom (2007) suggest that globalisation is an ongoing revolution. Success in revolutions, they say, is not about following the rules. Success is about breaking old rules and making new ones. At times of radical change, nuances are usually notable by their absence. Nowhere is this more obvious than in the very beginning of a period of rapid change, when initially there is no agreement about where the change is leading us, or if it is leading us or, indeed, if there actually is any change. To try to trace the developing concept of globalisation, this review will be divided into three chronological periods. The first starts when the old order was beginning to break down, with the works of Strassman and Wells (1988), including also Hippo and Tamura (1900) and Hawk on the formation of the new construction industry (1991), and finally Abdul-Aziz's (1994) comparison of Japanese and American international construction firms. Written just before and after the collapse of the Soviet Union as the process of globalisation developed, they trace the change from the transnational firm discussed by Strassman and Wells within a conventional 2x2x2 trade model to the mega-firm operating in a globalised market, and the works by Hawk and Abdul-Aziz together represent a quite definitive statement of the characteristics of globalisation.

The second period takes us from 1994 to about 2007, reviewing the issues that were identified as being important in international construction by the writers at the time. The papers draw surprisingly little from the previous discussion on globalisation, within the industry or in the general community, treating each issue in isolation. The third period starts about 2008 and brings together the different strands of thinking into a new, more mature, but equally footloose and ignored concept of globalisation.

## **EARLY HISTORY**

The first wave of international contracting came when European firms started building abroad. Initially, they capitalised on new technology developed in the industrial revolution and followed the expansion of the British Empire in the nineteenth century. Other countries soon followed, with the French building the Suez Canal, the German's constructing the Ankara to Bagdad railway and the American's undertaking the construction of a number of hydro electric power stations and petroleum refineries around the world (Strassmann and Wells 1988). At the beginning of the 20<sup>th</sup> century, there were free flows of world trade and investment, but this was brought to a halt by the onset of World War I, which prompted protectionism and ultimately the Great Depression in the 1930s, followed by World War II. The end of the Second World War could be taken as a possible beginning of modern internationalisation, with renewed interest in trade and investment leading to the development of multinational companies producing and selling in domestic markets around the world.

Strassman and Wells (1988) is the earliest of the works we look at in this paper, and it serves to some extent as a benchmark against which we can see where we were and how far we have moved. Globalisation was a new concept, and there are few signs of it emerging in their work. There was international construction, but for few large firms, maybe 10 or so, did overseas

projects predominate. Most firms used overseas activity to bolster home country earnings. The issues the authors discuss have a distinct similarity to the general writings on foreign direct investment in economic development theory and could apply equally well to any production overseas. They centre around comparative and absolute advantage and include discussions firstly on the encouragement of the investors in the form of government financial support and willingness to transfer resources abroad and secondly on the contribution of technology transfer to the host country. The capacity and willingness of the contractor to transfer site know-how and design-construct skills, possibly in the form of joint ventures, is a major issue. The authors also ask if competition is as fierce as it is said to be, when some contractors could exploit technological and economic leadership positions or if their dominance encouraged bidding rings, bribes or inside deals. Little evidence is offered in support of this proposition, which also seems to be a carry-over from the general debate.

The authors define two different approaches or models to international contracting. One we may call the US model a group which also includes UK, Canada and Australia, and the second the Japanese model, which in less extreme forms also includes most of Europe and a number of developing countries like Korea and Turkey. The difference is most noticeable in the extent of government support to the international contractors. In US, there is a generic support for the removal of barriers to trade, but little direct assistance. In the second group, there is not only a high level of direct government support, but also a highly co-ordinated approach by the construction industry and the governments.

Five years after the publication of Strassman and Wells, globalisation had become a more accepted concept and Abdul-Aziz compares the same two models as different forms of global strategies, rather than their approach as two different ways of creating competitive advantage in a conventional international trade model. Abdul-Aziz stated the difference between an international and a global approach: while contractors generally search for overseas opportunities when certain conditions prevail, the global builders, with global perspectives have additional motives which fundamentally are similar to those of global manufacturers. This means first and foremost the willingness to make farsighted commitments: "Instead of evaluating opportunities on a country by country basis these companies daringly took integrative actions for the sake of long term prosperity even though the immediate costs were high."

The competitive advantages Strassman and Wells saw for US firms were typically technological or organising skills, including the use of computers and CM or design and construct contracts. The direct investment part was normally restricted to about ten or less subsidiaries: "one in Saudi Arabia and the rest divided equally between industrialised and developing countries." The government offered very limited support but Strassman notes that "most countries protect their construction industries, not through tariffs but with other preferences and discriminatory measures." and that the US government was heavily involved in bilateral and multilateral negotiations to reduce these trade barriers. This protection seems to have been a two-way street as US firms received preferential treatment for US installations and government foreign aid projects overseas.

The Japanese strategy was quite different. After the Second World war Japan like Europe started from a very low base. Where American firms aimed to defend their supremacy, the Japanese

corporations' medium term aim was to become major players in international construction. This included a very deliberate policy of avoiding the perception of themselves as outsiders in the new markets by entrenching locally established corporations within local business communities where they were active, and maximising the use of local resources. Some also supported popular causes like environmental protection or by giving funds to universities.

The American contractors derived their competitive advantage from expertise in construction management, but also from construction technologies that allowed them to establish dominant positions in niche, for instance one half of the world's nuclear reactors were built by Bechtel. The Japanese tended to develop innovative construction methods and related specialised equipment that enabled them to establish proprietary positions across major sectors of the industry. During the 1980s, project finance became a competitive tool and here too the strategies differed, with US depending on its international banking sector while Japan could draw on their government's comprehensive export credit system. The American technological lead was also under threat. Abdul-Aziz suggests that while the leading American firms spent 0.5 per cent of revenues on research, the corresponding figure for Japan was 3 per cent and if all sources of research are included, in some instances it reached 10 per cent.

While these differences were to become important, at the time the similarities between American, Japanese and European firms were more evident. Unable or unwilling to compete on price in the 1980s recession, the firms from developed countries marketed a "total" service, including not only CM, finance and design, but also services such as site selection, feasibility study, design engineering, procurement of materials and equipment, commissioning, staff training and post-construction maintenance. The "complete solutions" implied proposing more cost-effective alternatives where possible, resuscitating abandoned projects or stimulating demand. This enabled the global firm to add value before and beyond the construction activity.

In this context, Abdul-Aziz suggests a theoretical framework proposed by Porter, who recognises competitive advantages based on both country and firm specific advantages. The national advantages are derived from factor and demand conditions as well as from the state of related and supporting industries. While the firm can only accept the country specific advantages, it can create specific advantages or disadvantages in the form of firm strategy, structure and rivalry. There is little to separate America and Japan in terms of demand conditions, while Japan is judged to have advantages in factor conditions and related and supporting industries. However, at the firm level the ownership structure of Japanese industry conveys a real advantage. Ownership, by and large, by institutions concerned with long term appreciation makes it possible for Japanese corporations to take a long term perspective of business development, a strategy by and large not available to the US firms. The patient capturing of market share and investment for research for sustained competitive lead fits in with the global mentality and makes Japan a good breeding ground for global industry.

Written prior to Abdul-Aziz, David Hawk's 1991 paper accepts as given Abdul-Aziz's major assumption, that competitive advantage on a national basis is not important, rather globalisation is based on the strategies of the firm. Discussing "Conditions of success" in international construction, Hawk does not mention globalisation, but implicitly, the whole paper is about how to be a successful participant in a "new", global construction industry, where the industry is not

confined to activities on the site, but covers everything from design to material to construction to finance. The themes around which the successful firms are responding to industry changes (developed from discussions and interviews with 60 of the largest participants) span not only new technology and organisation, but most of all, changes in the products and services they deliver that expand and create new markets. More specifically, the themes include innovation in identifying and responding to changing consumer expectation such as higher quality, lower costs and improved environmental sensitivity and finding new business ideas and customers by providing, among others, environmental sustainability, one-stop shopping, intelligent buildings, PPPs and innovative linkages to other industries. The over-riding theme is to add value through integration of the total process and respond to the advantages opened up by the globalisation of the world economy. This means that the firms accept higher levels of diversity in what they do and how they do it. The alternative to stagnant markets is to generalise with many specialties, including one-stop shopping.

In terms of the process of construction, the themes emphasised industrialisation by replacing the crafts tradition and organisation by industrial concepts and investing in a scientific-technical base for continual improvements. This would create the preconditions for replacing the traditional hierarchy system with a system based on decentralised decision making. The organisation of the firm needs to allow small autonomous groups to efficiently function within large companies to link the operational advantages of smallness to the symbiotic advantages of integration. Finally, there was the one theme that made all of this possible, adopting an attitude of learning to learn.

In Hawk's vision, international construction was entering a new stage that was more mature than the conventional multinational firm and less dependent on isolated and transient stockpiles of money. The global construction firm is closer to global business as developed in other industries than it is to the traditional, small scale, low technology service industry which it has left behind. This fairly small group of global firms is what Hawk, provocatively but justifiably, refers to as the new construction industry.

## **THE MIDDLE PERIOD**

Globalisation has been one of the major issues that have defined the economic and political debate for two decades, but as suggested in the introduction, there is no general agreement on the most basic issues. Indeed, defining globalisation is an issue in its own right. Even more prolific and diverse has been the debate regarding the significance of globalisation. Writings in construction and construction management have not, with a couple of notable exceptions (Lewis, 2007 and to some extent Raftery et al. 1998) participated in these debates, nor have they built on the foundations discussed above. Rather, the construction debate has been limited to individual papers on individual aspects of the industry, scattered without any clear pattern across a number of issues. While the term "globalisation" is used, there appears to be no implicit or explicit difference between globalisation and internationalisation or between the global and the multinational firm. A number of papers have dealt with competitiveness but these papers contribute little to the globalisation debate and will not be discussed here.

Halpin and Hoang (1995) summarised responses from interviews with representatives of

international corporations into a set of recurrent themes. While the terminology is different there are similarities between this set of themes and that developed by Hawke: customer focus, integrated perspective, environmental sensitivity, flexibility, improvements in management with less emphasis on hierarchies, the image of the client, and, most of all, add value to the development. Their conclusion, however, follows the American model: provide a service, concentrate on niche markets, focus on core competencies and ensure flexibility through loosely defined alliances with small and flexible specialty firms.

Raftery et al. (1998) breaks the mould by touching on the impact of globalisation on income distribution in the region, and in a Heckscher-Ohlin framework sees mutual benefits for exporter and importer, but does this without any empirical analysis. However, as has been pointed out, reality does not satisfy many of the very restrictive assumptions in the 2x2x2 trade model. In particular capital is becoming more mobile and is often supplied by the importer rather than the exporter. Without entering the debate on who benefits most from globalisation, the buyer or the seller, there are strong reasons to believe that there are more complex relationships than assumed in conventional trade models. The rest of their paper discusses policies for deregulation, rational taxation and increasing involvement of the private sector in provision of infrastructure. The only country in the region already part of the global market, Japan, is examined and the major reason for its success is seen as advanced technology. This is supported by a large domestic market that provides experience, access to finance and a supportive government. The importance of the strategy of the firm aiming to participate in the global market, stressed by Hawk and Abdul-Aziz, is somehow subsumed under generalised national competitive advantages, bringing us back to the analysis of Strassman and Wells a decade earlier.

Globalisation has demonstrated the importance of means other than international trade for winning markets, notably mergers and acquisitions (M&A) and takeovers, leading toward a small, global, "super league" of contractors who are seeking to widen their expertise, enter new markets and get closer to their international clients. There is an extensive literature on the performance of firms that have merged or taken over another firm, but very little in the construction context. One exception is Choi and Russell (1994). In their sample the acquiring firm typically had four previous experiences. Most of the transactions were cooperative and in about half the cases the target firms were classified as construction. As in many other studies, the shareholders of the merging firms did not realise significant gains around M&A transactions.. Not too much should be made of the explanatory variables tested. In regression equations, their  $R^2$  were between 0.10 and 0.16.

Whatever the profitability or otherwise Runeson and de Valence (2009) traced the growth of some of the top ten Australian construction firms as they went through stage after stage of M&A until most of them emerged as part of the top European firms, which have inputs of literally hundreds of firms from a range of countries. .

Among the most active writers on internationalisation of construction firms have been the staff at SNU and in particular George Ofori, starting from 1992 and covering a range of issues over the following decade. The first paper discussed here is Betts and Ofori (1992), which deals with the importance of strategic planning in creating competitive advantage. While the paper itself doesn't deal specifically with globalisation, many of its examples draw on studies of the

Japanese (Hasegawa 1988) and UK (Cannon and Hildebrandt, 1990) globalised industries, as well as companies like Bechtel which have embraced globalisation. There are discussions of the major aspects of strategies such as backward and forward integration towards the one-stop-shop and investments in technology which have become central to the debate but no corresponding conclusions. Ofori (1994) also discussed the broad issue of technology transfer with international construction. Joint ventures and PPPs are singled out as potential ways to facilitate technology transfer.

In a 2003 paper, Ofori recognises an “international construction system” comprising firms operating throughout the world. The firms chose markets where they have a competitive advantage, based on firm and national competitive advantages. In reconsidering Porter’s model, Ofori rejects factor conditions, demand conditions related and supporting industries and government support as irrelevant on the grounds that the international operation of the global firm offers alternative sources for these supports which leaves firm strategy, rivalry and chance. The conclusion is a model based on multiple linked diamonds.

Cuervo and Low (2005) report on a study of the reasons for internalising various factors in transnational construction that also demonstrates the problem of using a model developed for manufacturing for analysing construction. The importance of the various factors is determined without consideration to the motives for initiating transnational construction, although there are very strong a priori reasons to believe that the considerations of a contractor doing work overseas for a local client (twenty per cent of the firms) would be vastly different to these of the contractor making a deliberate decision to establish themselves in an overseas market (less than half of the firms). This, of course is not a problem in manufacturing where production overseas means a deliberate decision to be active in the market, requiring FDI.

The differences between firms that have made a decision to aim for a presence in the global market and firms that engage in international contracting on an opportunistic basis is illustrated in a study of British construction firms by Whitula et al (2006). Using Yip’s (2003) framework of four global drivers: costs, market, government and competitive which makes it profitable to make more or less use of five levers: participation, products and services, location of activities and competitive moves. The strength of the global drivers varies by industry and firms are expected to globalise activities and operations such that strategy levers align with relevant industry levers. In a sample of eight, where six firms are involved in international contracting on a substantial but opportunistic basis and two are by most definitions global firms, there is virtually no overlap between the two groups in terms of use of the levers. The authors found the global drivers were relatively weak, which suggested the use of global levers would also be low. While this was true in aggregate, the two global firms made significantly more use of each lever than the remaining six, suggesting that globalisation is an attitude rather than a classification based extensively on degree of internationalisation.

The future of construction: a critical review of construction future studies (Hartey et al. 2007) offers some interesting insights into current thinking. When aggregating 13 reports on the future of construction, three issues dominate the discussion: ICT, Sustainability and Globalisation and the authors present the conclusions in the form of two extreme scenarios of the future 20 years on. In scenario 1, increased legislation and regulation of both construction and building

performance at national, international and global levels as well as common standards has allowed expansion of the national sector into an international market. The work has shifted from short term construction to long term service provision with forward and backward integration, as new materials allow a shift from site to factory. Scenario 2 is different mostly in the consequences of a more regulated and standardised market. In this scenario national markets are opened up to global firms and in the end, only a few large firms has survived and operate in a global market. As in scenario 1, the surviving firms deliver a holistic, lifecycle based service integrating design, construction and facilities management, but like manufacturing, the products are standardised.

## **COMPETITION FOR GLOBAL CONTRACTORS**

Brockman (2009) paints a rather sobering picture of the current state of globalisation that may in parts explain the limited interest demonstrated in the construction literature. First of all, he differentiates between international, multinational and global markets and firms. If the activities in more than ten foreign countries contribute a larger share to a company's revenues, then the company can be called multinational. A multinational company normally has foreign subsidiaries and much of the firm's foreign revenue is produced locally by these subsidiaries. The projects are won, managed and constructed locally with local material and equipment, with no foreign influence except the transfer of profits and an occasional meeting of top representatives. Global companies, on the other hand, operate a network spanning the globe. Managers come from countries around the globe, products are bought where cheapest, and production is set up where labour costs are low. The orientation of the company is not tied to any one national culture. The headquarters coordinate the activities of affiliated and owned companies around the world.

Brockman uses the total value of construction spending, estimated to be around US\$3.9 trillion for the year 2002 (Tulacz, 2000), when the top 225 international contractors had revenue from overseas operations equivalent to 3.4 per cent of total construction spending, which means that the whole international market is roughly the same size as the market in Germany. Therefore about 95 per cent of the global construction spending is allocated in local markets to local and national contractors. It definitely shows that the construction market is not a global market. Further, the international revenue of the ten most active international companies amounts to 44 per cent of the worldwide international revenue, meaning that the market shares held by these ten companies of all national markets is merely 2.5 per cent. This would suggest that there are no global players in construction holding a recognizable market share.

To find out the strength of competition, we can look at the revenue in the six largest markets and the different types of project that generate the international revenue. There are clear indications that, except for the markets in Europe and the US, the direct competition among the big multinational companies is rather limited geographically and for types of construction with the exception of buildings. In each market the multinational firms compete only against a small subset of similar firms. The conclusion is that there is no global construction market, where companies compare themselves with the global leaders. On the demand side, in 2000 Engineering News Record listed 147 international projects with an average size of about US\$400 million, including a small number of Megaprojects, a special subgroup of projects of extreme complexity and size that require cutting-edge technology and include hydroelectric, thermal and



nuclear power, urban transport, roads, tunnels, bridges, tunnels, oil and technology projects.

Construction companies offer their potential in markets and sellers look for the potential their projects require. While on the supply side, we may not have a global market where global firms compete against each other, there is a global demand for construction potential to deal with international megaprojects: "There is a select group of companies engaged in global projects around the world. They standardize across cultures and organizations what they offer on this market, their potential to execute megaprojects. Such companies are the global players in construction" (Brockman 2009, p 195).

## **CONCLUSION**

Brockmann identifies what characterizes global construction firms: a global contractor understands megaprojects and knows how to deal with the complexity, is neither ethnocentric nor polycentric but transcendent, must have experience with international joint ventures, and have the ability to organize and manage an international network. The international contractor must offer the client a worldwide reputation as hostage against his possibilities to resort to opportunism and provide cutting-edge technology and possess sufficient financial resources for the tendering, negotiation and the start-up of the project. A global player does not standardize output but standardizes input in order to deliver projects around the world.

Brockmann's findings are consistent with Hawk's (1992) and also with Male and Mitrovic, (1999) and Halpin and Hoang (1995) and also with Runeson and de Valence (2009) who have looked at how social, political and technological developments have encouraged the development of very large firms with global potential. In a number of ways, these papers and that by Abdul-Aziz, have arrived at basically identical conclusions. Comparative advantages based on country of origin are not important. Conventional trade models offer little in the form of explanation of why or how global construction. Rather, we have a small number of firms, maybe 20 or so, that have developed strategies and responded to changing social, economic and technological developments in such a way that they have acquired the potential to handle global construction and have become part of the global market.

This paper has divided the development of the concept of globalisation in construction into three periods. The first started with Strassman and Wells (1988) and included Hawk (1991) and Abdul-Aziz (1994). In the second period from 1994 to about 2007 issues thought to be important were competitiveness, technology and technology transfer, procurement and mergers and acquisitions. The third period from 2008 has more mature concept of globalisation. The review finds that there has been little progress in the appreciation of the effects of globalisation on the construction industry, which is surprising given the importance of the topic.

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**CIB Joint International Symposium 2009**

**CONSTRUCTION FACING  
WORLDWIDE CHALLENGES**

**Dubrovnik, September, 27-30**

## Introduction

This volume contains executive summaries of papers submitted to the CIB Joint International Symposium, Construction Facing Worldwide Challenges, held in Dubrovnik, Croatia, from September 27 to 29, 2009. The associated compact disk contains the full papers. This is the annual meeting of two CIB Commissions and one Task Group:

- W055 Building Economics
- W65 Organisation and management of construction
- TG65 Management of Small Construction Firms

The two commissions and the task group operate under the umbrella of International Council for Research and Innovation in Building and Construction (CIB). CIB was established in 1953 as an association whose objectives are to stimulate and facilitate international cooperation and information exchange between governmental research institutes in the building and construction sector, with an emphasis on those institutes engaged in technical fields of research. CIB has developed into a worldwide network of over 5000 experts from about 500 member organisations active in the research community, industry, and education, who cooperate and exchange information in over 50 CIB Commissions covering all fields in building and construction related research and innovation.

The symposium is organised by the Faculty of Civil Engineering at the University of Zagreb, and it is supported by several international associations: International Project Management Association (IPMA) and International Construction Project Management Association (ICPMA), Croatian Association for Construction Management (HUOG), and Croatian Association for Project Management (CAPM).

The volume contains twelve sections according to the themes covered at the symposium:

1. Education and Training
2. Construction Performance
3. Economic Aspects of Construction
4. Information and Knowledge Management
5. Human Resource Management and Culture
6. Sustainable Construction
7. Management of SMEs
8. Academic and Industrial Collaboration
9. Project Portfolio Management in Construction Sector
10. Management and Economics of Complex Projects
11. Project Management as a Facilitator of Business Success
12. Construction Project Management at All Levels

All the papers were reviewed by the International Scientific Committee and about 250 delegates attended the symposium.

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Mladen Radujković

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