Strategic Groups: Evidence from Indian Industries

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Abstract

This paper investigates the formation of strategic groups in Cement, Automobile and Information Technology firms from emerging markets like India. Based on data of 140 firms during 2005-2010, firm's membership into different strategic groups is tested. Cluster analysis and one way ANOVA have been used to identify clusters and analyze statistically significant variables, which place a firm in one or other cluster. Except for the automobile industry, two clusters were formed in other industries. In the automobile industry, three clusters were formed. Different types of variables were responsible for cluster formation in different industries. This difference in significant variables is explained based on differences in industry growth rates and hence the demand- supply gap of products offered by firms belonging to different industries.

***Key words*:** Strategic groups, cluster analysis, India, cement, automobile, information technology

INTRODUCTION

Hunt (1972) was the pioneer of the concept of strategic groups. Since then, the strategic group concept has received utmost attention in strategic management. The term 'strategic group' represents a group of firms which are similar in many respects like cost structure, vertical integration, degree of product differentiation, control systems etc. (Hunt, 1972). Porter (1980) defined a strategic group as "a group of firms in an industry following the same or a similar strategy along the strategic dimensions".

(Cool and Schendel, 1987) defined strategic groups as "a set of firms competing within an industry on the basis of similar combinations of scope and resource commitments". Strategic groups enhanced clarities in industrial organization as firms now could be segmented within the industry and performance differences could be explained based on group membership. It was argued that performance differences between strategic groups existed because firms within one strategic group created mobility barriers for firms belonging to other strategic groups thus making inimitability of strategy rather difficult. Whereas one stream of research focuses on strategic group membership of the firm, another field of research investigates the stability of the strategic group and hence membership of the firm within one strategic group. In this respect

Oster (1982) was one of the pioneers to initiate the study. Her findings revealed that over a period of 8 years, group membership of firms in the consumer goods industry remained unchanged.

Companies need to have a clear perspective of how they are going to achieve competitive advantage. Similar firms have similar sources of competitive advantage. In this context, strategic groups provide meaningful information about the firms which follow similar strategies. This helps in analyzing competition, making strategies and studying the heterogeneity of the market. (Flavian and Polo, 1997). McNamara, Deephouse and Luce (2003) suggested that competition within a strategic group could be more as firms compete for similar consumer segments and similar kinds of resources. However, significance of resources in terms of critical success factors and competitive advantage could change with industry life cycle and industry growth rate. In this paper, the resource allocation strategy has been used to identify strategic groups in three industries, which are experiencing different growth rates. The three industries covered are the cement industry, the information technology industry and the automobile industry from one of the emerging markets i.e. India. Results of this study indicate that the resource allocation process as a source of competitive advantage is impacted by differences in the industry growth rates. Thus, even marketing, advertising, and research & development intensity may not always create a difference in strategic group membership of firms.

The paper proceeds as follows. First, literature on strategic groups is reviewed to analyze the strategic group concept in details. Next, the hypothesis is developed based on literature review and finally, analysis is carried out and this culminates into a discussion of results and the conclusion.

LITERATURE REVIEW AND HYPOTHESIS

A strategic group is a collection of firm, which are similar in certain strategic dimensions like vertical integration, or economies of scale. (Hunt, 1972). This concept was introduced by Hunt to identify the reasons for differential profitability of firms within the same industry. It provides an insight into different competitors' perspectives with respect to their approach to market place. (Harrigan, 1985). Empirically strategic groups are generated using techniques like cluster analysis. Scholars have investigated the presence of strategic groups in the home appliance industry (Hunt, 1972), chemical process industry (Newman, 1978), and consumer goods industry

(Porter, 1973). Organizational strategies adopted by firms in these industries have been investigated by virtue of the resource allocation process i.e. how much the firm invests in marketing, advertising, research and development.

Dess and Davis (1984) categorized firms into strategic groups based on Porter's generic strategies. However, in contrast to traditional studies which use secondary data to categorize firms into various clusters by their strategy, Dess and Davis conducted a primary survey to collect cognitive and perceptional information about the firm's strategy from CEOs of various firms. McNamara et. al (2003) found that performance differences existed between firms belonging to different strategic groups in the banking industry. Strategic groups were formulated on perception-based measures of managers where they categorized banks following similar strategies within the same group. Osborne Stubbart, and Ramaprasad (2001) analyzed letters sent to shareholders by top management to identify strategic groups based on mental models and firms' performance. Scholars have also used hierarchical linear modeling to identify differences in firms' performance across different strategic groups and they have found that strategic groups do differ in their performance. However, this may not always be true. For example, firms can follow any of the Porter's generic strategies to remain profitable. Thus, the cost leadership strategy and the differentiation strategy will render similar profitability to firms though firms following these strategies will fall under different strategic groups.

Lawless and Tegarden (1991) found that strategic groups helped in explaining performance differences amongst firms. Firms belonging to same strategic groups not only had similar strategies but were identical in their financial performance as well. Smith, Grimm, Walley and Young (1997) found that there was no difference in the competitive aggressiveness of firms belonging to different strategic groups. Rather, patterns of competitive behavior like frequency of competitive action and reaction were similar amongst firms belonging to same strategic group.

Marion (1998) confirmed the presence of strategic groups in the retail industry. He found that the metropolitan areas in the US that had depot stores had lower food prices compared to the areas in which supermarkets were absent. These depot stores (consisting of both warehouse and super warehouse stores) posed a major threat to traditional supermarkets in the US. Though depot stores were separate strategic groups from supermarkets, supermarkets were forced to

compete by lowering prices or raising the quality of their goods. In a way their findings are consistent with Smith et.al (1997)'s findings that membership to different strategic groups does not prevent firms from engaging in reactions to the moves of competitors who belong to different strategic groups.

Fiegenbaum and Tang (2001) found differences in strategic groups of firms in Insurance industry in terms of strategic maneuvering. Nair and Kotha (2001) analyzed the US steel industry to investigate if performance of steel firms differed by virtue of strategic group membership. Two groups were identified: one consisted of vertically integrated steel mills and that the other on mini steel mills. One way ANOVA reflected that these two groups differed in financial performance. Spencer Peyrefitte, & Churchman (2003) found that in in the healthcare industry, especially in hospitals, firms differed in their financial performance across strategic groups, where strategic groups were formed on the basis of competitive positioning strategies of firm.

In a study conducted on hi tech industries namely telecom and information technology in Japan, Europe and USA, strategic groups were formulated across three segments i.e. the size of the firm, the diversification strategy of the firm, and the firm's R&D intensity as well as patents filed by the firm. Then based on multi dimensional scaling, firms were placed into different strategic groups based on above-mentioned dimensions namely, size, diversification strategy and R&D intensity of the firm. However, strategic group formation was used not to test difference in performances but to analyze inter firm partnering strategies by these firms based on network density matrix (Duysters and Hagedoorn, 1995). Wiggins and Ruefli, (1995) tried to establish predictive validity of strategic groups without application of cluster analysis. However, their technique was based on two assumptions i.e. performance difference existed between groups and this difference remained stable over period of time. However, as demonstrated in the study of Nair and Kotha (2001) and Spencer Peyrefitte, & Churchman (2003) strategic groups may not differ in their financial performances and hence the assumption made by Wiggins and Ruefli (1995) may not always hold good.

We have seen that investigation of strategic group formation has been carried out in mainly two ways; a) using cognitive measures and analyzing competitive strategies and b) based on the resource allocation process like R&D intensity implying investment made by the firm in

research and development as ratio of total marketing intensity. Moreover, generally service industries like banks, insurance firms, retailers, hospitals have received greater attention than manufacturing firms. Nevertheless, pharmaceutical manufacturing companies have been investigated to some depth (Bierly and Chakrabarty, 1996; Cool and Schendel, 1987). Strategic group formation is an industry specific phenomenon and firms in all the industries would exhibit some form of group membership. Moreover, defining strategy through resource allocation and firms' performance measures would reflect quantifiable strategy formulation and implications rather than relying on perception based measures, which may or may not meet realities of the firm. Further, which resources are important determinants of group membership would also depend on the industry growth rate, for example, in a fast growing industry where demand is higher than supply, firms need not invest much in marketing as mere availability of the products is good enough for customers to buy the said products. With changes in industry life cycle, critical success factors in an industry also change and as a result, significance of resources changes. Thus over time, it is essential to see the competitive positioning of firms based on resource allocation, necessitating the investigation of strategic group formation in various industries based on resource allocation and firm's performance. Based on the arguments given above, we posit the hypotheses below in investigation of strategic groups in the three industries being investigated in this paper:

H1a: Strategic groups exist in the cement industry

H1b: Strategic groups exist in the information technology industry

H1c: Strategic groups exist in the automobile industry

RESEARCH METHODOLOGY

The target population constituted of firms from three industries in India viz. the cement, information technology, and automobile industries. Data was collected for five years i.e. from 2005-2010, from Prowess, a database of Indian companies' financial information.. Strategic group analysis was generally conducted with the help of cluster analysis. Cluster analysis can be carried in two ways: K-mean cluster analysis and Hierarchical cluster analysis. We used hierarchical cluster analysis to conduct the study. In this analysis, clusters are formed after running analysis unlike in K-mean cluster in which numbers of clusters are predetermined.

Operationalization of variables

Inventory turnover ratio: Inventory/Total Sales

Age of the firm: current year-year of inception of firm

Marketing Intensity: Total Marketing Expenditure/ Total Sales

R&D Intensity: Total research and Development expenditure/ Total Sales

Profitability: Natural log of total Profitability

Size of the firm: natural log of total assets

Leverage of the firm: Debt to equity ratio

RESULTS AND ANALYSIS

In the Indian information technology sector, strategic groups, using hierarchical clustering techniques, were formed on the basis of size of the firm, marketing intensity, R&D intensity and profitability of the firm. See table 1 for details.

Table 1
ANOVA Table (IT Industry)

Key variable	SS (Between groups)	DF	SS (within group)	DF	F-ratio	p-value
Inventory/sales	156600	1	146610	48	5.148	0.028
Lnage	106.58	1	3143.2	48	1.628	0.208
Marketing/ Sales	0.019	1	0.040	48	22.376	0.000
R&D/ Sales	0.013	1	0.097	48	6.491	0.014
Ln profits	1911602	1	23492343	48	3.906	0.054
Debt/Equity	3.377	1	29.664	48	5.464	0.024

Based on hierarchical clustering technique, two clusters emerged: one with large market size, marketing intensity, R&D intensity and high profitability and another one with small size, small marketing intensity, less R&D intensity and less profitability.

In the cement industry, two clusters also emerged but only two variables were responsible for segregation of clusters i.e. size of the firm and profitability of the firm. (See table 2 for details).

Table 2
ANOVA Table (Cement Industry

Key variable	SS (Between groups)	DF	SS(within group)	DF	F ratio	p-value
Inventory/sales	268.90	1	102.9	38	0.078	0.782
Lnage	30961	1	51027	38	124.384	0.000
Marketing/ Sales	0.204	1	0.209	38	0.021	0.885
R&D/ Sales	0.001	1	0.002	38	0.315	0.578
Ln profits	243.263	1	3118.9	38	2.964	0.093
Debt/Equity	3.522	1	864.153	38	0.155	0.696

Firms with large sizes and more profitability formed one cluster and firms with small sizes and less profitability formed another clusters. Thus, firms like Gujrat Ambuja, ultra techcement, and ACC cements were under one category (i.e. of high profitability and large size) whereas firms like Deccan cements, Namco cements, Binani cement etc. were under another category. Thus, variables like marketing and Research & Development intensity lost their significance. This could be because of the fact that the Indian cement industry is in the maturity stage and as a result, all firms are aggressively investing in marketing and research & development thus making them critical success factors rather than sources of competitive advantage.

In the automobile industry it was found that strategic groups were formed on the basis of R&D intensity and firms' size. See table 3 for details.

Table 3
ANOVA Table (Automobile Industry)

Key variable	SS (between groups)	DF	SS (within group)	DF	F ratio	p-value
Inventory/sales	13200	1	12640	52	3.148	0.128
Lnage	216.58	1	3013.2	52	1.018	0.225
Marketing/ Sales	0.035	1	0.241	52	2.146	0.124
R&D/ Sales	0.213	1	0.479	52	3.096	0.001
Ln profits	321602	1	301243	52	1.207	0.254
Debt/Equity	1.377	1	9.24	52	7.464	0.124
Lnassets	201828	1	3137832	52	3.00283	0.082

However, in the automobile industry, three clusters were formed unlike in the information technology and cement industries where we witnessed the formation of only two clusters. In the first cluster are the firms which have a low R&D intensity, smaller asset bases

and low profit margins. In the second strategic group are the firms which have an average asset base, average R&D intensity and average profitability and in the last segment are the firms with high asset base, high R&D intensity and high net profit margin.

Surprisingly top leading automobile companies of India i.e. Tata motors and Maruti Suzuki falls under different strategic group category with Tata motors having a higher asset base, more R&D investment and higher profit margin as compared to Maruti Suzuki which has an average asset base, average R&D and an average profit margin. Maruti, Hyundai, and Mahindra & Mahindra form same strategic group. TVS and Kinetic motors form a separate strategic group with low asset bases, R&D intensity and low net profit margins.

This variation in strategic group formation can be explained with the help of differences in the growth rates of industries considered so far. The information technology industry in India is growing at a very fast rate and therefore, the demand supply gap in information technology industry is high i.e. demand is more than supply. Thus, not all firms invest aggressively into marketing and R&D, hence these variables becomes a differentiating factor for firms in this industry. The growth rate of the automobile industry is relatively low and this industry is somewhere between growth and maturity stage, hence marketing has become a critical success factor, and all firms invest aggressively in marketing. Thus, marketing no longer provides unique advantage of any firm. But firms still do differ in their R&D competencies; hence groups are still formed on the basis of R&D intensity. On the similar lines we can explain insignificance of marketing and R&D intensity in case of cement industry, as the industry is already in maturing and declining stage. Thus, neither of the resources i.e. marketing or research and development provides any distinctiveness to companies in this industry.

CONCLUSION

In this paper, emergence of strategic groups based on resource allocation strategy has been studied. In the information technology and cement industries, we saw an emergence of two strategic groups whereas the automobile industry witnessed the presence of three strategic groups. Different resources differentiated firms in different industries based on their industry growth rate. Significance of the industry growth rate was not analyzed earlier in terms of focus of firm on its resource allocation with respect to strategic group study. Moreover, studies from emerging markets like India was lacking earlier.

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