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International Management in Construction: Organizational Issues and Selected Empirical Findings

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Abstract
Global ventures are always full of challenges, opportunities and risks. For international engineering and construction businesses, the risks of internationalization are traded against an upsurge in new opportunities and potential returns that evolve with deregulation of industries and increasing liberalization of emerging markets such as China, India and Eastern Europe. In academic and research studies, international management stands out as a multidisciplinary field with considerable intellectual diversity and non-uniform empirical findings shaped by differing industrial contexts. Given the wide spectrum, this paper focuses only on selected aspects of international management within the context of construction. The first part presents some interesting empirical results extracted from a more comprehensive study of twenty-four large international engineering and construction firms. Specifically, the revenue composition of these firms – classified by geographical regions, sheds some light on the behavioral aspects of firms towards internationalization. The appropriateness of four different mechanisms of coordination (multi-domestic, international, global, transnational) to construction is briefly commented, while it is suggested that in the long run, the transnational organizational model is the most ideal setting to strike a balance between global integration and local responsiveness. Finally, an evolutionary pattern of organizational models is proposed for moving along the internationalization process.

Keywords
Internationalization, Organizational Models, Global Integration, Local Responsiveness

1. Introduction

In 2000, Fluor Corporation, one of the largest publicly held construction firms actively involved in international projects, observed that its operating profits had been dwindling. Not too long after that, Stone & Webster, another global engineering and construction firm with more than 100 years of history, filed for bankruptcy protection. In retrospect, some have asserted that Stone & Webster's problems partly stemmed from cost overruns in lump sum turnkey contracts for international projects. Meanwhile, many

local construction companies in the United States – the home country of both Fluor and Stone & Webster, were able to sustain and maintain a reasonably good posture. These firms had largely limited their businesses to the domestic market.

Is it worthwhile to pursue some seemingly more lucrative but more risky international ventures? The answer is never a straightforward one. On one hand, the construction industry is highly fragmented, and many domestic firms can sustain their growth and profitability levels so long as the economy of the home country remains strong. Thus, there is no strict rule that construction firms must internationalize and it becomes a matter of choice of a landing point along the risk-return curve. While it is not clear if domestic business has a lower return compared to international ventures, the risk appears to be generally lower. On the other hand, although international ventures are more risky, they create some hedging effects when the home market experiences a downturn, thereby diversifying the risks of the overall business portfolio of a firm. Substantial reductions in transaction costs, communication and coordination efforts due to technological advancement have further enhanced the attractiveness of this option. Lastly, increasingly saturated market condition, as in the case of Singapore, is making international ventures a necessity.

If one believes that at some point along the corporate growth path a construction company has no choice but to venture abroad, it becomes critical to develop competitive advantages, assess the mobility of these competitive factors, decide on the choice of entry modes, and select appropriate organizational structures and models. This paper focuses mainly on the aspects of organizational structures and models.

2. The Varying Significance and Prospects of International Activities

Cheah (2002) conducted a comprehensive study of the strategy and performance (over the period of 1997~2001) of twenty-four large international engineering and construction firms, equally distributed in numbers among Japan, the United States, and Europe. Most of the firms are placed within the top fifty of the *Engineering News Record*'s Top 225 International Contractor Ranking according to their international construction revenue. Extracted from this study, the revenue composition and growth pattern of some firms from the sample reveal differing prospects and reasons to pursue internationalization. While the sample size from each region is not large, it is found to be sufficiently instructive for conducting a qualitative comparison exercise rather than performing a rigorous statistical study.

As one of the largest construction markets in the world, it is not surprising that many Japanese construction firms are content with staying within their large domestic market. This is verified by the fact that five out of eight Japanese firms in the sample had more than 75% of their total revenues derived locally. Interestingly, the remaining three firms, with international revenues making up more than 60% of their totals, all focus on industrial projects (specifically the construction of power plants, refineries, and other structures incidental to the energy sector). In contrast, the previous five firms are more heavily involved in residential and commercial building construction projects.

By and large, data associated with the U.S. sample conforms to the previous comments on the Japanese firms. Obviously, the U.S. construction market is even larger than that of Japan, and the local firms would have even less need to venture abroad. Again, the four firms that had more than half of their revenues coming from abroad are primarily active in construction projects in industrial sectors. On a separate issue, one of the other U.S. firms is quite diversified in its operations. This firm has reconfigured its organizational structure to allow for greater flexibility of individual business divisions to internationalize.

Moving on to the third group of players from Europe, a larger diversity is expected due to the varying sizes of domestic markets – all being smaller as compared to the U.S. and Japan. The group is composed of four French companies, with the rest from England, Norway, Sweden, and Germany respectively. Among the four French companies in the sample, three of them had domestic revenues exceeding 50%,

while the remaining one reduced its exposure to the French and even the European market from 40% to 19% over the study period. Incidentally, this remaining firm is a focus-differentiated player in industrial sectors.

The German, British, Norwegian and Swedish firms all shared a common trend: they reduced their domestic exposure and increased their construction activities in the United States over the period of 1997~2001 (up by 10%~20% of total revenues). From the trends of revenue growth over the period, these firms generally adopted the following sequence of internationalization moves: Home Market → Other European Markets → the U.S. Market. It is also worthy to note that each of the four firms was confronted by very different economic conditions in their domestic markets during that period.

More trends can possibly be derived from the original data in Cheah (2002), but just based on the brief discussion above, the following points can be noted:

- The choice and globalization potential of individual *market segment* (within the construction industry itself) play an influential role in the degree of internationalization adopted by firms.
- Focus-differentiated players that concentrate most of their activities within fewer segments have greater potential to develop competitive advantages that are *mobile*, thus helping them to internationalize.
- The sequence of moves taken by some European firms effectively demonstrates Johanson and Vahlne's (1977) internationalization process model. This model emphasizes the incremental learning and experiential knowledge that firms capture to overcome the "psychic distance" (differences in terms of language, culture, business practice etc.) between the home and foreign markets. Logically, their adjacent European countries would have less psychic distance to overcome compared to the U.S., which in turn is less alien compared to, say, the Asian markets.
- Organizational structures and models matter in internationalization process. First, different structures may be required along different stages of the internationalization process. Second, for a diversified firm, the structure has to cater for the differing degree of globalization potential of divisions/business units involved in various sectors.

3. Relevance of Four Coordination Mechanisms to Construction

Bartlett and Ghoshal (1998) categorized traditional organizational characteristics of an international firm into the following three models: (i) *Multi-domestic*; (ii) *International* (iii) *Global*. In broad sense, each of these three models had been labeled as the "administrative heritage" of European, American and Japanese firms respectively. Bartlett and Ghoshal further advocated that a fourth organizational model – the *Transnational* model, possesses many characteristics that are superior to the three traditional models.

For a construction firm in general, local responsiveness is of vast necessity, but the firm will quickly reach its limited capacity to establish too many local offices to compete with the local players in a largely fragmented industry (the *Multi-domestic* model). Further, this model suffers from the lack of integration that can be achieved in a less costly manner these days due to technological advancement. At the other extreme, construction is seldom thought of as a truly global industry with full integration, as unfavorable globalization drivers (Yip, 1989) would eliminate the possibility of centralizing most of the decision making processes and operational activities in the *Global* model. The *International* model somehow stands in between *Multi-domestic* and *Global*, but its reliance on corporate headquarters to develop competitive advantages is still too excessive, which prevents a better responsiveness to cultural and location factors that have largely divided international construction into discrete markets.

The *Transnational* model, which aims to develop a global network of operations in the long run, seems logical in at least four aspects:

- Decisions, control and certain functions may be centralized at several "anchor" offices or regional headquarters that manage a largely homogenous group of markets. For example, taking the various countries as a group, the Southeast Asian construction market poses few differences in a strategic sense and can be managed through a regional headquarters. Being physically close to these markets, local responsiveness is more accessible, which includes closer understanding of political and economic conditions in those countries. Meanwhile, specific resources, such as design expertise or construction technology, may still be sourced from other global "centers of competence" that are established in places with *location-specific advantages* (LSA).
- Regional headquarters develop their knowledge learned from some local projects. Some of the knowledge could be codified, shared among headquarters and applied in other areas.
- Regional headquarters, being physically "anchored" at the heart of those homogenous markets over time, can progressively tap into the local LSA. This strategy is more desirable compared to treating international projects as one-off events simply because construction business is project-based by nature.
- All these still leave the corporate headquarters with the flexibility to consolidate certain functions, such as R&D in construction and process technology, IT-related studies etc., before transferring their techniques of application to international offices.

4. An Evolutionary Pattern of Organizational Models in the Internationalization Process

This section suggests a possible evolutionary pattern of organizational models that a construction firm can follow when it intends to internationalize in the future. The overall sequence is shown in Figure 1. Obviously, there are other alternatives in pursuing the internationalization path, but the key is to understand the rationale behind every move when shaping the path.

In Stage 1, the firm initially expands its operation in its home market and develops strong competitive advantages. As the firm grows larger, it starts to seek out projects that are located in foreign countries and is ready to export its services abroad. Therefore, in Stage 2, it will leverage on its *firm-specific advantages* (FSA) that are mobile and applicable in other countries to execute projects located in those countries (Dunning, 1993). At this stage, most of the supporting resources (engineering design, financial resources, primary technology etc.) are still derived from the strength of the home country headquarters.

As the firm executes more projects abroad, it becomes more and more familiar with the local environment in those countries. Hence, in Stage 3, the firm now has sufficient knowledge to group some of these countries and classify them as homogenous market groups (e.g. Group 1 for Countries A, B & C in the figure). At the same time, the firm would probably know the best location within each group that has the most attractive LSA to set up an "anchor" office or a regional headquarters. Gradually, more and more operating knowledge, control procedures and other FSA are transferred from the home country headquarters (HQ) to the regional HQs. The home country HQ will also start to withdraw from directly providing resources to execute projects in other countries within the homogenous market groups (e.g countries A and C --- hence represented by a dashed arrow at this stage). Gradually, it delegates this role to the newly set up regional HQs within the homogenous markets due to more advantageous logistics, familiarity with the environment, and better ability to utilize the their local LSA to serve these markets. In fact, over time the linkage between the home country HQ and the regional HQs becomes a *two-way* flow: with the transfer of technology and expertise developed in the centralized functions at home to the regional HQs, and the feedback of valuable project knowledge from the regional HQs to the home country HQ so as to update corporate strategy and reshape competitive advantages if necessary.

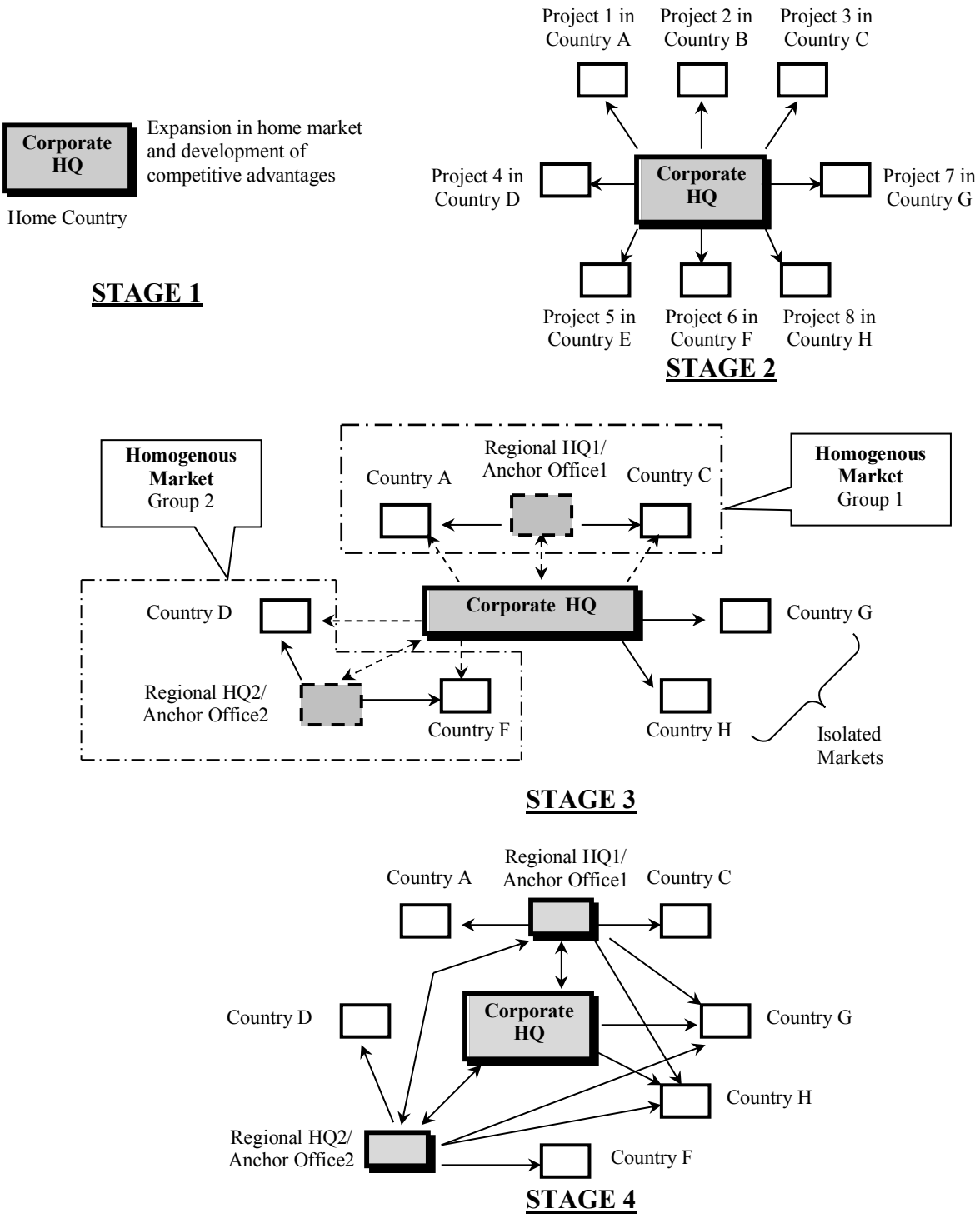

Figure 1: An Evolutionary Pattern of Organizational Models in the Internationalization Process

Nonetheless, there are obviously some other isolated markets which cannot be grouped within a homogenous market group, such as countries G & H shown in the diagram of Stage 3. This could be due to the extreme idiosyncrasies or the lack of prospects in these markets, so that setting up of a regional HQ to specially serve these markets would not be warranted (compared to countries A & C which have sufficient prospects for regional HQ in country B to monitor the market conditions in those countries).

In the final stage, the regional HQs become "matured" and basically function autonomously. Some of these may further serve as corporate centers of development for certain expertise (design centers for each type of industry sector, IT development, construction technology development etc.) – depending on their respective LSA. In essence, a *network* has now been formed, much similar to that of a *Transnational* model. A balance of global integration and local responsiveness is better achieved (Prahalad and Doz, 1987). In fact, as shown in the diagram for Stage 4, any of the HQs can serve those isolated markets of countries G & H – the final configuration would depend on which HQs are in better positions to (either individually or jointly) contribute resources to execute projects in those countries at that time.

5. Conclusions

Engineering and construction firms must create sustainable competitive advantages in order to compete, especially since the industry is highly fragmented. While a firm may be able to survive in the domestic arena by utilizing certain LSA (e.g. local network) to compensate for its shortfall in FSA, this tactic will not work when the firm ventures abroad because LSA, by definition, are not mobile. The firm would have to rely on its mobile FSA to compete with the local players in the foreign countries (who in turn have advantages in their LSA).

From the partial summary of the empirical results, it can be deduced that large international engineering and construction firms possess different outlook in terms of international operations. They often venture abroad for different reasons – some are motivated by the dwindling prospects in home markets, while others seek to pursue growth in a country with less "psychic distance". In any case, proper organizational structures and models need to be in place to cater to: (1) various degrees of internationalization potential and (2) differing fundamentals that underlie each market segment of the construction industry. Along each stage of the internationalization process, the structures and models would also change accordingly.

Among the four organizational models described by Barlett and Ghoshal, the *Transnational* model offers many advantages. In the long run, it is believed that pursuance of this model will reward an international construction firm with a well-balanced mixture of global integration and local responsiveness. The evolutionary pattern of organizational models proposed in the last section observes the importance of both LSA and FSA, captures the learning element, and seeks balance between integration and responsiveness.

6. References

Bartlett, C.A., and Ghoshal, S. (1998). *Managing Across Borders: The Transnational Solution*, Harvard Business School Press, Boston, MA.

Cheah, Y.J. (2002). *Fundamental Analysis and Conceptual Model for Corporate Strategy in Global Engineering and Construction Markets*, PhD thesis, Massachusetts Institute of Technology, U.S.A.

Dunning, J.H. (1993). *Multinational Enterprises and the Global Economy*, Addison-Wesley, Wokingham.

Hendrickson, C., and Au, T. (1989). *Project Management for Construction: Fundamental Concepts for Owners, Engineers, Architects, and Builders*, Prentice Hall.

Johanson, J. and Vahlne, J. (1977). "The internationlisation process of the firm: a model of knowledge development on increasing foreign commitments". *Journal of International Business Studies*, Spring-Summer, pp. 23-32.

Porter, M. E. (1985). *Competitive Advantage*. Free Press, New York.

Porter, M. E. (1998). "Competing Across Locations: Enhancing Competitive Advantage through a Global Strategy", *On Competition*, Harvard Business School Press.

Prahalad, C.K., and Doz, Y.L. (1987). *The Multinational Mission: Balancing Local Demands and Global Vision*, Free Press, New York.

Yip, G. S. (1989) "Global Strategy…In a World of Nations?" *Sloan Management Review*, Vol.31, No.1.