

EXAMINING THE EFFECTS OF SENIOR EXECUTIVES' PERCEIVED ENVIRONMENTAL UNCERTAINTY ON THE STRATEGIC FUNCTIONS OF CONSTRUCTION FIRMS

Florence Phua¹

Faculty of the Built Environment, University of New South Wales, 2052 Sydney, NSW Australia.

Insofar as the dynamic interaction between construction firms and their external environment is concerned, little empirical work has been done to examine how the external environment *as it is* perceived by senior executives affect the way firms operate. Results from 526 firms across various construction-related sectors show a link exists between senior executives' perceived environmental uncertainty and the kinds of activities or strategic functions that firms use. Results also show that while the day-to-day firm support activities are not generally affected by differences in perceived managerial environmental uncertainty, firms do not seem to consistently put more emphasis on strategic functions like long-range planning process, and R&D activities even when the perceived environmental uncertainty is high. The contradictory results indicate that broader industry characteristics might be at play in influencing this lack of innovativeness by firms to pursue high-end strategic functions that could potentially improve the competitiveness of the industry.

Keywords: firm activities, perceived environmental uncertainty, senior executives, strategic functions.

INTRODUCTION

The literature in construction and project management very often highlights the utility of the open systems approach (Lawrence and Lorsch 1967) in explaining the sustained performance of construction firms and project organizations (Lansley 1994; Walker 2002). In order to succeed and survive, firms must continuously monitor, respond and adapt to the influences of the external environment. Because these factors are constantly changing, the ability for firms to timely detect the changes and decide when to respond and how to best adapt to those changes are critical to their long-term success. The construction industry, like all other industries, is subjected to a whole series of environmental factors that may or may not be unique to the industry itself but these factors do not all have the same impact on all construction firms. For example, short-term labour shortage may have a bigger impact on the operation of smaller construction firms compared to larger ones because larger firms have more spare labour capacity to withstand the shortage. Thus different environmental dynamics place different demands on different firms in terms of the way they structure their strategic functions and activities, i.e. production, finance, sales and marketing, procurement delivery, etc. in order to cope with the environmental circumstances.

¹ f.phua@unsw.edu.au

Given this all-important interaction between the firm and its environment, it is surprising that there is not more research to examine the nature and effects of this interaction on construction firms' strategic functions. Notwithstanding the largely descriptive writings about the central role that the environment plays in determining firm success, little research has been undertaken to examine the extent of empirical association between the two. Two reasons might possibly explain the dearth of research in this area. First, that such relationships are complex and dynamic and, hence deemed difficult for construction researchers to assess empirically (Walker 2002) have either directly or indirectly led many to adhere to the view which does not go further than recognising that a link exists between the environment and firm strategy. The other possible reason lies in the research tradition in construction management where most existing literature tends to focus on the structural and contractual variables that lead to superior project performance. In this context, the success of projects is generally regarded as an antecedent to construction firm success. However, successful projects are likely to be a function of the general 'health' of the construction firms undertaking the projects in terms of having strong financial and investment portfolios, management know-how, technical expertise, human resources capabilities, good sales and marketing strategy – which all constitute the strategic functions/activities of firms. Hence, any investigation into the type of environmental factors and their associated impact on the strategic functions of firms is equally important and warrants more scholarly attention.

Following from this, the apparent question is: how should the environment, given its complexity, be conceptualised to allow for its “different components and dimensions to be more clearly defined” (Duncan 1972: 313) in order to facilitate empirical research? Consistent the extensive line of work in this area (e.g. Dill 1958; Boyd and Fulk 1996), this paper adopts the conceptualisation of the environment as consisting of its *perceived* state (Milliken 1987; Miles and Snow 1978). In contrast to the objective state which refers to the 'hard' characteristics or state of affairs of the environment, the perceived state is the state of affairs about the environment as they are perceived by the decision-makers of firms. It is this perception that has long been argued and repeatedly tested to be the environmental construct that is most relevant in the study of firm's behaviour and activities (Bourgeois 1980). This paper is organized into three parts. The next section is a review of the literature that explains the relevance of perceptual environmental characteristics in affecting firm activities. This is followed by a brief discussion of empirical results obtained to examine the influence of perceived environmental uncertainty on construction firm activities, before finally discussing the implications of the findings for further research and practice.

THE RELEVANCE OF PERCEIVED ENVIRONMENTAL UNCERTAINTY

According to Bourgeois (1980) and many others, the underlying explanation why the objective and physical environmental attributes are deemed 'less important' in influencing organizational actions can be traced to one vital perspective -- subjective interpretation and assessment are needed to give meaning to the objective information. The prevailing reasoning in which organizational decision-makers are required to interpret the information they have collected in order to assess the level of opportunities and threats present in the environment is paramount to the kinds of decisions that will be made eventually (Hambrick 1981). Hence, the way senior

executives make sense of their environment is influenced by their individual perceptions of uncertainty that exists in the environment. More simply, the perceptual construct relates to “an individual’s perceived inability to predict accurately” the state of the environment, its effect on the firm and the type of response options that are available (Milliken 1987:136). For instance, perceived environmental uncertainty is high when firm executives do not feel confident about the likelihood of whether a new legislation will be passed and do not fully understand what likely impact this may have on the operations of the firm.

Because the same objective environmental signals can be perceived differently by different individuals, only aspects that are perceived to be important to senior executives will be picked up and acted upon. In this sense, perceived environmental uncertainty is regarded as a more meaningful construct than actual environmental complexity because it is the perceptual interpretation and assessments of that environment that drive decision making, a view supported by Daft *et al.* (1988:125) where it is suggested that “unless the external events are perceived as important to organizational performance, managers may have little interest in them”. Even when using ‘hard’ archival information, firm executives will still make individual judgements as to the relevance or likelihood of indicators having an impact on the firm. It is this variance in perception that underlies the heterogeneity of management decisions between firms which could determine the difference between successful and unsuccessful firms as they strive to obtain the best possible ‘fit’ between the environment and its strategy (Elenkov 1997).

THE RELATIONSHIP BETWEEN PERCEIVED ENVIRONMENTAL UNCERTAINTY AND FIRM STRATEGY

Two questions can be advanced from the above discussion: in what ways and to what extent does senior executive’s perceived environmental uncertainty influence firm operations? And, under what environmental circumstances do firm executives make the decisions that shape their strategies? Even for firms that exist in the same industry, and therefore subject to the same environmental factors, there will be significant differences in managerial perceptions of the environment across firms within that industry. Firm executives who perceive constant volatility or changes in the environments (dynamic environment) will enact strategies that are different to those that perceive the environment as stable. Similarly, executives who perceive that the firm is affected by only a few, homogenous environmental factors, would have different strategies in place compared to those who perceive the environment as having numerous factors affecting the firm (complex environment) (Daft *et al.* 1988). It can be reasoned that senior executives will experience the highest perceived uncertainty when they perceive the environment as complex and dynamic, while those that perceive the environment as stable and simple will experience low perceived uncertainty. Hence, the complex-simple and dynamic-stable dimensions of the environment will result in firm executives adopting various types of activities.

On the one hand, when perceived environmental uncertainty is high, firms can adopt long-range planning, quality control, value management or R&D strategies by integrating the process with the broader objectives and goals of the firm and having formal procedures for monitoring and auditing the plan. Individual firms will adopt these processes to varying degree of extensiveness depending on the level of perceived managerial environmental uncertainty (Lindsay and Rue 1980). On the

other hand, executives who experience low perceived environmental uncertainty might focus on the day-to-day firm support activities such as finance, accounting, and purchasing without seeing the need for adopting any key strategic functions. These day-to-day and necessary activities are those that lead to more immediate and tangible goals. This does not, however, imply that senior executives who experience high perceived environmental uncertainty will abandon such day-to-day activities but rather these executives would devote more resources and attention to developing key strategic functions vis-à-vis other day-to-day firm activities.

The other factor that influences environmental perceptions is related to the attributes of the physical environment. Broadly, the environment can be categorised into two separate entities. First, is the task environment which comprises elements that have a direct day-to-day impact on the firm, which include competitors, suppliers, and customers (Dill 1958). The second, known as the general environment, consists of aspects in which firms have little or no control over and include more broadly, factors that exist in the economic, political and social domains. Because the task environment is argued to have a more short-term, and direct impact on the firm, as opposed to the general environment, it may accordingly shape the environmental perception and consequently the strategies that senior executives adopt.

Viewed from this broader perspective, it is argued that strategic functions are normally adopted to cope with changes that occur in the general environment which are beyond the control of firms while day-to-day firm support activities are harnessed in the context of changes that happen within the task environment where firms have more direct control.

PRESENT STUDY AND RESULTS

This paper sets out to empirically investigate three issues. Firstly, it aims to examine the proposition that different types of construction firms (i.e. contracting, consulting, developer, supplier), influenced by different task and general environmental conditions will have differing strategic functions and day-to-day firm activities, and that the nature of these is influenced by senior executives' perceived environmental uncertainty.

Secondly, because both the task and general environments within the construction industry can be regarded as complex and dynamic where (i) numerous factors related to competitors, customers, markets and suppliers are affecting the firms at any one time, and that (ii) these factors may be constantly changing (dynamic), how do these in turn, affect the kinds of strategies that firms employ? Contrary to the assumption that this will lead to high perceived environment uncertainty among senior executives (Duncan 1972) which is likely to result in the adoption of strategies such as long-range planning and R&D, it is argued that although firms' task environment might be complex and dynamic, firms have a high degree of manipulation and control over many of these factors in that they can exercise considerable latitude in business judgements in order to manage them to the firm's best advantage (Phua 2005). This, coupled with the ready access of available information about task environment factors (Huber *et al.* 1975) suggests that the effects of these factors are more predictable and would lead to lower and *not* higher perceived environmental uncertainty and correspondingly, less emphasis will be placed on strategic functions such as long-range planning and R&D while more emphasis will be placed on the day-to-day firm support activities.

Conversely, the general environment consists of factors that firms do not or have little direct control over such as for instance, policies relating to migrant workers, political and economic climates. Moreover, firms are usually not privy to information pertaining to these changes in the environment. Hence, the difficulty to predict and assess accurately the changes in the general environment would lead to increased senior executives' perceived environmental uncertainty and in turn, would result in the adoption of more strategic functions, while putting less focus on the day-to-day firm support activities.

Method

A questionnaire survey incorporating various well-validated scales measuring respectively perceived environmental uncertainty (Miles and Snow 1978), the environmental conditions pertaining to both task and general environments (Buchko 1994), and relevant firm strategic functions were administered to a population sample of 2602 foreign and local firms in Hong Kong which was framed from (i) the construction-related consulting industry, (ii) the construction contracting industry, (iii) the construction manufacturer and supplier industry, and (iv) construction developers. The sample was believed to represent all construction firms operating in Hong Kong for which contact details, including the name of the most senior executive, were available. After two waves of administration, a total of 526 responses were obtained. Of these 270 firms were related to the construction contracting industry; 110 were construction consulting firms of one type or another, a further 101 firms belonged to the construction manufacturer and supplier industry; 15 firms were construction developers. Some 46% of respondents were between 41-50 years old, while 22% were 40 years old or younger; 488 were men and 38 were women; 454 were Chinese and 72 were foreigners from predominantly Britain, Australia, America, Japan and Singapore; 184 had at least an undergraduate degree and 116 had postgraduate degrees; average length of current-job tenure was 13.02 years (s.d. 8.71).

Discussion of results

Statistical results lend support to the broad proposition that perceived managerial environmental uncertainty influences the types of activities that firms undertake and the influence varies across different sector of firms. However, contrary to the study prediction, respondents with high perceived environmental uncertainty with respect to the task or general environment do not visibly put distinct emphasis on either the strategic functions or the day-to-day support activities. This could imply that the level of uncertainty that exists in the environment, be it in the task or general environment may not be as clear-cut to senior executives to the extent that it would predict the kind of firm activities/strategic functions that firms would use. In other words, it could mean that in practice, it may be difficult for senior executives to identify the source from which the uncertainty stems such that if senior executives do employ long-range planning or R&D activities, they will do so as a result of certain imperative environmental changes and whether it is the task environment or the general environment that gives rise to the changes in the first place does appear to bear much significance.

Interestingly, results also show that construction firms, irrespective of industry sector, and despite of differences in perceived environmental uncertainty place very similar level of importance to day-to-day firm support activities. This suggests that perception of changes in the environment has relatively little bearing on such activities because these could be deemed as essential and necessary things that each firm has to deal

with in order for the firm to operate smoothly. On the other hand, there is a conspicuous lack of adoption of high-end strategic functions by firms even when perceived environmental uncertainty is high. Nor has there been evidence to support the argument that senior executives with high perceived environmental uncertainty are more likely to diversify or introduce new products, services or processes in order to counteract the impact that any unpredictable changes in the environment may bring. It seems whatever strategic functions that firms adopt happen only sporadically, giving a sense that such adoption is a reactive rather than a proactive response to the environment by firms.

Arguably, industries in which a high proportion of firms systematically engage in R&D and other strategic functions are generally regarded to be innovative and hence, able to create competitive advantages over other industries (Porter 1980), but the construction industry as a whole is not seen a forward-looking industry due possibly to some of its broad structural and contractual characteristics (Cherns and Bryant 1984). Prime factors which might impede the innovativeness of firms include the long-standing and widely practiced lowest bid tendering process, large proportion of subcontractors, small proportion of firms with the required resources and capability to engage in innovative activities, and the industry culture that views itself to be unique in its method of operation. Of course, the cause and effect relationships of these factors on firm strategy remain to be determined.

Using Miles and Snow's (1978) firm typology that relates to the pattern of firm-environment interaction, it might be that the majority of firms in the construction industry can be classified as '*defenders*' and '*reactors*'. In the former, top managers have little inclination to make big adjustments in organizational structure and processes but choose instead to concentrate to focus in their existing field. In the latter category, managers perceiving uncertainty in the environment are not likely to make any substantial adjustments until the environmental pressures are intense enough to force them to do so. These contrast with the '*prospector*' firms where managers who continually perceive change and uncertainty in the environment capitalise on it to create and experiment with new products, trends, processes, etc.

CONCLUSIONS

Notwithstanding the limitations that are associated with a cross-sectional, exploratory study such as this one, the results shed some important light on the dominant firm-environment interaction pattern of construction firms and reinforce the long held view that the industry is not, for one reason or another, predisposed to the adoption of systematic strategic functions. More importantly, at the same time the study throws up several key questions: To what extent does the lack of systematic adoption of strategic functions by firms affect the competitiveness of the industry as a whole? Is it sustainable for construction firms to continue being defenders and reactors rather than prospectors? Why? Why not? Do prospector firms really have a superior advantage over the others, and if so, by how much? Given the possibility that across the industry, a wide range of responses to similar environmental forces may be observed due to different managerial perception of the environment, might it be that the defender and the reactor structures are the choices construction executives make to achieve a good fit between their firm and the industry environment. These are presently untapped areas of research that future work could contribute to because they will form a much-needed basis from which we could better understand what makes the construction industry more competitive and why. Furthermore, drawing on the rich

conceptualisation of the environment and its effects from existing mainstream strategic management literature, future studies could look at extending the present research using multi-country samples and different sets of variables to examine and compare the impact that perceived environmental uncertainty under different circumstances has on firms' operations.

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