

ASPECTS OF MARKET DIFFERENTIATION IN THE BUILDING INDUSTRY

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Introduction

The use of neo-classical micro-economics for analysing various industries, including the building industry, has been criticised on many grounds (de Valence, 2000; Runeson and Raftery, 1998). One of the major criticisms has been that firms are not, as assumed in the theory, attempting at all times to maximise profit. Instead, their major aim is to survive, to stay in business, and many firms are prepared to trade-off short-term profit for a more secure market position.

In industrial economics, survival techniques have long been considered necessary complements to, or substitutes for, the assumption of profit maximisation employed in micro-economic theory. The survival techniques acknowledge that a single-minded pursuit of short-term profit may leave a firm behind when market conditions change in a dynamic economy (Johnson and Scholes, 1999; Singh, 1971; Schumpeter, 1954; Downie, 1958). The survival techniques are also used by firms that operate in markets where demand is subjected to rapid short-term fluctuations, ie. the sort of markets that firms in the building industry work in. Here, the survival techniques allow the firm to modify the structure of the overall market in which it operates (Walker, 1996).

This paper deals with theoretical issues of a specific survival technique in the context of the building industry, ie the use of differentiation as a strategy to survive and to maintain growth and profitability in a rapidly changing environment.

Aims

The specific aim of the study was test the hypothesis: *that different markets have significantly different requirements in terms of resources, organisational*

*structure and skills*¹, and to establish the main strategic aspects of the use of differentiation as a survival technique in the building industry. The quantitative information is derived from a survey of 108 building contractors operating in the Sydney area.

Considering its size and importance for the economy, there has been very little research into microeconomic aspects of building, and virtually no research directed towards the market structures that face firms in the building industry. There even seems to be a tradition in construction economics to regard the building industry as a special case, separate from and different to the rest of the economy in important aspects of economic theory (Hillebrandt, Cannon and Lansley, 1995) although Runeson and Raftery (1998) do argue for the applicability of economic theory.

In fact there has been no research into establishing what constitutes individual markets or what separates different markets. The hypothesis behind this paper is that different types of buildings require different types of resources and therefore are produced in what is in effect different markets, but very little is known about movements between different markets, what the opportunities and constraints are and in particular, how firms select the markets they diversify into, or how they obtain and allocate their resources between different markets.

Markets, market power and organisational niches

In neo-classical micro-economic theory, the behaviour of a firm is determined by the structure of the market in which it operates (Gans, et al, 1999; Caves,

¹ Resources, organisational structure and skills, these are the three criteria that describe the firm.

1992). The structure determines not only the conduct and performance of the firms operating in the market, but it also determines the performance of the market itself. The *structure-conduct-performance* model or hypothesis of micro-economic theory suggests that particular types of market structures are associated with specific types of market behaviour and performance (Caves, 1992; Lee, 1979).

The market structure refers to the specific characteristics of a market that establish the inter-relationships between the buyers and sellers of a particular product (Caves, 1992). The defining characteristics are the degree of seller and buyer concentration, the degree of knowledge, the extent of product differentiation and the conditions of entry into and exit from the market. The structure determines the pricing, output and marketing strategies open to the firms in the market, and are influential also in the markets for labour and other resources (Scherer, 1980; Scherer and Ross, 1990; Scherer and Ross, 1990).

What is not reflected in microeconomic theory - which is static - is that over time, the structure of a market may change considerably (Lee, 1979; Mackintosh et al, 1996). Economists who have attempted to create a dynamic theory within industrial economics suggest (Church and Ware, 2000; Bain, 1968) that the major reasons for differences in structure and therefore also changes in structure, are economies of scale, differences in market size and/or growth rate, barriers to entry, government policies and merger activities. Changes in market structure may also result from technological change and process innovations, which may alter the range of products and the number and size of sellers and buyers as well as changing entry conditions to the market (Mansfield, 1968). However, it is also hypothesised (Singh, 1971; Schumpeter, 1954; Downie, 1958, Walker, 1996) that at least part of the change is the result of a deliberate strategy by producers - the use of product differentiation (Wong and Logcher, 1986; Walker, 1996).

The reason why differentiation is so widespread as a survival technique is that it allows firms to escape the confines of the current market into more favourable markets (Johnson and Scholes, 1999, Thompson, 1989, Male, 1991). The new markets may be more favourable to the firm because they convey more market power, because the combination of the old and new markets makes the firm's output less subject to fluctuations in demand or because they offset a secular decline in demand in the original market (Obinero Uwakweh, 1996).

Differentiation will, almost always, effectively change the structure of the overall market for a firm since it gives the firm a certain market power. New products or markets give the firm an ability to control the market environment in which it works - to grow or maintain profitability even if the original market is declining, to meet temporary fluctuations or a secular decline in one of the markets - simply by relocating resources from that market to another (Walker, 1996).

While a market is traditionally identified in terms of a product, which may be a good or a service (Miller and Meiners, 1986), the supply of that product requires a more or less unique set of resources. The ease by which a firm is able to differentiate into new markets depends on the degree to which there is an overlap between the necessary resources for the original and the new markets. Resources here include not only fixed capital but also, in particular, the skills and experience, at all levels of the organisation, which are relevant to the outputs of the different markets (Benes and Diepeveen, 1985; Fisher, 1986; Mukalula, 1996).

The degree of overlap between the resources of a firm and the requirements of different markets determines the organisational niche or the capacity of the firm to operate in different markets. Baum and Singh (1994) define organisational niches in terms of domain similarity or complementarity, which, in turn, determines the degrees of mutualism (symbiosis) and competitiveness

(commensalism) in the markets. These aspects therefore, measure the attractiveness of a niche to potential new entrants. The organisational niche, much more than the individual markets, determines the nature of the competitive environment of the firm (Baum and Singh, 1994).

To measure the potential competition in both product and resource markets, it is necessary to desegregate the industry into overlapping and non-overlapping niches. The firms that occupy an organisational niche compete in both the product and resource markets. Firms that occupy partially overlapping organisational niches compete for some resources and may have the capacity to produce the same output, but may also enhance the markets by their complementary resources (Baum and Singh, 1994). Organisations that occupy non-overlapping niches may affect either of the markets by complementary resources or products². One of the very important consequences of the complementarity and competition in a system of several overlapping markets is that even when individual markets have

² In general, organisations in two organisational niches (*i*) and (*j*) have a potential for competition that is directly proportional to the extent their niches overlap. This potential for competition is denoted by an organisational niche overlap weight W_{ij} , where $0 < W_{ij} < 1$. At one extreme, when W_{ij} is = 0, there is no potential for competition for either output or resources. At the other extreme, where $W_{ij} = 1$, the organisations occupy the same organisational niche, and there is implicit or explicit competition in either or both the product and resource markets (Baum and Singh, 1994).

The competitive market density (CMD) with overlapping organisational niches (*i*) at any time is given by:

$$CMD = N_{it} + \sum W_{it} N_{jt} \quad \text{where } i \neq j \quad (1)$$

where:

N_{it} = the number of organisational niche (*i*) at time (*t*),

N_{jt} = the number of organisations in organisational niche (*j*) at time (*t*), and

W_{it} = the organisational niche overlap market weight of organisational niche (*i*) with organisational niche (*j*).

unstable equilibrium, the system will have a stable equilibrium (Bilas, 1972).

If there is a stable equilibrium, it means that when producers are aware of the resources required in a particular organisational niche, they can, theoretically, assess the competition for products and resources at any time in that niche. This assessment will give a clear indication of their ability to compete effectively and survive in any such niche, and is therefore an essential part of any planning for diversification.

Strategy for the Firm

Having established the theoretical framework for diversification as a survival technique, it is now possible to look at the empirical implications for firms operating in the construction industry. Construction firms that are not differentiated operate in markets where they have little control over the demand for their output, and may therefore experience highly variable workloads over time. Industry-wide, the number of firms is so large, and the mix of demand and hence the required combination of production factors so diverse that there may not necessarily be a recognised optimum level or combination of output where the costs of production are at a minimum (Ofori, 1990). While this, in itself, represents a problem for the firm, the survival of the construction firm does not depend on cost alone. The firm needs at all times, not only to match its resources and capabilities to a workload that is uncertain and changing, but also to deal with changes in the demand for their output and competition for resources. This ability has been defined as survival "power".

The survival "power" can be identified as the ability of the firm to control its environment (Etzioni, 1988, Devine, 1979, Seldon and Pennance, 1965), or linked to the ability to grow in a constantly changing environment (Singh, 1971). Differentiation into new markets with the aim to occupy a suitable organisational niche is an effective strategy to achieve survival power. Knight and Morgan (1995) and

Bernhardt (1980) both stress the importance of a strategy for change, and the impact of such a strategy internally and externally. Particularly important aspects of this strategy are the organisational relations with competitors, suppliers, sub-contractors, public instrumentalities, workers, etc. Similarly, Schroeder, Gongden and Gopinath (1995) see the strategy as identifying, assessing and comparing the specific needs of techniques appropriate within specific market environments in order to operate efficiently in these markets. Oller and Giralt (1995) also point to the effects of changes in internal characteristics.

Diversification thus contributes to survival power, not only by changing the environment, but also by providing the organisation with the kind of focus and direction necessary for “managing” the uncertainties of competitive markets and sensitive environments.

When discussed at all, there appears to be an implicit assumption that building firms move effortlessly from one type of building to another. Briscoe (1988: 100), for instance, suggests that “In practice, a construction firm is likely to encounter all shades of competition, as it attempts to sell a wide range of products and services in a variety of different markets”. This implies that there are no constraints in the form of specialised resources or organisational skills. Either the requirements are not different in different markets or any required resources or skills can easily be obtained and effectively integrated into the firm without any cost disadvantage. If this is correct, contractors may move from one market to another without any problems and the idea of diversification as a special survival technique obviously would not apply in the construction industry in the same way as it does in other industries.

In order to establish if this is so, or if (i) there are identifiable markets with distinctly different resource requirements and market conditions, and (ii) if firms operating in different organisational niches see their market environment as being

different, we conducted a survey of 108 contractors operating in the Sydney area³ (90 respondents answering all questions = 83 per cent response rate). The respondents were selected at random from Cordell’s *Who’s Who Report for Builders*. The list represents the more advanced segments of the industry whose management would be expected to have an informed and rational approach to business strategy, hence the sample was considered to be adequate. The interviewee was the manager for small and medium sized firms and a person nominated by the manager for large firms. The interviews consisted of closed and open-ended questions to ensure that no aspect of the perception of different markets was left unexplored and lasted approximately 30 minutes.

There is no recognised system of classification of markets for building contractors. While Maisel (1953) used a classification of different sub-markets for residential building with different requirements to which builders had responded by developing firms with different structures and characteristics, the only generally accepted classification of building activity in Australia is that of the Australian Bureau of Statistics (ABS). ABS classifies buildings according to end-use only. This is not an ideal classification for the concept of markets based on the productive capacity and skills of the participating firms and their ability to produce different types of output. This classification means for instance that small school buildings (public non-residential) and small office buildings (private non-residential) - similar constructions in many respects - are classified into different classes, while small and high-rise office buildings are in the same class, despite requiring very

³ The ABS (1999) **Private Sector Construction Industry**, 1996 - 97, does not publish data on the number of firms operating in different localities, but there are some 15,000 general contractors operating in Australia, and approximately 20 per cent, or 3,000, of these could be expected to operate in the Sydney area.

different resources and techniques for their construction.

This means, however, that the concept of clearly identified markets in the building industry would be unfamiliar to our survey respondents. Hence, for the purpose of the survey, it was judged that it would be ambiguous to the respondents and probably result in equally ambiguous responses if we introduced a theoretically more satisfactory, but conceptually complex and foreign classification of markets in the questionnaire. A simple classification based on public/private sector clients, on the other hand, has the advantage of being well known, unambiguous and simple, and there would be no or minimal misunderstanding from the respondents. As the aim of the survey was to illustrate the applicability of theoretical principles and some consequences of these principles, it was decided to use the public/private sector client as a basis for the classification also of markets. Consequently, three separate markets: Residential, Public non-residential and Private non-residential, were identified. This can obviously be seen as only a rough approximation of an appropriate classification based on the capacity to produce, but it was assumed and certainly confirmed by the results, that even with this definition, clear evidence of differences between different segments of the industry could be obtained.

The survey collected a number of responses on the characteristics of the firm and the environment they were operating in. In particular, it required the respondents to classify 22 factors, divided into four sets relating to the project, external environment, internal factors and output, as important, of some importance or not important for the firm's operation in its current market.

The survey was carried out to test the theories with particular respect to the impacts of both external⁴ and internal

⁴ External environment factors such as type of competition, support from subcontractors, support

environment⁵, and complexity of project⁶ on the outputs⁷ to suit market demands as illustrated in figure 1.

The absolute importance of each factor was calculated and the differences tested for statistical significance (chi-square test). The pair-wise correlations between the relative importance of the different factors were also tested statistically.

Results

The use of the selected classification made it easy for the respondents to classify their activities in the form of markets, and 45 per cent of the respondents (40 firms) operated in one of the markets only, while 20 per cent (18 firms) operated in all three markets⁸.

The firms operating in each of the different markets had clearly different perceptions about the environment in their market, in terms of their perception of the importance of the different factors included in the questionnaire. They clearly differentiated between the types of skills and experience necessary to work in that market, as well as their relationships with the environment.

from suppliers, availability of materials, type of client.

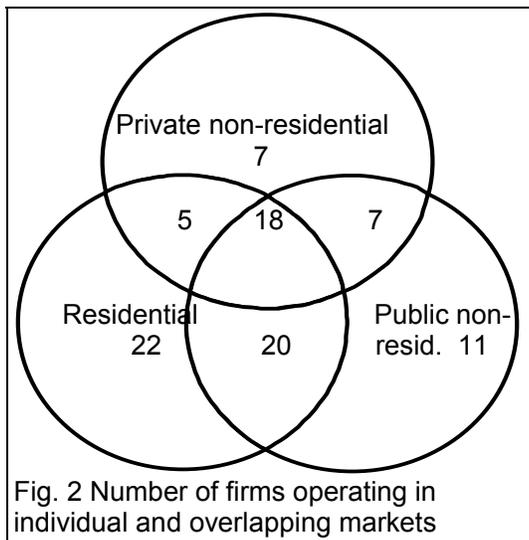
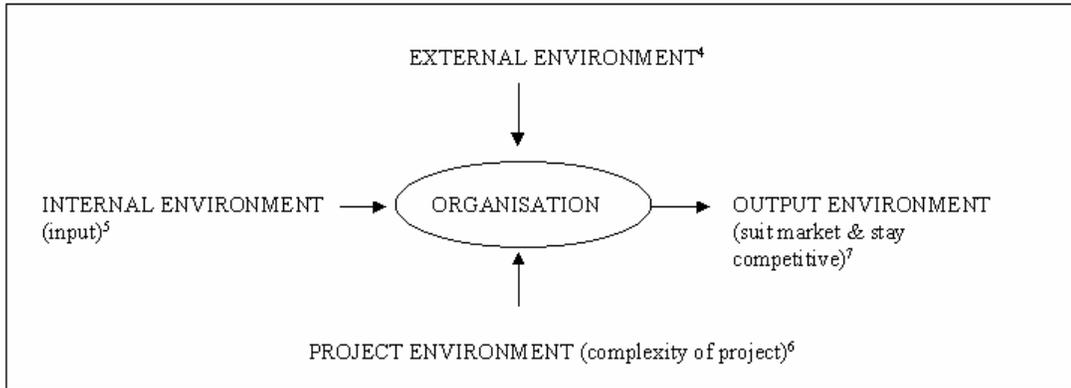
⁵ Internal organisational environment factors such as finance, site management structure, familiarity of project, communication, capacity, experience in geographical location, construction methods, plant and equipment requirement/management, product knowledge, manpower.

⁶ Complexity of projects factors such as location of projects, nature and size of projects, height of buildings, complexity of projects.

⁷ Outputs to suit the markets factors such as price (cost), buildability skills (quality) and contract period (time).

⁸ Since the aim of the survey was to establish the characteristics of the firms operating in the different markets, rather than the proportion of firms operating in each market, the sample was not tested for representativeness in this respect. Hence these proportions of the sample may not be representative for the population.

Figure 1: The 22 factors together characterised the environments.



The number of respondents from each organisational niche is given in figure 2. The Chi sq. test showed statistically significant differences (at the .05 level) between the three single markets.

The differences in ranking of importance of the 10 leading characteristics of the different markets are outlined below in Table 1. The pair-wise rank correlation tests were significant at the 0.01 level, which also indicates that the requirements for resources and skills are significantly different in the three markets.

Rank	Private non-residential	Public non-residential	Residential
1	Finance	Experience with	Finance
2	Complexity of Project	Location	Price
3	Workload	Price	Type of client
4	Support from	Workload	Complexity of Project
5	Subcontr.	Availability of Material	Size of Project
6	Size of Project	Finance	Support from
7	Type of Competition	Site Manag. Structure	Suppliers
8	Dist/Location of	Familiarity with Project	Support from
9	Project	Method of Construction	Subcont
10	Type of Client	Support from Suppliers	Method of
	Price	Size of Project	Construction.
	Method of		Communications
	Construction		Familiarity with
			Project

Table 1: Rank of importance given to the ten most important aspects of environment and project by contractors working in different markets.

For the firms operating in two or all three markets, the indicated importance and ranking were composites of the requirements in the individual markets, distinctly different in the different markets.

Discussion

The survey shows that the need for skills and resources were significantly different in the different markets, as were the ranking of their relative importance. The classification of firms in the industry into only three markets groups grouped together firms that are quite different in terms of size and output, but even in this aggregated form, there are clear differences between the skills and resources required in each segment. With a theoretically more valid classification, it is likely that these differences would have been even more significant. The results clearly indicate that contractors perceive very clear differences between different markets, across a broad range of aspects such as the skills, the relationships with other organisations and the structures of organisations that are required to operate in the different markets. Several respondents also volunteered opinions to that effect during the interviews.

The implication of this is that firms which use differentiation as a survival strategy - whether to grow, to reduce fluctuations in demand or to compensate for a secular decline in the home market - must move into markets where the organisational structure required, the skills and the relationships to external organisations are different in both relative and absolute terms. The results show for instance that firms operating in the public non-residential sector need to ensure that they have much greater access to finance, if they intend to expand into any other market. On the other hand, firms in the private non-residential market need to use price, rather than other competitive strategies, if they move into any of the other markets.

Rather than firms moving in and out of markets as a matter of course, as

suggested by Briscoe (1988), this study shows that different markets require different resources and skills. This indicates a need for strategic planning for new resources and new organisation requirements when firms intend to enter new markets. Differentiation is not a short-term response to a short-term problem, or a chance event. To be successful it is conditional on the building up of the desired resources and skills. This conclusion is strongly supported by the fact that, although demand had changed rapidly in all three markets in the years prior to the survey, a substantial proportion of firms had elected to operate in a single market, despite the obvious disadvantages of doing so in terms of fewer options and less market power.

The study has not revealed the exact process by which firms expand into new markets. It is, however, likely that the same strategy is required in the building industry as in other sectors of the economy. There, such moves are preceded by structural changes, designed to develop the new skills and relationships necessary in the new market environment. Moreover, any such move is preceded by an analysis, not only of the demand in the new market, but also of the competition for resources in the new organisational niche. While differentiation has obvious advantages, and a large proportion of the firms do use it, it is obvious that a number of firms do not engage in different markets, but prefer, for whatever reason, what they are familiar with.

It should be noted, that while the results show statistically significant differences between the different markets, the actual definitions of the different markets were based more on a perceived need to be unambiguous and clear to the survey respondents, than on strict theoretical considerations. It is quite possible; in fact quite likely; those more theoretically satisfactory definitions of relevant markets would have given even more clear-cut results. The original hypothesis and the conceptual framework are supported, but for practical applications, it would be

necessary to establish more discriminating definitions of the various markets. Such definitions would be based on considerations of resource use, size and skills, rather than end use of the output.

Conclusion

This study has shown that firms in the building industry perceive the structure and operation of different markets in the building industry as substantially different. If firms are to improve their market position by differentiating their output, they need therefore to adjust the way they operate, their resources and their skills base.

The survey result also showed that while the majority of firms do operate in two or more markets, a substantial proportion of all firms are not prepared to be involved in diversification but elect to operate in one market only, despite the obvious advantages of diversification. It would therefore seem likely that building firms are operating under similar restrictions as are firms in the rest of the economy, meaning that differentiation requires substantial changes in the way firms operate.

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