CHAPTER III

REVIEW OF LITERATURE

The present chapter attempts to review the available literature on Indian automobile industry and structure-conduct-performance paradigm in some of the major Western industries as well as Indian industries with the aim to get deep insight into various aspects and identify the key research gaps. The chapter is divided into three segments, the first related to Indian automobile industry, second related to SCP Paradigm into foreign industries and finally third one related to SCP paradigm into Indian industries.

3.1 LITERATURE RELATED TO INDIAN AUTOMOBILE INDUSTRY

To achieve competitive edge in any sector it is imperative to focus investment in technology. Rao (1993) gave emphasis on technology in the following words:

“Indian industry needs to focus on technology and support it with sufficient and efficient allocation of investment if it is to achieve a competitive edge”

The study analyzed the different structural and strategic aspects of Indian automobile industry from 1974 to 1990 and included 13 four-wheeler automobile firms. Out of thirteen firms, seven were established one and remaining six were new entrants. The study observed that the established seven firms displayed a measure of diversity in their product portfolios. Some firms derived their revenue from sale of single product, whereas, others from multiple products. For example TELCO (Tata Engineering and Locomotive Company Limited) is involved in the production of MCV (Medium Commercial Vehicle), EME (Earth Moving Equipment) and LCV (Light Commercial Vehicle). Similarity, the different firms also displayed diversity in their profile of manufacturing facilities. For example some firms have the facilities like forging, casting, forming, and machine tool building to supplement the core machining and assembly facilities. Rao used investment in technological assets and skills as a strategic behaviour. The study tried to verify the relationship between the size (measured in sales turnover) and investment (Expenditure on R & D) and found a statistically significant relationship between the two.
Siddharthan (1998) tried to find out the differential behaviour of Japanese affiliates firms in India. The study proceeds on the basis of an analysis of Automobile firms in India over the period 1987-88 to 1989-90. The study found that even within the multinationals, Japanese affiliates differ from those of Western Countries. He observed a significant difference between Japanese multinationals in India and unaffiliated Indian firms as well. The study further tried to found the reason of variation of Japanese firms over non-Japanese firms. The study found that this variation is due to the differences in the management techniques that the Japanese firms adopt over the other multinationals and unaffiliated Indian firms.

Basant (2000) explored the changes in some key corporate strategies in response to economic reforms introduced in India since 1991. The study pointed out significant changes with respect to merger and acquisition activities of multinationals, foreign technology purchase, R & D and manufacturing capabilities. The study suggests that to improve manufacturing capability especially quality up-gradation through building alliances. The study also argues that the policy initiatives will need to persuade investment in R&D. The MNCs have cost of capital advantage which dampen domestic firms. Hence, the initiatives should be taken so that the Indian corporate sector especially automobile industry be able to benefit from the strategic action taken in the form of recent economic liberalization.

George et al. (2000) to study the evolution of the competitive structure of the two wheeler industry in India, employed Kendhall’s Index of rank-concordance and the Evnas-Karras test of convergence. They also calculated Herfindhal index over a period of 10 years for both the two wheeler as a whole and for each of the segments (motorcycles, scooters and mopeds). They found that the Indian two-wheeler industry continues to be oligopolistic in the post-reforms period even though the degree of concentration has declined. They observed that on an average the HHI has varied between 0.20 and 0.25 for the two wheeler industry which implies that the two wheeler industry has turned into an oligopolistic industry where product differentiation is a decisive variable. At the level of individual segments, the oligopolistic forces are more pronounced both in the pre-reform (1998-90) and post reform (1991-99) periods, with the index varying on an average between 0.3 and 0.7. The results for Kendhall’s Rank
concordance test suggest that a few of the firms in the industry exercise undue influence in the market, it is due to the structure of competition in the market which has led larger firms to succeed in consolidating capacities while smaller firms have remained less-dominant and the results of the Evans-Karras convergence test suggest that in the scooter and motor cycle segments, inter brand transmittal of information through promotion, product development, pricing etc. is likely to be effective in influencing the growth rates of other firm in these industries.

Das and Das (2011) tried to examine whether Indian automobile industry is competitive or not by using 19 years firm level panel data from 1990 to 2008. The study employs Vector Auto Regression (VAR) and Panel Regression. The study also examined the impact of industrial performance and market structure on research and development. The study found that Indian automobile industry is highly competitive and it is oligopolistic in nature. The study observed that the concentration ratio, gross fixed asset, cost margin and profit margin of the last year are significant determinant of R&D and R&D is affected by market structure (concentration ratio). Finally, the study found Schumpeterian inverted U relationship between research and development intensity and market concentration in Indian automobile industry.

Ray (2012) tried to examine the economic performance of Indian automobile industry in terms of capacity utilization. The study estimated rate of capacity utilization at aggregate level and also analyzed its trend during the post liberalization period, 1991-92 to 2005-06. The study further added the different factors affecting the capacity utilization in Indian automobile industry. The study found that capacity utilization improved after the path breaking economic reforms at the rate of 5 per cent per annum. The study also observed that the capacity grows more rapidly than output. The study also identified several factors that affect capacity utilization like export intensity, import penetration ratio and market share. The study observed that coefficient of export intensity and import penetration ratio are negative which indicate that capacity utilization was relatively lower in firms belonging to industry characterized by high export-intensity and import penetration. The study found the relationship between size and capacity utilization and similarly between market share and capacity utilization.
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The study suggests that the gradual delicensing of automobile sector after path breaking economic reforms after 1991 accompanied by growing demand of automobile vehicles among middle income group people of the country might have encouraged the entrepreneurs to invest more and expand their plant capacity.

3.2 LITERATURE RELATED TO SCP PARADIGM INTO FOREIGN INDUSTRIES

Bain (1954) tried to examine the relationship among economies of scale, concentration and entry by using data of twenty American manufacturing industries. He found that the economies of large plants frequently erect formidable barriers to entry in the shape of absolute capital requirements. However, the study concludes that such barriers are not clearly correlated with percentage of the market supplied by a single plant, that is why, a relatively independent effect on entry is observed. The author also observed that in half of cases in which definite estimates were received, such economies were felt to be negligible or absent, whereas in most of the remainder of cases, there seemed slight or small effect of economies of scale on concentration. The study finally concluded that the size of the plant or firm has strictly affected the cost of production and distribution and thereby has effect on entry barrier and on concentration.

Camanor and Wilson (1967) examined the effect of market structure- seller concentration, economies of scale, absolute capital requirements; rate of growth of demand, advertising-sales ratio and composite variables representing technical entry barrier, etc. on profit of the 41 industries including the durable and non-durable consumer goods producing industry from 1947 to 1957. To obtain some concrete results the study employed simple correlation, multiple regression analysis. Besides these they also checked the multicolinearity and hetrocedasticity problems. They found that for industries where products were differentiable, investment in advertising was a highly profitable activity. Industries with high advertising outlays earn, on average, at a profit rate which exceeds that of other industries by four percentage points. They also noted the significant joint impact on profit rates of concentration and the entry barriers created by scale economies and high capital requirements.
Gupta (1983) applied two and three stage least square method instead of single equation model. The author contrasted the results of single equation model and 2SLS and 3SLS model. The study found following results:

(a) The positive effect of R&D intensity on concentration observed in the OLS results tends to vanish in the simultaneous equation results, suggesting that R&D and scale economies do not constitute as entry barriers, important enough to influence concentration.

(b) Concentration appears to exert a negative effect on advertising intensity in the OLS results, but this effect turns out to be positive in simultaneous equation results.

(c) The effect of concentration on price-cost margin found in the OLS estimation gets lost in the 2SLS and 3SLS estimation, which suggested to withdraw empirical support from the traditional concentration-profitability hypothesis.

(d) The study further observed that the OLS results hold up prevalent view i.e. advertising is more helpful in consumer goods than in producer goods. However, in case of simultaneous equation this view is not supported.

Patalinghug (1983) attempted to analyze the degree of concentration in specific Philippine industries, namely, food, home appliance and textile during 1978. The study has found that these three industries are highly concentrated. Since, highly concentrated industries were linked with undesirable market conduct and performance (e.g. higher price-cost margins, less output, high rates of profit, absence of technological innovation, etc.). They further suggested that policy planners would have to take a serious look at both the direction of industrial growth and structure of industries now and in the future.

Smirlock et al. (1984) analysed the structure performance hypothesis by using OLS regression. They measured the firm’s profitability with the help of Tobin’s q which is the firm’s market value divided by replacement costs of its assets. They used concentration, entry barrier and growth rates as traditional SCP hypothesis and firm’s market share was used as proxy variable for relative efficiency. The results of this analysis strongly supported the efficient structure hypothesis.
Collins and Peterson (1986) studied the relationship among the average industry price-cost margin and degree of concentration by employing structural variables like concentration, capital-output ratio, and geographical dispersion of manufacturing facilities. All of the above structural variables statistically explained 80 percent of the variations in the price-cost margin among the 32 food manufacturing industries and concentration alone accounted for nearly 50 percent of the variations.

Chang and Choi (1988) find out different reasons of diversification of Korean manufacturing industry, for this they took sample of top 30 manufacturing industries which covered about 40.7 per cent of the total value of shipments over the period of 1975 to 1984. Besides, this they also evaluated the different factors like three-firm concentration (CR3), advertising intensity (AD), total assets (TA), average rate of growth of sales (GR) and diversification index (DI) which affected the profitability of the firms. They categorised the 30 industries into three parts: type-I, four largest business groups have all the characteristics of a conglomerate and multidivisional fall. In next type-II, twenty largest business groups fall and in type-III six smaller business groups consist, which do not have multidivisional structure. The study used three kinds of dummies D1, D2, and D3 respectively for above mentioned types. Further, the authors used two measures of profit i.e. average annual rate of profit after taxes on owner’s equity (PE) and average annual rate of profit after tax but before interest on total assets (PA). While using PE as the measure of profit, they found that all variables except CR3, GR and DI come out significant at 5 per cent level. Whereas, when PA was used as profit, AD (advertising intensity) and TA (total assets) became significant. Besides, these factors they don’t denied that the other factors also affected profit, such as political or personal connection between large business groups and the makers of government policy.

Bernstein (1989) estimated the effect of inter-industry R&D spill overs on the production cost of nine major Canadian industries from 1963-1983. Thus, one can say that the study tried to test the hypothesis of “Swarm like clusters” given by Schumpeter. He found that production cost in all nine industries was influenced by at least two different source industries. The major spill over sources was non-electrical machinery, rubber and plastics, petroleum products and chemical products. He also estimated social
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and private rate of return of R&D. The study concluded that social rate of return ranged from four times the private rate for non-electrical machinery to three times the private rate for electrical products to twice the private rate for the other two industries.

Eveley and Little (1960) tried to gauge into British Industry. They found that there was a strong correlation between concentration and the size of the units. Industry concentration and average size of plant were positively correlated whereas the concentration was negatively correlated with the number of units in the industry i.e. when the concentration increases, the number of units in the industry decreases. Shepherd (1966) noticed that there had been a broad upward movement in the extent of concentration in British industries during 1950s. The author also notices that growth and changing concentration was inversely associated. So, one cannot rely on faster future growth to reserve the upward trend in concentration. Shepherd (1972) tried to measure market structure and profitability of large United States firms during 1960-1969. The study develops and tests models of market structure, based on the profitability of firm and representing a variety of hypotheses. The findings of the study conflict with the hypothesis that size affects profits positively. Study observed that assets size confirm a negative association with profitability, in all cases and often at the 0.95 confidence level. The study found the Advertising robustly and positively related to profitability in all of the general panels, with coefficients centering on 0.22. While the growth variable shows a strong positive association with profitability, with coefficient of 0.90. Shepherd observed relatively small role of entry barriers in market structure of large United States firms during the study period.

Hurdle et al. (1989) evaluated the airlines market by using structure and performance relationship. To examine the relationship among fares and structure, 867 non-cities were selected for the period of 1985. For structural variable they used potential entrants or LPEs. For this they used regression analysis. The study found that the threat of entry varies considerably depending upon the characteristics of individual city pairs and the characteristics determine the extent to which economies of scale or scope pose a significant entry deterrent. The authors found that airline markets do not satisfy the theoretical conditions for perfect contestability and theory does not significantly affect performance.
Kraft (1989) utilized data from the 57 West German metal-working firms for the year 1979. In most of studies R & D expenditure and patent statistics were used as proxy variable for innovation. But Kraft measured innovation activity in terms of percentage of sales, which can be attributed to products newly developed during the last five years. Thus, by doing this, the author not only included the number of new products but also their success in the market. Besides, these variables the author also tests the Schumpeterian hypothesis that barriers to entry and innovation are positively related. The study tested the above mentioned hypothesis by employing both single equation and instrumental variable models and neutralized the problem of heteroscedasticity by weighted least squares (WLS).

George (1975) examined the association between the level of concentration and the plant number and the plant size. The plant size is the ratio of the average number of employees per establishment in the largest three firms divided by the average in the rest. It was found that there was a closer association between concentration and plant size ratio in the post 1958 period. Viaene and Gellynck (1995) employed the traditional industrial organization approach; structure, conduct and performance (SCP), to analyse the performance of European food, drink and tobacco (FDT) industry. Statistical data and interviews with experts were the main information sources for this analysis. The structure of the FDT industry was characterised by increasing concentration, largely determined by growing concentration in the retail sector and greater consumer demand for variety and quality. The study observed that competitive conduct in the FDT industry involves both horizontal and geographic diversification, brought about through mergers and acquisitions. The overall performance in the FDT industry was inadequate.

Aswicahyono and Hill (1996) attempted to capture the impact of liberalization on industrial structure using data that covers a cross section of firms belonging to various industries in Indonesia. Their study focuses on variables such as concentration, ownership, size distribution, spatial distribution and total factor productivity growth, and their results suggest that liberalization does not have major impact on the industrial structure. The study admitted the inability of their study to capture the effects of liberalization to inter-sectoral differences within the industrial sector in Indonesia and the short period of time taken under examination.
Davies and Downward (1996) sought to test the general applicability of the structure, conduct and performance (SCP) approach in tourism via the vehicle of the U.K hotel industry. The Schmalensce approach of generating ‘stylised facts’ was adopted by using pooled data on profits, turnover, market share, concentration and unemployment for 65 hotel companies over a five year period, 1989-93. It was felt that the applicability of the approach had been demonstrated and that the SCP variables were significant and the relationship between them was dynamic. The U.K hotel industry was seen to be highly competitive. It was found that profitability in many companies was affected by firm-specific effects.

Bikker and Haaf (2002) examined competitive conditions and market structure in the banking industry of as many as 23 industrialized countries inside and outside Europe over approximately 10 years. The study measured Competition by using the Panzar–Rosse model. The result of the H statistic provides strong evidence that the banking markets in the industrial world are characterized by monopolistic competition, but perfect competition cannot be ruled out in some cases. To differentiate competitive behaviour on local, national and international markets, for each country, three subsamples are taken: small or local banks, medium-sized banks and large or international banks. The study observed that competition is stronger among large banks – operating predominantly in international markets – and weaker among small banks – operating mainly in local markets – while medium sized banks take an intermediate position. In some countries, perfect competition has been found among large banks. For a number of countries, estimates of the H statistic over time indicate a significant increase in competition. Competition seems to be somewhat stronger in Europe than in countries like the US, Canada and Japan. Afterwards the study tried to test a relationship for the impact of the market structure on competition. The results provided support for the conventional view that concentration impairs competitiveness. The study found that a few large (cartel) banks can hamper competition and that a large amount of fringe competitors was unable to stimulate competition.

obtained balance-sheet data of about 450 industries and analysed to get information for sales, assets, income, advertising and R & D intensity. The study supports some aspects of traditional S-C-P paradigm, but challenges others. The study finds that only coefficient of lagged R & D, is statistically significant and positive in the structure (concentration) equation. This positive coefficient means industries with higher level of past R & D spending lead to higher concentration. In the conduct (advertising) equation, they observed negative or inverse relationship between advertising and concentration. Whereas, in performance (profit-margin) equation, the HHI Index and profit-margin showed positive relation for the period of 1982 and 1987. In 1992 both variables (HHI and profit-margin) were found to be negatively correlated. Finally the study suggests that 2SLS is relatively more useful for analyzing the relationship between structure, conduct and performance.

Resende (2007) estimated the system of simultaneous equations by means of three stage least squares (3SLS). The author formed four equations namely Concentration Equation (CONC), Advertising Equation (ADV), Research and Development (R&D) and Profitability equation (PROF), which were treated as endogenous. In order to control the sectoral heterogeneity, sectoral dummy variables were constructed at the 3-digits level and were included in each equation with potentially different coefficient. Resende obtained following results:

In the concentration equation the minimum efficient scale (MES) exerts the expected positive effect on concentration.

In the advertising equation the so-called inverted-U relationship appears to be supported in terms of positive significant coefficient for CONC (concentration equation).

In the profitability equation, a significant positive impact of concentration on profitability was observed.

Liebenberg and Kamerschen (2008) analysed the South African auto insurance market through the application of structure-conduct-performance paradigm. They observed that the market share of the leading firms has fluctuated between 18 percent and 31 percent and averaged 22.3 percent, the four-firm concentration ratio averaged
57.3 percent and the HHI was always below 2000, averaging 952.5 over the entire 21 year period from 1980-2000. The empirical evidence shows that a link between market structure and market conduct, performance or power was not present. Prices and profits were not statistically significant, were not related to various sellers’ concentration measure and do not follow any explicit trend over time.

Deng and Alyson (2010) by using market level data on quantities, prices and automobile characteristics from 1995-2001, analyzed the Chinese automobile industry under imperfect competition. For this they constructed two models, demand side and supply side. On the demand side, they apply a nested multi-nominal logit model to the national market share data in order to ascertain the demand features of china’s automobile market and on the supply side; they assume Bertrand behaviour to uncover the mark-upset by automobile manufactures. Their empirical results suggest that some large automobile manufactures set high mark-up, indicating the strong market power in china’s automobile market. However, in the 1990s their mark-ups started declining which imply a reduction in market control by the major producers. This decline is due to the removal of protection provided by government. The domestic industry faced competition and experienced as decline in their dominance in the Chinese automobile industry.

Bosena et al. (2011) analysed the Ethopian cotton market by using structure-conduct-performance paradigm. They found that market concentration ratio (CR4) at district level was 49.76 percent, which was indication of a strongly oligopolistic industry, according to rule of thumb of (Kohls and Uhl, 1985). During survey, they found that capital acts as entry barriers to cotton trading and about 96 percent of assemblers identified capital as the entry barrier to cotton trading. During the study, all of the farmers identified price as the major determining factor that affect their decision as to; whom to sell their seed cotton. This is an indication of competitive pricing system, which in turn indicates the deviation of cotton market from the norm of competitive market.

Ding et al. (2011) analyzed the problem including the market structure, conduct and performance in China’s automobile industry. They observed that the market
concentration of the rank of top 4 and top 8 enterprises was increasing continuously. According to the classification about the type of industrial monopoly and competition by Bain, the market concentration rate of China’s automobile industry reached 82.2 per cent in 2008, which belongs to medium oligopoly type industry and they also observed that the investment in advertisement increasing over the years, which shows that there is excessive competition in china’s automobile industry. They categorized the factors into two parts (i.e. policy factor and market factor) which affected the automobile market:

- **Policy Factors**- to strengthen the examination and approval of investment, strict industry entry with the purpose of improving industry concentration rate and support several large groups to improve competence.

- **Market Factors**- integration and re-organisation of automobile industry.

Thong (2012) has studied competitive structure and factors affecting business performance of Vietnam state-owned commercial banks from 2002 to 2010. The study realized following results:

(i) Deposit share tends to go against the expectation. In other words, when the deposit shares held by state owned commercial bank reduces their return on equity (ROE) tend to inch up.

(ii) Analysis shows that increases in the lending to deposit ratio make ROE decrease.

(iii) Higher the net non-interest margin ratio, the higher the ROE.

(iv) Increases in the average interest rate gap make the ROE fall.

Darsil and Kasumastuti (2013) determined the relationship between the structure, conduct and performance of food processing industry from 1996 to 2009. The authors employ simultaneous equation model, consisting of fine structural equations. The estimation of first model shows that profit significantly and positively affect market concentration (HHI). According to second model, changes in the number of companies in the industry are affected by market concentration (HHI) and profit. Because higher concentration leads to higher profit, which attract other companies to enter the industry that had resulted in an increase in the number of firms in the industry. In the third
model, ratio of capital to labour is used as proxy for market behaviour. The results suggest that the ratio of capital to labour affected by concentration and level of real wages whereas the fourth model that the more concentrated the market structure is the more efficient is a company in running its business. Due to this higher concentration leads to lower the prices.

Dogan (2013) investigated the effect of firm size on profitability. For this the study used the data of 200 companies which were active in Istanbul during the years 2008-2011. The study used Return on Assets (ROA) as an indicator of profitability and total assets, total sales and number of employees as indicators of size. To avoid the problem of multicollinearity among size variables like total assets, total sales and number of employees the study constructed three Multiple Regression model. In each model only one indicator of size used, in model one total assets used similarly in model two and three total sales and number of employee used respectively. When study examine model first, independent variables of SIZE_TA, LEV, LIQ and AGE are observed to influence firms’ profitability (ROA). A positive relation has been found between total assets (SIZE_TA) and profitability (ROA) of the firms. In other words profitability increases as total assets of the firm increase. A negative relation between leverage ratio (LEV) and firm age (AGE), and ROA but a positive relation between liquidity ratio (LIQ) and ROA have been found. When model two and three analyzed they too found a positive relation between total sales and ROA, number of employees and ROA. However, Control variables as the age of the firms and leverage rate have been found in a negative relation with ROA.

Nabieu (2013) examined the effect of structure and conduct on the profitability of commercial banks in Ghana from 2007-2012. The study used two different measures of concentration to represent market structure i.e total assets and total annual turnovers. The market performance measured by return on assets (ROA) and return of Equity (ROE). The study found that market concentration and market share significantly determine profitability which shows the strong acceptance of the SCP hypothesis in Ghana banking industry. With the exception of CAPASS capital to asset ratio of commercial banks and IC-GLA (Impaired Charge- G Loans and Advances) which reflected a negative or inverse relationship to bank performance.
Setiwan et al. (2013) to investigate the simultaneous relationship among industrial concentration, technical efficiency, price rigidity and price-cost margin in the Indonesian food and beverages industry. Their model of SCP is different from conventional Industrial Organization (IO) model because Setiwan et al. extended the SCP Framework by including price rigidity and technical efficiency in the model. They found that there was a simultaneous relationship among industrial concentration, technical efficiency, price rigidity and price-cost margin with a positive bi-directional association between industrial concentration and price-cost margin. The study suggests that to achieve more competitive environment in the food industry the government can reduce concentration ratio by reducing higher price flexibility.

3.3 LITERATURE RELATED TO SCP PARADIGM INTO INDIAN INDUSTRIES

Gupta (1981) classified 62 Indian industries into thirteen different market types, according to the strength of their monopoly power in various industries was significant and positively correlated with profit margin (profit as a percent of total cost of inputs) and efficiency (value added as percent to total cost of inputs) was significantly and negatively correlated with the extent of idle capacity and price rise.

Gupta (1985) made an attempt to find out the relationship of profit margin with different market structure variables: concentration ratio, size ratio, scale economics and capital requirement entry barrier. The first variable out of other variables was found to be important determinant of profit-margin. On the whole all selected variables explained approximately half of the variation in profit margin, extending support to the hypothesis of structure-performance relationship.

Saikia (1997) analysed the 31 industries from the Indian manufacturing sector. The data for these industries were collected from CMIE for the period of 1989-93. The author estimated entry to industry as a function of past profit rate, sunk cost, product differentiation proxies by intensity of advertising, industry size, concentration, growth and risk. By employing two stage least square technique and Probit model. The study found that market size and growth of the firms were statistically significant. The study verifies that factors like profit, industry size and market growth attract entrants while entry is deterred in a concentrated and machine intensive industry.
Narayanan (2001) has attempted to compare the differences in the conduct and performance of Indian automobile firms operating under two different policy regimes (Pre and post Liberalisation). The analysis covers firms manufacturing/assembling cars, other four-wheeled utility vehicles, light, medium and heavy commercial vehicles. The author employs step-wise discriminant analysis to identify the discriminants in the behaviour of firms across the two policy regimes. The results of the statistical exercise confirmed that firms operating under different policy environments behave differently. Much of this difference in the behaviour of firms is with respect to variables representing technology acquisition and performance. Imports of capital goods, which were the preferred mode of effecting technology transfer during the first period, actually declined during the second period. The differential behaviour of firms with respect to the performance indicators was found to be in terms of their ability to achieve higher exports during the second in contrast to the first period. This difference in the ability of firms to be more export oriented was due not only to the trade liberalization measures and exchange rate de-control introduced by the Government of India during the 1990s, but also to the technological paradigm shifts that they could accomplish through intra-firm transfers. Firms in the regulated regime preferred to buy most of the parts and components from the market, during the post liberalization period, firms opted to produce most of them in-house. A move towards achieving economies of scale and efficient utilisation of the additional capacity during the second period also made the firms differ across the two policy regimes. The insistence of firms on non-price competition through higher advertisement outlays in a more liberal economy also makes yet another difference between the liberalisation and controlled regimes.

Athreye and Kapur (2005) had done a study on Industrial concentration on liberalizing economy by calculating CR4 (four firm concentration ratio). The size structure relationship states that if the size of the market is large relative to set-up costs, a large number of firms may exhibit profitability and thus decrease the level of concentration. They studied Suttons’ argument that the size structure relationship is not always true in those industries in which advertising and expenditure play an important role. The study studied equilibrium levels of concentration among eleven industry groups using data from 1970 to 1999. The authors developed the basic framework of
how the Industrial concentration may depend on factors like marketing and R&D expenditure. They hypothesized that that these variables may become more significant in explaining the changes in the market concentration after liberalization.

Nag et al. (2007) made an attempt to understand the dynamics of Indian automobile sector in comparison with the same sector in the other selected Asian countries by using structure, conduct, performance (SCP) paradigm analysis. The study found that the success of automobile sector in each these countries depend on the government’s effective support on the development of the domestic system supplies with large foreign players in this sector and government need to create proper investment environment, incentives for R&D and strong patent regime.

Bansal and Mathur (2009) tried to measure the effect of set-up cost, marketing expenditure and R & D expenditure on concentration ratios of Indian automobile, pharmaceutical, machine tools, inorganic chemical and cement industry from 1989 to 2009. The study used Herfindahl index for measuring industrial concentration ratio in above mention five major Indian manufacturing industries. The authors used the pre-liberalized and post-liberalized period exhibit the change in industrial concentration. The study found that marketing and technology expenditure brought more effect in automobile and pharmaceutical industry, study also reveals that R & D expenditure and marketing expenditure prove major factors of determining the variation in the industrial concentration in the post-liberalization era as compared to the pre-liberalized era. Thus, the decreased value of Herfindahl index suggests that in these industries liberalization increased extent of competition.

Bhandari (2010) took an attempt to measure effect of concentration and different entry barriers like advertising intensity, R & D intensity and minimum efficient scale (MES) on profitability of 37 Indian industries. The author extract company level data on several economic variables from Prowess database from one a half decade (1993-2005). They considered two alternative measures of concentration; first one is four-firm concentration and second is Herfindahl index. The author employed standard regression technique in a step by step fashion. The study did not regressed all above variables on profitability rather brought those variables one by one and examine at each stage and
check whether regression result improves in terms of value of R-square. The study further fitted random effect (RE) and fixed effect (FE) model at each stage regression result; and used the Hausman test to arrive at the appropriate model for estimating the parameters of regression result. The result suggested that market structure variable like industry concentration has a significant positively effect on industry profitability. On the other hand the entry barrier variables like advertisement intensity, minimum efficient scale, R & D intensity, and degree of vertical integration have also affected profitability significantly with theoretically proper signs.

Srinivvas and Kumar (2010) conceptualised a model on the basis of Bain’s SCP paradigm. The authors tested the direct and indirect effect (mediated through the conduct variables) of market structure on profitability. The results indicate that direct and total effects of industry structure on firm’s profitability were positive and significant while the indirect effect insignificant. It was observed that in the presence of entry barriers, industry concentration has no significant effect on firm’s profitability.

Sahoo and Mishra (2012) evaluated the structure-conduct-performance relationship in Indian banking sector. The study observed that there have been changes in the market structure of Indian banking sector, conducts of the banks and their performance in the post-reforms era. The employed panel dataset of 59 banks during 1999-2000 to 2008-09 and applying the two stage least square (2SLS) method of estimation. The authors found that market share of bank depends directly on its market size, asset base, selling efforts and past financial performance; its selling efforts vary directly with market share, asset base and past financial performance.

It is evident from studies reviewed above that studies related to application of SCP paradigm in Indian automobile industry are very scanty and there have been no comprehensive attempt made to empirically examine the effect of market structure on market performance and effect of market conduct on market performance in Indian automobile industry. Therefore, the present study is an attempt to examine structure, conduct and performance interrelationship in Indian automobile industry.