

A CONCEPTUAL FRAMEWORK AND RESEARCH METHOD FOR ANALYSING THE PERFORMANCE OF CONSTRUCTION FIRMS IN HONG KONG

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This paper reports on an on-going project examining the performance of construction firms in Hong Kong. The discussion will cover three main aspects: The first shows that the conceptual framework developed in this study is an attempt to apply concepts of competitive advantage to the Hong Kong construction industry. The framework is developed based on the integration of market-based and resource-based approaches to competitive advantage. The second part discusses the factors that have been considered in the strategic selection of methodology in the analysis of competitive advantage in Hong Kong construction industry. It is concluded that qualitative data generated from fieldwork based research provides a better understanding on the sources of competitive advantage than the use of quantitative analysis. The third and the last part details the process by which qualitative data obtained from fieldwork is analysed and how the construction firms can benefit from the findings of this study.

Keyword: competitive advantage, leadership, organisational structure, competence, construction firm.

INTRODUCTION

There has been a shift in literature of strategic management from a focus on product market to one on the internal attributes of firms. This shift has aroused the interest of researchers to examine the ways firms can improve their performance by shifting the focus of their strategy. However, the application of these concepts in construction industry has not received much attention. Only a limited number of researchers have examined the competitive advantage of the construction industry based on these concepts (Ngowi and Rwelamila, 1999; Tan, 1996; Tatum, 1988). This paper attempts to examine the applicability of these concepts and to identify how these concepts may contribute to a better understanding of contractors' sources of competitive advantage. In terms of practical benefits, by examining both the market-side and resource-side of the construction firms, this project attempts to provide recommendations for chief executives directed towards achieving competitive and sustainable corporate performance.

This paper is divided into three sections. The first section reviews existing approaches to study of competitive advantage and the mechanisms for sustaining competitive advantage. The second section explains the development of the conceptual model to be used in this project for analysing the competitive advantage of contractors in Hong Kong. The third section discusses the research methods employed in this study.

CONCEPTS OF COMPETITIVE ADVANTAGE

There are two paradigms dominating in the field of strategic management in the analysis of competitive advantage. One focuses on the positioning of the product market in order to achieve competitive advantage. The other focuses on firms' resources as a means to achieve competitive advantage. In the following sections, the details of each approach and the mechanisms to sustain competitive advantage are discussed.

Market-based approach to competitive advantage

The market-based approach suggests that the firm's success is a function of both the industry-wide structural traits of the industry in which the firm competes and the structure within the industries (Porter, 1979). The attractiveness of the industry depends on degree of seller concentration, rate of growth of industry demand, economies of scale, capital requirements and overall potential for product differentiation (Caves, 1972). The ultimate profit potential in the industry affects the profitability of individual firms. The structure within industries depends on the firm's strategic group membership and the configuration of other strategic groups within the industry. Strategic group is a group of firms who makes similar decisions in key areas within the same industry (Porter, 1980). A firm will have higher profits if it is located in a group that possesses high mobility barriers, is relatively more insulated from rivalry by its place in the configuration of strategic groups, has superior bargaining power with adjacent industries and faces lower elasticity of demand with substitutes' (Porter, 1979). Firms aiming to obtain higher than normal returns should attempt to formulate strategies that tend to create high mobility barriers, reduce the number of firms in their industry, increase product differentiation, or reduce demand elasticity (Porter, 1980). This would prevent competitors from moving freely from one strategic group to another, duplicating the strategies of the successful firms. In this way, successful firms can continue to enjoy higher than normal returns, without the risk of these being eroded by competitors.

Resource-based approach to competitive advantage

The resource-based approach attempts to look at firms in terms of their resources. In this approach, firms are viewed as heterogeneous in terms of resources and internal capabilities, and it is the heterogeneity that explains firm's different performance.

Unlike the market-based approach which is dominated by Porter's framework, a number of concepts are developed within the resource-based approach. Barney (1991) attempts to understand competitive advantage by focusing on the key critical traits that provide meaningful distinctions among firms' resources. He identifies four key attributes that must be satisfied in order to provide sustainable competitive advantage. They are rare, valuable, imperfectly imitable and non-substitutable. This is defined as the resource-based view for the firm. Teece *et al.* (1997) develop the concept of 'dynamic capabilities' that emphasize the managerial process involved in combining resources for competitive advantage. Prahalad and Hamel (1990) develop the concept of 'core competence' and focus on the learning, coordination and integration of the organisation. Although these concepts approach competitive advantage from a different angle, they all agree on the conditions that must be satisfied in order to generate sustained competitive advantage. In addition, they all proceed from the concept of 'isolating mechanisms', developed by Rumelt (1984), to explain how a stable stream of rents can be developed and maintained.

DEVELOPMENT OF CONCEPTUAL FRAMEWORK

The theoretical background of this framework is the integration of the resource-based and market-based approaches to competitive advantage. The value of integration of these two approaches (Collis, 1991; Combs and Ketchen, 1999) and their complementary relationship (Maijoor and Witteloostuijn, 1996; Mehra, 1996) have been well examined. The underlying premise of the framework is that competitive advantage can only be understood by analyzing both the external environment and the internal attributes of the firm (Barney, 1995). While it is generally agreed that Porter's (1980, 1985) frameworks provide the best way to analyze the external environment, no consensus has been reached on the approach to analyze firms' attributes.

Of the various concepts developed within the resource-based approach, the resource-based view of the firm (Wernerfelt, 1984; Barney, 1991) and the concept of 'core competence' (Prahalad and Hamel, 1990) are mostly used by researchers. For those who analyse the internal attributes of firms from the perspective of the resource-based view, the traits of the internal attributes become the central focus (Barney, 1986; Barney and Hansen, 1994). For those who approach this issue from the concept of 'core competence', the managerial processes by which firms accumulate and develop the asset stocks required to exploit cost and differentiation advantages becomes the key issue (Dierickx and Cool, 1989; Verdin and Williamson, 1994).

This paper argues that the competitive advantage of a construction firm is developed as a result the ways its resources are used and the ways different resources are combined. The traits of the resources are only the outcomes of the process resources are developed and deployed. It is posit that resources can render its full service only if this process is guided by an effective leader and is taken place in a suitable organisational culture. The framework developed in this project thus focuses on leadership style, organisational culture and competence in the understanding 1) the performance differences between construction firms in Hong Kong and 2) the ways contractors with sustainable performance develop and manage their performance.

Competence

The link between competence and competitive advantage has not been well examined. Only a limited number of empirical studies can be found (Henderson and Cockburn, 1994). Most of the studies focus on the conceptualisation of the link between competence and competitive advantage (Verdin and Williamson, 1994; Bogner *et al.*, 1999) and the conditions under which competence can generate sustained competitive advantage. Eriksen and Mikkelsen (1996) suggest that sustainable competitive advantage would result if : i) it is difficult to perceive the value of competences; ii) it is impossible to deduce why the firm is better and how such activities may be replicated by competitors; iii) the competences are created by interactions between many different entities/individuals; iv) the competences are developed as a result of a unique historical process; v) the competences are accumulated, rather than acquired in a corresponding factor market; and vi) the investments required to create competences are totally irreversible.

Verdin and Williamson (1994) attempt to develop the link between competitive advantage and core competences by viewing competencies as 'catalyst' in the process of asset accumulation and asset development. It is this process by which non-tradable, industry-specific assets are accumulated which lies at the heart of competitive advantage. Competences are linked to the competitive market place based on the

value of the end products that are developed. Bogner *et al.* (1999:281) postulate that “no skill or cognitive trait, ..., should be described as a ‘competence’ if it does not lead a firm, directly or indirectly, to a persistent competitive advantage by satisfying a customer need better than competitors, or at lower costs than competitors or by producing an advantageous combination of both.” Competitive advantage can be achieved by the pursuit of one of the three strategies: cost leadership, product differentiation, or focusing on a particular segment of the market (Porter, 1985).

Organisational culture

Previous findings suggest that there is a positive relationship between organisational culture and firm performance. Peters and Waterman (1982), in the study of the best-run American companies, point out that firms with strong cultures are examples of excellent management. Firms are predicted to be effective if their cultures solve the managerial problem of governing economic activity effectively. Camerer and Vepsäläinen (1988) suggest that a firm would increase its effectiveness if it has the right cultural traits, its ‘soft’ cultural traits fits with its ‘hard’ cultural traits and its cultural traits fits with environmental conditions or business needs. Kotter and Heskett (1992) establish that corporate culture has a significant effect on a firm’s long-term sustainability and economic performance. They found that firms with an embedded cultural capacity for managing change would result in increased revenues, expanded workforces, raised stock prices and improved net incomes.

Instead of viewing organisational culture as the key driver of firm performance, others suggest that organisational culture provides the context which facilitates the coordination, learning and integration of the firm’s different skills and resources to create value. Cherrington (1994) suggests that organisational culture creates a shared vision among members about the mission of the organisation and the strategies and goals it should use to achieve success. With a well-defined culture, managers are able to identify the employees who share the same beliefs, select the right suppliers that provide better service and select the right customers in which the firm’s expertise meets their needs. In this way, the firm is in a better position to adapt to the changing environment. By enhancing the capacity for organisational learning and adaptation (Fiol and Lyles, 1985) and by unleashing the human creative potential in the implementation of efficiency- and innovation- efficiency strategies (Lado, Boyd and Wright, 1992), a good organisational culture enhances the capacity of the firm to respond to external changes.

Leadership

The literature suggests that certain behavioural traits of leadership are found to associate with performance. The results conducted by Boehnke *et al.* (1997) suggest that most successful executives have a clearly-defined vision of the future, generate excitement at work and heighten others’ expectations, arouse interest in new ideas and approaches, build effective teams, and coach, advise and provide hands-on help for others to improve their performance. In addition to the charismatic role taken by the leader, the ‘architectural’ role is also important in creating a high performance organisation (Kets De Vries, 1996). By putting in place appropriate structures and setting up the proper control and reward systems, they create the essential conditions of a high performance organisation.

There is a controversy over the relationship between personal traits of a leader and firm performance. Some researchers suggest that certain personal traits are found to have a profound effect on firm performance. However, some would argue that the

qualities of leadership vary with the context and it is of little use to try to identify which traits represent predictors of leadership ability. Cherrington (1994) develops a list of personal traits that are found to be most frequently associated with effective leadership. These are shown in Table 1.

Table 1: Personality factors most frequently associated with effective leadership

Capacity	Achievement	Responsibility	Participation	Status
Intelligence	Scholarship	Honesty	Activity	Socio-economic position
Alertness	Knowledge	Dependability	Sociability	Popularity
Verbal facility	Athletic accomplishment	Initiative	Cooperation	
Originality	Personality adjustment	Persistence	Adaptability	
Judgement		Aggressiveness	Humor	
		Self-confidence		
		Desire to excel		

Source: Cherrington (1994)

While the majority of the literature in the area of leadership suggests that culture determines leadership behaviour (Chemers, 1997; Smith and Peterson, 1988), there are some who argue that individuals possessing charismatic behaviour tendencies will be able to influence culture. Schein (1990) argues that a new leader who comes into an organisation with beliefs and assumptions may eventually challenge currently held beliefs and values.

A conceptual framework linking the leadership, organisational culture, competence and competitive advantage is depicted in Figure 1. This framework suggests that a necessary precedent condition to competitive advantage is the leadership style. Westley and Mintzberg (1989) argue that leaders create a strategic vision, communicate it throughout the organisation, and empower employees to realize that vision. This enhances the strategic direction and the organisational culture of the company, which in turn affects the shared mind and beliefs of employees and process of asset accumulation and development.

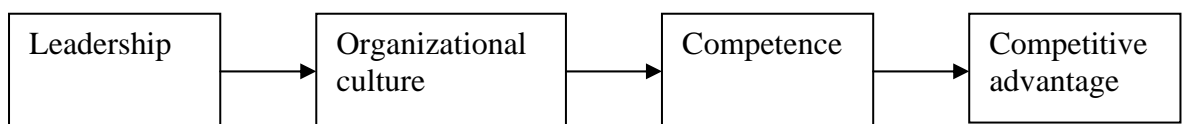


Figure 1: The development of competitive advantage

RESEARCH DESIGN

Most of the market-based studies examine the relationships associated with structure-strategy-performance paradigm. The central focus of these studies is to identify the common structural factors that influence firm performance. The basic tenet of the resource-based approach is that resources must be valuable, rare, imperfectly imitable and non-substitutable in order to generate sustainable competitive advantage (Barney, 1991). The resource-based studies are thus focused on the identification of firm-idiosyncratic sources that contribute to firm success. It is unlikely that the use of large and multi-industry samples adopted in the market-based studies is applicable to resource-based studies. The inapplicability stems from the different success criterion adopted in these two approaches. In the market-based approach, the success criterion is derived from identifying structural factors that are common to the most successful

firms. In the resource-based approach, the success criterion is derived from identifying resources that are unique to the most successful firm. If the success criterion adopted in the market-based studies are applied to the resource-based studies, it would result in identifying a number of resources that are common to many successful firms. The identified resources thus constitute the necessary conditions, but not the sufficient conditions for success (Foss and Harmsen, 1996).

Firm selection

Most construction firms in Hong Kong are privately owned. Financial data such as rate of return, return on investment are not available. Absence of financial data is a problem commonly encountered by researchers in the study of firm performance. Most of them resort to the use of market share (Karnani, 1984) or subjective performance measures (Dess, 1987). In this study, the selection of performance measures is based on the availability of data and the consistency in applying these across all the firms under examination. The performance measures selected are contractors' market shares in the public sector.

In Hong Kong, construction work can be broadly divided into 11 categories: i) Buildings; ii) Building Maintenance; iii) Demolition; iv) Earth and Geotechnical Works; v) Ground Investigation; vi) Piling and Foundation; vii) Interior Decorations; viii) Port and Marine Works; ix) Public Housing; x) Roads and Bridges; xi) Utilities and Drainage. Because of the different financial criteria, and the different technological and management capability required for bidding each type of work, the competitive advantage in each work category will be examined. Thus, contractors' performance in each work category rather the overall performance in the public sector will be determined. Values of contracts acquired by a contractor are used to compute its market share in its respective work category. This information derived from the tender results published in the Government Gazette every Friday.

Within each work category, contractors are classified into two groups – Group I and Group II - according to their performance. Group I is defined as a group of contractors who have acquired superior performance within the study period. Group II is defined as a group of contractors who have not acquired superior performance within the study period. The study period is from 1990 to 1999. In this study, superior performance is defined as a rate of return greater than a normal return. Average performance is defined as a rate of return just large enough to ensure a firm's survival. Due to the limited time and resources, only two contractors - one from each group - will be selected and the research samples thus comprise a total number of 22 contractors. By comparing the resources possessed by high- and low-performance contractors, those which are unique to high performance contractors require further investigation. An examination of the attributes of the identified resources will be conducted to determine the competitive implications on contractors' performance. If the resources are valuable, costly to imitate and have no strategically equivalent substitute, the contractor is said to have achieved a sustainable competitive advantage. On the other hand, if the resources are costly to imitate or can be substituted by other resources, even though the resources are valuable, the contractor is said to have achieved a temporary competitive advantage.

RESEARCH METHODS

There has been limited empirical research conducted using resource-based studies. This may be due to the problems encountered in the identification and measurement of

these valuable resources and capabilities (Yeoh and Roth, 1999). Godfrey and Hill (1995: 522-523) argued that ‘the more unobservable a value resource, the higher are the barriers to imitation, and the more sustainable will be a competitive advantage based upon that resource.’ This suggests that what can be observed may not be the source of sustainable competitive advantage because the observation immediately erodes the height of the barrier to imitation, and the competitive advantage is no longer sustainable. On the other hand, resources may generate competitive advantage only if they are valuable in the context of performing activities. Thus, any changes in the context such as technology or buyer needs would immediately erode the value of the resources. Any attempts to measure the value of a resource would be meaningless (Porter, 1991). Even if such an attempt is made, what is measured does not necessarily represent the value of the resource under examination (Montgomery, 1995). Due to the presence of complementary assets, the value of an individual resource is likely to be contingent upon the presence or absence of other resources.

Researchers who attempt to conduct empirical tests of the resource-based approach suggest that not all industries provide an appropriate context for statistical analyses. Yeoh and Roth (1999) suggest that the pharmaceutical industry provides an appropriate context because of two reasons: i) research and development is noted to be an important source of advantage in this industry; and ii) the technological development process has relatively well defined components that allow the resource-based view to be operationalized in a manner that can be applied to major competitors within the industry.

In this study, the context to be examined is the construction industry. Studies on the competitive advantage of this industry have been few. Only Ngowi and Rwelamila (1999), Tan (1996) and Tatum (1988) attempt to identify the sources of competitive advantage. However, these studies are conducted in isolation of one another and the lack of a coherent framework makes it difficult to determine which resource is an important source of advantage in this industry. Table 2 lists the theoretical background adopted by these studies.

Table 2: The theoretical background of the studies of competitive advantage in construction industry

Studies	Theoretical background	Area of focus
Ngowi and Rwelamila (1999)	Resource-based approaches	Organisation structure
Tan (1996)	Porter’s (1980) five forces model	Information technology
Male and Stocks (1991)	Concepts rooted in the strategic management field	Isolate the construction activities where a construction company has superiority over its competitors
Tatum (1988)	Porter’s (1985) generic strategies	Technology

In view of the limited number of studies made on the competitive advantage of construction industry and the difficulties in identification and measurement of firms’ resources, this paper argues that a qualitative approach should be employed to explore why contractors differ in performance. The use of a qualitative approach generates rich descriptions of the subject matter and allows a detailed analysis and explanation of why some contractors perform better than others. Strategy research has reached the point where detailed, comparative data about organisational process, strategy and implementation are needed for a more integrative and useful understanding of competitive advantage (Rouse and Daellenbach, 1999). Case studies of representative

contractors will provide contextualized data for understanding contractors' sources of competitive advantage.

Fieldwork will be conducted by means of semi-structured interviews, following a pre-determined set of questions that explore the leadership, organisational culture, competence in bid preparation of, competence in construction and market strategies. The questions tend to be open and this places less restriction upon the topic and permits greater freedom in possible responses (Miller *et al.*, 1992). Members of the top management team will be selected as respondents in this study because they often have the best vantage point for viewing the entire organisation system (Snow and Hrebiniak, 1980). The number of interviews conducted for each selected contractor depends on the availability of the top managers. It is suggested that the use of single respondents in strategy research is unreliable as disagreement among top managers is commonly observed (Bowman and Ambrosini, 1997). For each section, it is proposed to have more than one member of the top management team answering the same set of questions. The proposed members of the top management team are listed in Table 3.

Table 3: The proposed respondents for this study

Section	Preferred respondent
Leadership style	Director
Organisational culture	Middle management
Competence in bid preparation	Members of the top management teams who are responsible for the mark up decision
Competence in construction	Members of the top management teams who are responsible for project performance
Market strategies	Members of the top management team who are responsible for strategy formulation

Data analysis

Thematic analysis will be employed to conduct the data analysis. Data obtained will be compared and contrasted in three ways: i) Group I and Group II contractors in each work category; ii) Group I contractors in all work categories; iii) Group II contractors in all work categories. By comparing Group I and Group II contractors within the same work category, it is proposed that sources of sustained competitive advantage for that particular work category may be identified. By comparing the data obtained from all Group I contractors, it is proposed that the key success factors for running a profitable construction business in Hong Kong may be identified. By comparing the data obtained from all Group II contractors, it is proposed that factors that prevent contractors in obtaining superior performance may also be identified.

CONCLUSIONS AND DIRECTIONS FOR FURTHER RESEARCH

This paper describes and justifies the methodology of an on-going research that aims to account for the performance differences between contractors by identification of contractors' sources of competitive advantage. The framework has been developed based on the resource-based approach and the market-based approach to competitive advantage. With regard to the central proposition of the resource-based approach, it is concluded that large sample quantitative analysis is not an appropriate mean to understand the real sources of competitive advantage. Qualitative methods that provide rich descriptions and detailed analysis should be employed.

In conclusion, there has been a shift in the focus of strategic management for the analysis of firm performance. The shift was brought about by dissatisfaction with the existing approach's capacity to cope with volatile external environments. Researchers

have been busy in testing the applicability of the concepts of competitive advantage in different contexts and examining how firms' performance can be improved by the integration of frameworks rooted in various disciplines (Collis, 1991; Combs and Ketchen, 1999; Mahoney, 1995). Researchers in construction, however, have mostly not participated. The major competitive advantage study on construction industry was conducted by Male and Stocks (1991). It took almost ten years before Ngowi and Rwelamila (1999) for example, examined how competitive advantage in the construction industry can be better understood by this resource-based view. The purpose of this study is to examine the extent to which concepts of competitive advantage are applicable in the context of the construction industry. It is hoped that this study can open an avenue for researchers in the construction field to consider the economic, behavioural and cognitive approaches in strategy formulation.

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