CHAPTER – 4

REVIEW OF LITERATURE

4.1 Introduction

4.2 Studies of Indian origin

4.3 International studies

4.4 A Study on E-Commerce strategy in the automotive industry of the car maker - Renault

4.5 A Study on Evaluating Toyota’s Opportunities and Threats of Social Media

4.6 A Study conducted by J.D.Power and Associates’ Asia on Consumer satisfaction Index
CHAPTER – 4

REVIEW OF LITERATURE

4.1 Introduction

The E-Commerce literature is of recent origin. The domain of E-Commerce is challenging, owing to its recent origin and due to lack of well established theoretical axioms. Though there is a great deal of development in the Automobile industry Automation, especially in India, the existing literature is not matching with the speed of advancement. Upon the review of the extant literature on E-Commerce it was found there exists gaps in the domain of E-Commerce. As could be aptly quoted: Roger (2000) said: “there is a need to build a firm foundation in order to achieve a higher degree of relevance, subject to the constraint of sufficient degree of rigor”. The domain of E-Commerce is substantially influenced by the high volatility of phenomena and advancement in the technological front. A review of the existing literature is depicted in the ensuing pages:

4.2 Studies of Indian origin

Hazari (2000) in his article, has observed two generations of the World Wide Web. His article identifies the three ‘C’s of first generation E-Commerce: Content, Community and Commerce and the evolution of these 3 ‘C’s into 7 ‘C’s of second generation E-Commerce: Content, Community, Commerce, Communication, Connectivity, Collaboration and Customization. These features enable automated processes like procurement and extending these processes with consumer and business partners.

Samir and Dubelaar (2000) in their study on E-Commerce concepts, in the light of B2B transaction, have examined and formulated four propositions regarding the impact of E-Commerce on business performance. They develop a model of impact of E-Commerce adoption on business performance and suggested that their model would accelerate the business performance.
Rajaraman (2001) has identified the advantages of using Electronic Data Interchange (EDI). In eliminating paper based documents, duplication of data entry, improvement in accuracy and reliability and savings in time without human intervention, Electronic Data Interchange facilitates the business establishments to exchange business documents using private networks or public switched network.

Krishnaiah (2001), in his study, has focused on the evolution of E-business and its relationship with knowledge management. He has examined the emerging knowledge management tools and their relationship with e-business. He underlines the core characteristics of the paradigm shift from the industrial economy to the knowledge economy and highlights the need to exploit the knowledge management applications by the organizations to compete in the digital age. He propagates the need to leverage the advanced Information Technologies in general and knowledge management in particular, for organizations. To survive in e-business, organizations need to recognize their own capabilities and products, knowledge about the processes and knowledge of customers and suppliers.

As could be evidenced from the earlier research on application of knowledge management tools as an integral part of E-business strategy, to overcome competition Ramaswamy (2001), in his study emphasizes the need to formation of work groups and cross-functional teams for organizational learning. He holds the view that intranet is an effective tool in enabling Corporate communications. The study recognizes the need for organizational learning as an effective tool for knowledge integration and disproves the traditional Command and Control bureaucratic system of management, which fails to motivate the employees. The study reveals, the organizational effectiveness lies in the higher quality output and ability to adapt quickly to the rapidly changing environment.

Mitra and Agarwal (2004), on the issues on outsourcing, a study on Indian Automobile Industry make an attempt to study the outsourcing practices in Indian Automobile industry and compare it with the Japanese counterparts. They identify the success of the Japanese auto makers in world markets for complex products due to the Keiretsu networks. These networks are the inter connectivity through the web sites fostering inter-firm relations and collaboration which has been a major source of Japanese competitive advantage, which was evidenced in the earlier studies of (Dyer,
Japanese assemblers could exploit the benefits of market based exchanges through learning and coordination benefits. The local firms rely heavily on Japanese capital and technology.

*Mittal and Swamy* (2004), in their empirical research on pioneering advantage of companies, have highlighted the fact that, in today’s dynamic and competitive environment, Pioneering (Prime-mover) is an important strategy for E-Commerce business survival and performance. Authors find, the Pioneers perform better with large market share and profits than follower companies, guided with aggressive strategies such as R&D, Advertising, promotion and Distribution. The results indicate the performance of Pioneers and strategic variables have closely associated relationship with each other.

*Ojha* (2004) in his paper argues that, internet has increased the efficiency of market governance and in turn reducing the transaction costs which were not feasible in the traditional business. He further States the Extranets have enhanced scope of network organizations by making network governance more viable by developing a reliable vendor network. The study built on Transaction cost theory identifies the 3 kind of transaction costs viz., Information costs, contracting costs, Coordination costs. The study also makes an attempt to understand the impact of emerging ICTs (Information and Communication Technologies) on fundamental organizational principles and organizational forms.

Agility is a vital component for corporate survival and for competitive advantage in the fast changing business environment. This idea has been propounded in the study conducted by *Siddiqui et al*, (2009). The authors examine the synergistic model of an agile corporation which embeds the information technology, information systems, operations, functions, people, management and assets. The study envisages four principles of customer enrichment as:

a. Mastering change
b. Mobilizing resources
c. Directing each and every asset towards organizational goal
d. Co-operate and collaborate with competitors.
However, the study indicates the need for empirical research in measuring agility and its impact on organizational performance.

The study on B2B commerce by Ram et al. (2009) evidenced that benefits derived from utilizing electronic market places were: reduction in transaction costs and strategic advantage for participatory companies. The statistical analysis indicates the response rate of 3.8 with a standard deviation of 1.1 on a measuring scale from 1 to 5. This shows the extent to which the organizations had plans to utilize the electronic market places for the procurement. The research on the Indian companies accentuates the need for combining online tools as well the offline tools to exploit the full potential of their supply chains.

In a study conducted by Tewari (2000) on the impact of Foreign Direct Investment (FDI) on the domestic industry and economy, highlights the automotive supply chain of Tamil nadu, based on field survey. The study shows that the entry of global auto majors in India and Brazil have impeded domestic firms which was also highlighted in the earlier studies conducted by Humphrey (1999). The study has evidenced the ‘follow source’ which is heavily due to the fact that medium-sized firms, which entered in the mid-1990s in Tamil nadu have formed networks with smaller domestic suppliers and helped them upgrade their technologies. These medium sized suppliers require more support from the government, since they play a crucial role in facilitating the development of the domestic automobile industry. Joint ventures and technical know-how tie-ups with overseas suppliers have been the crux of the strategies that were followed by the well-performing auto-component manufacturers, long before the global auto majors entered India. These relationships and the entry of foreign Original Equipment Manufacturers (OEMs) into India, not only helped in promoting employment and income, but also enabled diffusion of technologies and knowledge to the entire supply chain, including smaller firms.

With respect to productivity growth, Sharma (2006) in his study ‘Analyses of the performance of the Indian Auto Industry with respect to Productivity Growth’ has evidenced the partial and total factor productivity of the Indian automobile industry. In this study, calculations of the partial and total factor productivity of the Indian automobile industry has been done for the period from 1990-91 to 2003-04 using Divisia-Tornquist Index for the estimation of the total factor productivity growth. The
author finds that the domestic auto industry has registered a negative and insignificant productivity growth during the last one and half decade. Amongst the partial factor productivity indices, only labour productivity has seen a significant improvement while the productivity of other three input factors (Capital, energy and materials) haven’t shown any significant improvement.Labour productivity has increased mainly due to the increase in the capital intensity, which has grown at a rate of 0.14 percent per annum from 1990-91 to 2003-04.

4.3 International studies

In his study, Zwass (2003) categorizes and presents a systematic view of the hierarchical structure broadly comprising of networking infrastructure, services and products. The study also indicates the expansion of commerce will present countless opportunities and challenges to the economies and further, (Mokyr, 1990) in his study, lauds: “The expansion of commerce and technological innovations are the two levers of economic growth”.

Macaluso (2001) in his report, has identified specifically the B2B commerce would be lead by the Automobile industry. The evolving internet technologies, the fierce competition and slow down in car sales have forced the manufacturers to connect electronically with trading partners and customers to stay competitive.

Nakayama (2002), in a contrasting view to the above studies, has empirically tested and evidenced the impact of E-Commerce using a model where conventional retailers and electronic retailers compete in a retail market. He argues that E-Commerce greatly benefits customers whereas the possibility of damage to the business of the Automobile industry is prevalent from a social welfare perspective. The study based on two postulates; of which one of them assumes E-Commerce does not increase market demand and the other one assumes no price and product differentiation prevails. The study proposes a measure for E-Commerce as a promising business model for Automobile industry where the two postulates are nullified and do not hold good.

Clayton (2002), in his paper for Royal Economy Society Conference outlines the impact of E-Commerce as a central element of new economic activity on economic
performance. The purpose of this study is to analyze the impact of E-Commerce and electronic business process as a means of:

- Improving effectiveness of R&D in delivering innovation,
- Improving communication,
- Improving business process efficiency and
- Improving the network with processes for more reliable and faster output.

The study envisages new measures to identify the impact of E-Commerce as a central element of new economic activity

*Holcombe* (2003), in the survey report on B2B E-Commerce types, examines the Business to business E-commerce as wholesale than retail business. He emphasizes the need for interchange of information of all types; corporate, technical, identity building across the scattered divisions of large companies and also advocates the necessity of generating new ideas, assessing and disseminating the ideas. He presses the need for building a strong I.T. infrastructure for speedy communication, collaboration and customer understanding and suggests for careful research in the Asia and Pacific Rim.

*Zwass* (2003) in his study on E-Commerce and organizational innovation, reveals, the principal domains of E-Commerce as: commerce, collaboration, communication, connection and computation. He provides a comprehensive framework of E-Commerce as a technological base for business transformation. The study identifies the web as a universal supply-chain linkage capable of delivering complex client support with innovative media products and as a vehicle for delivery of digital goods which enables cost-effective computation on a large scale.

An empirical research conducted on wholesale companies reveals the impact of E-Commerce on business efficiency. *Barsauskas et al.* (2008), in their study investigate the cost efficiency in Supply Chain Management and major findings of the study indicate E-Commerce adoption has a positive impact on several areas. However the study limits itself only to the measurement of business performance in relation to Supply Chain Management only, which, in a broader spectrum, is a B2B E-Commerce. The evaluation of other areas has not been included in the study. Hence this study narrowly approaches from the angle of business to business, which is against the idea
of E-Commerce as a business philosophy. The authors provide a valuable insight in the context of input minimization by the usage of new technologies. As could be evidenced from the earlier studies of Mahadevan (2002), the technological progress stimulates the growth of output keeping the same level of other inputs which is the indicator of the business efficiency improvement.

In a study conducted by Rowley, Yang, Kang, Kwon (2009) on the changing benefits of e-market places, they have counter argued the proposition: “companies move towards e-market places with strong I.T. facilities”. Their argument suggests that only in the early stages buyer companies use e-market places for better purchasing performances and they prefer hierarchy governance. However the study does not include the diverse purposes for which the buyer companies utilize the e-market places.

The study conducted by Pingle (2000) on Modularisation in the Auto Industry: interlinked multiple hierarchies of product, production and supplier systems analyses modularisation in the world’s automobile industry. The paper highlights the role of modularisation in bringing about architectural changes in product, production and supplier systems, with each region (India, Europe and the USA) emphasising different purposes and aspects. As an attempt to understand such multi-faceted, complex processes coherently, the paper proposes a conceptual framework that sees development and production activities as interlinked, multiple hierarchies of products, processes and inter-firm boundaries. With this framework, drawing on case studies and questionnaire survey data, the paper examines the ongoing processes of modularisation in the automobile industry. It is argued that the tensions exist among the three hierarchies, and such tensions may lead to further changes in product, production and supplier system architectures in the Automobile industry, in a dynamic and path-breaking manner.

Sutton (2000) has compared the Auto-component Supply chains in India and China, based on field surveys. In both these countries, the supply chain has developed very rapidly at the level of car makers and Tier-I suppliers, with quality levels close to world standards, largely driven by the entry of multinational car makers. But the Tier-II suppliers are still not up to the global standards. The domestic content requirements, based on the infant industry argument, have helped the international car makers in
enhancing the production capabilities of the domestic players effectively, as shown by increase in auto-component exports from India and China. Of the top ten exporting firms in India and China, five and six are domestic ones, respectively. Enhanced supply-chain capabilities have benefited the domestic auto-makers as well, such as Mahindra & Mahindra in India, who have been able to capture a sizeable market share with their indigenously designed and assembled Multi-Utility Vehicle (MUVT).

Both in India and China, some leading component manufacturers strategically use highly capital intensive techniques such as Robotics, occasionally, despite the low wages, mainly on account of their concerns to achieve high levels of quality. This, in combination with employing high-quality workforce even at shop floor is another strategic choice of a few leading firms in India, to promote exports. Many Tier-I firms follow the standard Japanese work practices to improve quality and minimize costs. Interactions between carmakers and component suppliers have also helped the latter to improve quality.

Veloso and Kumar (2002) have analyzed the major trends in the global automobile industry in their study ‘An overview of major trends taking place in the global automotive industry, emphasising on Asian market’. The study examines the ever changing consumer preferences; government regulations and intense competition have been driving forces for the firms’ orientation towards new technologies, modernization, research and development changes in design and production methods. Market saturation in Triad regions (The US, Western Europe and Japan) and rapid emergence of markets in Asia have led to increasing diversity in market needs. As a result, there are many models and new market segments coming up rapidly. Auto majors have started adopting a global perspective and reorganising their vehicle portfolio around product platforms, modules and systems. They are also minimising the number of suppliers, by opting for bigger ones, based on cost and quality competitiveness, R&D capacity and proximity to manufacturing and development hubs. Mergers and acquisitions are taking place for consolidation of activities. Suppliers have been accepting new roles, as systems integrators, global standardized systems manufacturers, component specialists and raw material suppliers. These roles are based on their focus, market presence, critical capabilities and types of components and systems.
The automobile industry in India had been facing the problem of over capacity till 2000 and the auto-component sector was not so developed as to be able to deliver quality products of world-class. Chinese tariff and quota policies, coupled with local content regulations protect the auto industry in China immensely. However, the Chinese auto industry suffers from fragmentation, lower quality, lack of technological upgradation and managerial skills. Consolidation and liberalization that are happening recently in China are expected to promote its auto industry. Auto industries in the ASEAN and Korea have recovered quickly from the Asian crisis of 1988. The report concludes with some aspects that any study on auto sector should focus on factors such as evaluation of the capabilities of auto-component supply chain - both large and small suppliers, strategies of OEMs, cost, delivery, dependability, quality, product development, process development, flexibility, facilities/equipment, technology, process, workforce and organizational capabilities, logistics and supply chain, research and engineering and interfaces.

Accentuating the need for technological advancement and superior collaboration between Original Equipment Manufacturers (OEMs), a research was conducted by Amit (2007) on Virtual team working in the Indian automotive industry. The author, in his study expresses that the globalisation and increased competition from the U.S and Asia-Pacific firms are forcing the Indian automotive industry to introduce information technology and telecommunications that enable more efficient collaboration along the supply chain, and hence significant reduction in the time to launch and market new vehicles. The paper illustrates the nature of the automotive supply chain and summarises current barriers to collaborative working between Indian automotive manufacturers and suppliers. To achieve greater degree of concurrent engineering, organisational and user requirements are outlined, drawn from a series of collaborative European projects. Finally, a case study is presented, based on the development, demonstration and evaluation of a heterogeneous computer-supported cooperative working platform to support the working between virtual teams during the product introduction process.

As cited by Jean-Paul Mériau E-business Program Manager, Renault in a report identifies the Renault’s strategic alliance with Nissan and Volvo. Renault is engaged in global ventures through its alliances with Nissan and Volvo. The alliance
with Nissan will lead to the formation of a bi-national enterprise, the world’s fourth-largest auto-maker, realizing nearly EUR100 billion in sales and producing 5 million vehicles a year worldwide. They have developed many projects to manufacture vehicles based on a common platform instead of the multiple platforms used by the two auto-makers today.

Quoting on Renault’s e-business strategy, in February 2000, he recalls the launch of Renault’s E-business Program. An E-business Program Management Unit was set up to oversee the expansion of their electronic-commerce activities. Their goal is to develop a comprehensive Renault offering. The program focuses on four areas:

- Business-to-consumer (B2C) (presenting our line-up to customers);
- Business-to-business (B2B);
- E-vehicles (production of “communicating” vehicles);
- Business-to-employee (promoting the use of new technologies by all employees).

The study concentrates on the B2B aspect which is elaborated hereunder:

The automobile is both a simple, mass-market product and a highly complex product. Vehicle design requires cooperation between the auto-maker and a host of suppliers from tiers 1, 2, 3, etc. Another characteristic is the high percentage of procurement: 70% of a vehicle’s value is purchased from third parties. For many years now, auto-makers and suppliers have been working together on development, logistics, and purchasing: this has led to the establishment of computer links. Renault is involved in electronic data interchange (EDI), mainly for logistics, but also for product development, although today’s telecommunications networks place limits on our capacity.

On the logistics side, they have computerized links with all leading equipment suppliers (such as Valéo and Bosch), but many tier-2 and tier-3 suppliers do not use EDI—and that’s a major problem. They believe Internet technologies will democratize EDI and make it accessible to all suppliers. The Internet will also allow direct links to customers. Thanks to the Web, customers will be able to configure the vehicle they want; they will contact a dealer directly and ask for that particular vehicle to be
delivered to them. Renault’s “New Distribution” project aims to deliver Internet-ordered vehicles in less than fifteen days, which practically means a made-to-order production chain. This represents a dramatic change in the automotive industry.

**The B2B stakes**

The B2B exchange has often been regarded as an alliance of leading auto-makers against suppliers to drive down prices. They don’t share that analysis. On the contrary, they consider B2B an opportunity for a manufacturer to work with all its suppliers—from the largest to the smallest—using the latest tools. B2B, therefore, does not conflict with the partnerships that they are developing with the suppliers. More generally, B2B, the new technologies, and electronic exchanges are all having profound effects on corporate organization. If they want to make the most of these innovations, they need to understand them, adopt them, and—in some cases—transform the organizations.

B2B has implications for corporate strategy, operations, and everyday procedures. These effects are felt at three levels:

**At the first level, B2B improves the operational efficiency** not only of purchasing, but also of development and supply-chain processes. In a word, B2B means communicating and working together in these three areas. The new technologies allow transparency of information, instant response, and interactivity.

**At the second level, B2B acts as a facilitator** for the established drivers of progress inside the enterprise. Shared planning for all the participants in a vehicle project—a practice now implemented by Ford—opens up many opportunities. Co-development is not easy to achieve today, but it is within reach. The new technologies will soon enable the company to work with geographically scattered teams as if they were all in the same place. They have conducted co-development trials with Siemens. The time and cost savings are spectacular. GALIA (Groupement pour l’Amélioration de l’Industrie Automobile) a French Automobile Research Agency brings together a number of French auto-makers and suppliers dedicated to quality improvement. They are working jointly on standardization and on the construction of a common extranet for the auto industry: the European Network Exchange. ENX will enable the company to put all these concepts into practice.
At the third level, and in the longer run, Internet resources will also help transform the value chain in the automotive industry. Today, information transmission between the manufacturer, Renault, and its suppliers is not optimal, particularly in the logistics area. It takes three days between the moment the order enters the Renault system and its transmission via EDI to the tier-1 supplier. Another three days are needed for the information to travel from the tier-1 supplier to the tier-2 supplier, assuming the latter can receive EDI messages. If it can receive only faxes, the process takes even longer. Until now, the auto-industry value chain therefore operated as a linear, hierarchical system in which auto-makers interacted with a limited number of players. Henceforth, the chain will function as a true network providing contact with many different partners.

In a study entitled ‘Research on Sale Model for Automobile Enterprises in’ by Li Xinwu (2004) illustrates: In view of current situation that automobile enterprises are not able to carry out the E-Commerce Sale fully, an intelligent marketing mode is advanced based on E-Commerce supply chain management.

Firstly, the great superiority in the E-Commerce sale mode is illustrated through the analysis and the comparison of traditional automobile sale and intelligent sale mode.

**Figure 4.1 Traditional automobile and part Sale mode**

And then, the system structure of the sale mode is put forward for the sale development of current automobile enterprises in which traditional automobile sale mode and automobile sale mode coexist to satisfy nowadays’ situation of the automobile enterprise. Third, the specific measure of implementation for the intelligent sale mode is analyzed.
Finally, superiorities of the mode are summarized and analyzed when it is used in two motor corporations. The intelligent sale mode was used in Jiangling Motors Co., Ltd. and Shanghai Huizhong Motors Co., Ltd.. The mode’s superiorities in engineering usage is analyzed and listed as follows:

As seen in the report, the intelligent sale mode based on the E-Commerce adds EDI settlement and goods enquiry means on the basis of the retention of traditional settlement means, so it guarantees that the distributive units with low information degree can finish the sale flow smoothly, enhance the sale efficiency partially and reduce the sale cost. Next, there are discussions for the difference of the intelligent marketing mode and the traditional mode.

(1) **Goods enquiry means**: The users and the dealers can continue to enquire the goods in the upper distributive units and the sale companies according to traditional goods enquiry means. Meanwhile, the users who have the conditions and the dealers may complete on-line ordering service through new E-Commerce trend so as to shorten the enquiry lead period greatly.

(2) **Price quotation means**: Traditional price quotation means such as telephone, facsimile, etc. can be still used, but the E-Commerce price quotation is encouraged to apply. The enterprises are able to release each kind of vehicle models and fitting price in the customer end, and use “basic + menu” price quotation means to satisfy different
users’ demand, obtain the users’ information well, and realize the customer-oriented customization in the price.

(3) Settlement means: Besides the most traditional “bill” settlement was still applied, adopting the settlement based on EDI (electronic data interchange) can enhance the settlement speed greatly, simplify the settlement flow, quicken the capital turnover, and pull the distance of the factories and the users closer.

(4) Distributive means: The great change of distributive means is that the factories can combine the users’ direct enquiry plans in some area with the exclusive distribution or the exclusive agency’s plans in this area after the users enquire the goods directly by the E-Commerce platform. The goods will be delivered to the users through the united shipment and the nearest sale terminal from the users so as to complete the whole sale process.

In conclusion, the study identifies that the sale mode based on the E-Commerce will be sure to cause another revolution of auto sale means in not far future. The profound influence will come into existence regardless of auto sellers, auto users and auto producers. However, the existence of various subjective and objective reasons makes the of automotive industry not replace traditional auto sale means completely at present and is only a supplement, so the said mode applies the gradual progress towards the sale mode based on the so as to work under the traditional mode and fully display the advantages of the sale mode.

Customer Satisfaction and Links to Customer profitability in the Automobile Industry was done by Piplai (2001). In his study, he explores the link between car users’ satisfaction, repurchase intentions, buying behaviour, and customer profitability with empirical data on attitudes, behaviour and profitability at the customer level of analysis. Buying behaviour and profitability data, derived from the accounting system of automobile firms, are matched with the responses of the firm’s customers’ response to the survey questions distributed prior to the behaviour and profitability outcomes. The study reveals a strong linkage between customer behaviour and customer profitability, while moderate links exist between repurchase intentions and subsequent behaviour.
Susan Helper & John Paul Mac Duffie (2000) in their paper – ‘Evolving the Auto Industry: Effects on Consumer and Supplier Relationships’, argue that the Internet-mediated scenario described above will come about only if several other major changes in the auto industry occur as well. That is, in order to be able to buy a car the way that we buy a computer today (on-line, with the consumer specifying components, software, and services provided by different firms), cars will have to be “built to order” as personal computers are today. To make this possible would require large changes in product development (a more modular product architecture, with more standardized or common parts across models); in the supply chain (a larger supplier role in designing, building, delivering, and possibly even installing modular parts); and at dealers (who would serve as a conduit of information between consumers, designers and assembly plants and would derive revenues primarily from the provision of services rather than from vehicle sales).

This is a daunting prospect, they argue, given the infinitely greater complexity of automotive product designs, production processes, and supply chains, the lack of evidence that consumers are willing to pay a premium for customization, and the much slower rate of technical obsolescence (the reason that it is so costly to hold inventory in computers). Nevertheless, “build-to-order” is the energizing vision of where the Internet takes the auto industry. “Build-to-order is the key,” according to J.T. Battenberg, CEO of Delphi Automotive, the world’s biggest supplier, “That’s the game-changer in the industry,” (Taylor, April 17, 2000, p. 174). “Build-to-order” is where the incumbent automakers potentially gain a competitive edge over a variety of dot-com challengers by tying their Internet-facilitated relationships with consumers together with their Internet-facilitated relationships with suppliers into one integrated, “end-to-end” package. A fully realized “build-to-order” system would transform industry structure most dramatically from the status quo, raising the prospect of automakers who focus only on design and marketing, suppliers who control key elements in the dominant design, contract assemblers who build vehicles for multiple automakers, and new kinds of intermediaries for retailing and distribution. They purport that they would sketch the “build-to-order” scenario at the start of the paper, not because they believe it is imminent (the most optimistic observers place the implementation of a full end-to-end build-to-order system 10-15 years away), but
because it provides a useful framework for evaluating the significance of a host of other trends.

The Internet will still have a very large impact on the auto industry even if the “build-to-order” vision is not realized. At a conceptual level, the Internet is a powerful tool for promoting fast, asynchronous communication among large groups of people, without a need to invest in a specific asset (such as specialized software).

The Internet is often seen as having two types of impacts on commerce:

1) Aggregation of buyers and suppliers; and

2) Facilitation of information exchange (The Economist, March 2000).

Since the automotive market is already so large, the aggregation benefits of the Internet are relatively small in this industry. (In contrast, aggregation benefits have already proven to be substantial for specialized markets, such as used books or industrial equipment.) On the other hand, the information-exchange aspects of the web have huge potential in this industry. The reason is the vast amount of coordination necessary to manage the design, production, and assembly of thousands of parts into each of millions of vehicles every year.

Auto dealers are already coping with the consequences of Internet-informed consumers and a host of dot.com intermediaries that are challenging the traditional retailing model. Supplier relationships may be even more dramatically transformed by the recently-announced industry consortium backing a gigantic e-procurement website known as Covisint. Just how large the impact of these developments would depend on how Internet-fuelled reduction in information costs interacts with current business processes. In the second section of this paper, they laid out the “not build-to-order” scenario to evaluate the consequences for the industry of this less fundamental set of changes. In this scenario, they see inventory savings of about $500 per car, due to the Internet’s ability to transfer information quickly and cheaply throughout the supply chain. Most of this savings would ultimately accrue to automakers and consumers, Can promote both market-like dealings with suppliers (through its auction capabilities), and collaborative relationships (by facilitating the transfer of proprietary information); automakers are thus likely to use E-Commerce to reinforce whatever supplier relations
strategy they have used in the past. A variety of models are also likely to coexist on the dealer side, as they describe below.

By taking the long-term or short-term view, the impact of E-Commerce on industry structure and competitive dynamics will depend how Internet-related capabilities affect overall firm capabilities. Will the Internet offer a step function improvement in efficiency and effectiveness of core processes for all players (or at least those that stay in the game)? Or will it provide differential advantage to particular firms (and particular nations) based on how it is combined with existing and emergent capabilities? In particular, will the firms with the greatest mastery of lean production systems will be affected by and/or take advantage of Internet-related developments in different ways than firms still heavily influenced by mass production? They focus on these questions in the third section of the paper. A concluding discussion summarizes their views on what scenario, lying between the two extremes presented here, is most likely for the auto industry over the next 10 years.

They summarize in their paper that overview of the “build-to-order” scenario is necessarily speculative, but reveal the vast number of interrelated changes necessary to make this production model a reality for the auto industry, including: modular design and modular production; a sufficient prevalence of “voice” mode supplier relations to insure collaborative product development of modules; dealers incentivised to pass information on consumer preferences directly to automakers; and consumers who would be willing to pay at least a small premium for a deeper level of choice and speedier fulfilment.

Ziqi & Cheung (2001) in their paper, Internet-based e-shopping and consumer attitudes: an empirical study have analysed consumer attitudes towards Internet-based e-shopping. The study aims to provide a theoretically and empirically grounded initial reference position, against which later research can explore and interpret the effects of changes in variables representing consumer preferences and shifts in these preferences on the success or failure of B2C E-Commerce over the Internet. Because of the opportunity to sample at the outset and of ceteris paribus conditions following from the tendency for other factors such as e-transactions cost to remain small and constant, Singapore data were employed.
Regression analysis shows that the life content of products, transactions security, price, vendor quality, IT education and Internet usage significantly affect the initial willingness of Singaporeans to e-shop on the Internet. Generalising, they suggest that Internet based B2C E-Commerce can profitably be introduced or promoted along similar dimensions in socio-geographically and technologically similar situations.

They employed a regression model to quantify the effects of the identified factors on the initial willingness of Singaporeans to e-shop on the Internet:

\[ y = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \beta_4 x_4 + \beta_5 x_5 + \beta_6 x_6 + \beta_7 x_7 + e \ldots \]  

The dependent variable measures consumer willingness, while the right hand side of the equation contains explanatory variables other than (relative) price and income. Analytically, therefore, the above expression represents more than a demand function. The independent variables are, \( x_1 \): perceived risks associated with transactions security in Internet-based e-shopping; \( x_2 \): level of education and training in computer applications and IT; \( x_3 \): representative retail price on the Internet e-market; \( x_4 \): consumer perceptions of the relative life content of Internet-based e-shopping; \( x_5 \): perceived quality of Internet e-vendors; \( x_6 \): level of Internet usage; \( x_7 \): network speed.

**Empirical results and interpretation**

Ordinary least squares (OLS) regression results are shown in Table 4.1. They yield the following equation for the initial willingness of Singaporeans to e-shop on the Internet:

\[ y = 2.48 - 0.22x_1 + 0.38x_2 - 0.10x_3 - 0.42x_4 + 0.45x_5 + 0.25x_6 + 0.02x_7 \ldots \]  

Since the first six independent variables yield significant P-values for their coefficients, the corresponding factors were found to be major determinants of the willingness of the Singaporean consumer to e-shop on the Internet. In addition, they computed:

An F-value of 545.3 (d.f. = (7, 304), \( P < 0.01 \)) and an adjusted \( R^2 \) of 0.9.
The regression results therefore, suggest that Eqn. (1) satisfactorily explains the initial willingness of Singaporeans to e-shop on the Internet. The effect of a change in any variable representing consumer perceptions would be given by its regression coefficient, while a shift in any specific aspect of consumer attitudes can be interpreted in terms of a parametric change in the corresponding coefficient.

Table 4.1: Showing OLS (Ordinary Least Squares) regression results

<table>
<thead>
<tr>
<th></th>
<th>Un standardised coefficients (bk)</th>
<th>Standardised coefficients (bk*)</th>
<th>t</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>2.48</td>
<td>4.54</td>
<td>&lt;0.01</td>
<td></td>
</tr>
<tr>
<td>$x_1$</td>
<td>-0.22</td>
<td>-0.16</td>
<td>-5.50</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>$x_2$</td>
<td>0.38</td>
<td>0.17</td>
<td>7.20</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>$x_3$</td>
<td>-0.10</td>
<td>-0.05</td>
<td>-2.95</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>$x_4$</td>
<td>-0.42</td>
<td>-0.31</td>
<td>-9.57</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>$x_5$</td>
<td>0.45</td>
<td>0.22</td>
<td>5.60</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>$x_6$</td>
<td>0.25</td>
<td>0.22</td>
<td>5.99</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>$x_7$</td>
<td>0.02</td>
<td>0.02</td>
<td>0.81</td>
<td>0.42</td>
</tr>
</tbody>
</table>


They offer the following conclusions and interpretations with regard to Singaporean consumer attitudes towards Internet-based virtual retailing at the outset, and their willingness to shop in this fashion.

Transactions security is a significant factor, with perceived transaction risks exerting a negative effect on willingness ($b_1 = -0.22$, $P < 0.01$). If these risks increase, consumers would become more reluctant to post, credit information over the Internet. Possible (future) changes in the payment component of Internet transactions cost can be introduced indirectly into the analysis through parametric change in the transaction risks coefficient, interpreted in terms of shifts in consumer attitudes in this dimension. Such an instance would be the introduction of individually encrypted e-purses by banks specialising in at some future time, leading to a reduction in Internet payments cost, a parametric decrease in the importance consumers attach to perceived transaction risks, a less negative regression coefficient, and an increased willingness to e-shop over the Internet (other things being equal). This suggests a two-stage
procedure by means of which, once a theoretically and empirically grounded reference position is found, we can explore the effects of possible (future) changes in Internet.

Generalising from this finding, virtual retailers in socio-geographically and technologically similar situations and locations may wish to consider the path of least resistance, and first cultivate the preferences of consumers accustomed to the traditional environment by offering goods which do not require much ‘touching-and-feeling’ before purchase. Initiatives to increase the life content of products and render the virtual marketplace more attractive and enjoyable in terms of shopping experience would be required for further development. A similar remark applies to the quality of e-vendors, especially with regard to the lemon problem and the need for an independent agency to perform quality evaluation of goods and services marketed over the Internet.

Hamill (2009) in his essay has utilised Toyota as a case study and critically evaluated the opportunities and threats presented by Web 2.0/social media to the organisation. Additionally, the essay has evaluated the progress made in responding to these opportunities and threats. Moreover, this essay has made strategic recommendations that Toyota can utilise to create sustainable long term growth. Hamill portrays Toyota Company’s profile and throws light on the opportunities and threats posed by the social media and its influence on the performance of the organisation which is elucidated in the Toyota Company’s profile:

Toyota was founded in 1937, Mintel (2009) states that Toyota now owns and operates the Lexus and Scion brands and has a majority shareholding stake in Daihatsu and Hino Motors, and minority shareholdings in Fuji Heavy Industries, Isuzu Motors, Yamaha Motors and Mitsubishi Aircraft Corporation. Since its inception Toyota has grown to become the world’s leading manufacturer in 2008 a title previously held by General Motors. It also held the label of being the most lucrative vehicle manufacturer in 2006.

4.4 A Study on E-Commerce strategy in the automotive industry of the car maker  
- Renault

As cited by Jean-Paul Mériaux E-business Program Manager, Renault in a report, identifies the Renault’s strategic alliance with Nissan and Volvo. Renault is
engaged in global ventures through its alliances with Nissan and Volvo. The alliance with Nissan would lead to the formation of a bi-national enterprise, the world's fourth-largest auto-maker, realizing nearly EUR100 billion in sales and producing 5 million vehicles a year worldwide. They jointly have developed many projects to manufacture vehicles based on a common platform instead of the multiple platforms used by the two auto-makers today.

Another benefit of this tie-up is geographic complementarities: Nissan has an extensive presence in Japan, Asia, and the United States, while Renault commands strong positions in Europe and South America. They are setting up a common development approach, in which the majority partner in a given area will handle the back office and supplementary development work. For example, in Mexico, they will be making Renault Scénic models in a Nissan plant, while in South America they will be producing Nissans in Renault plants. Before its alliance with Renault, Nissan was in a highly precarious position. When Renault acquired its stake in Nissan, many observers wondered if it was not a far-fetched gamble. The results of the first year of the “Nissan Revival Plan” show that Nissan is making a profit from its operations again. Renault has therefore already achieved a positive short term return on its investment. Admittedly, however, the goal is not to make the investment profitable, but to turn Renault Nissan into a bi-national global enterprise. The alliance with Volvo will give birth to the world's number-two truck manufacturer. Renault is contributing Renault Véhicules Industriels and Mack Trucks to Volvo and will become the largest shareholder of the new entity, with a 20% stake.

Quoting on Renault’s e-business strategy, in February 2000, he recalls the launch of Renault’s E-business Program. An E-business Program Management Unit was set up to oversee the expansion of their electronic-commerce activities. Their goal is to develop a comprehensive Renault offering. The program focuses on four areas:

- Business-to-consumer (B2C) (presenting our line-up to customers);
- Business-to-business (B2B);
- E-vehicles (production of “communicating” vehicles);
- Business-to-employee (promoting the use of new technologies by all employees).
The study concentrates on the B2B aspect which is elaborated as follows:

The automobile is both a simple, mass-market product and a highly complex product. Vehicle design requires cooperation between the auto-maker and a host of suppliers from tiers 1, 2, 3, etc. Another characteristic is the high percentage of procurement: 70% of a vehicle’s value is purchased from third parties. For many years now, auto-makers and suppliers have been working together on development, logistics, and purchasing: this has led to the establishment of computer links. Renault is involved in electronic data interchange (EDI), mainly for logistics, but also for product development, although today’s telecommunications networks place limits on our capacity.

On the logistics side, they have computerized links with all leading equipment suppliers (such as Valéo and Bosch), but many tier-2 and tier-3 suppliers do not use EDI—and that’s a major problem. They believe Internet technologies will democratize EDI and make it accessible to all suppliers. The Internet will also allow direct links to customers. Thanks to the Web, customers will be able to configure the vehicle they want; they will contact a dealer directly and ask for that particular vehicle to be delivered to them. Renault’s “New Distribution” project aims to deliver Internet-ordered vehicles in less than fifteen days, which practically means a made-to-order production chain. This represents a dramatic change in the automotive industry.

4.5 Study on Evaluating Toyota’s Opportunities and Threats of Social Media

Hamill’s (2010) four ‘I’s of Social Media highlights and evaluates the progress made by Toyota in responding to the opportunities and threats previously highlighted. The key issues discussed in the Social Media are: Involvement network/community numbers/quality, time spent, frequency, geography Interaction (actions they take) read, post, comment, reviews, recommendations Intimacy affection or aversion to the brand ; community sentiments, opinions expressed etc Influence advocacy, viral forwards, referrals and recommendations, social book marking. The first recommendation offered by him is related to the identification of Toyota’s customer segments on its main website. The study highlights that it is not initially clear who Toyota’s main customer segments are. Toyota has appeared to use the model of its cars to create customer segment.
In conclusion, this essay has utilised Toyota as a case to study and critically evaluated the opportunities and threats presented by Web 2.0/social media to the organisation. This essay has also evaluated the progress made by Toyota in responding to these opportunities and threats. Firstly, the essay investigated Toyota’s pre recall social media strategy and concluded that although Toyota was ‘involved’ across three channels (Facebook, Twitter and YouTube) they did not spend much time providing rich content to invigorate customers. Toyota’s ‘interaction’ was almost non-existent and did not ignite discussion amongst the target audience. The ‘intimacy’ of the campaign was severely lacking and appeared to create brand aversion. Surprisingly the social media campaign did have ‘influence’, with Toyota successfully creating negative grounds well regarding the competition.

This essay has concluded by making strategic recommendations that Toyota can utilise to create sustainable long term growth.

Firstly, it is recommended that develop its customer profile groups on its website. This strategy will allow Toyota to clearly identify its customers and tailor a more specified eMarketing strategy. Furthermore, this will allow Toyota to gain a deeper insight of its customers and recognise the most appropriate methods to engage them.

Secondly, this essay has recommended that Toyota utilise Hamill’s (2010) four ‘I’s of social media to help tackle the threats associated with the recall. If Toyota recruit third party backers would help or bloggers to spread positive messages regarding its brand promise they could increase their effectiveness in relation to ‘Interaction’, ‘Intimacy’ and ‘Influence’.

A scientific standard of customer satisfaction is the American Customer Satisfaction Index (ACSI). Academic research has shown that the national ACSI score is a strong predictor of Gross Domestic Product (GDP) growth, and an even stronger predictor of Personal Consumption Expenditure (PCE) growth. On the microeconomic level, academic studies have shown that ACSI data is related to a firm’s financial performance in terms of return on investment (ROI), sales, long-term firm value (Tobin's q), cash flow, cash flow volatility, human capital performance, portfolio returns, debt financing, risk, and consumer spending. Increasing ACSI scores has been
shown to predict loyalty, word-of-mouth recommendations, and purchase behaviour. The ACSI measures customer satisfaction annually for more than 200 companies in 43 industries and 10 economic sectors. In addition to quarterly reports, the ACSI methodology can be applied to private sector companies and government agencies in order to improve loyalty and purchase intent. Two companies have been licensed to apply the methodology of the ACSI for both the private and public sector: CFI Group, Inc. and Foresee Results apply the ACSI to websites and other online initiatives. ASCI scores have also been calculated by independent researchers, for example, for the mobile phones sector, higher education, and electronic mail.

A theory of product development and customer satisfaction developed in the 1980s by Professor Noriaki Kano (1980) is the Kano model. The model classifies customer preferences into five categories: Attractive, One-Dimensional, Must-Be, Indifferent, Reverse. The Kano model offers some insight into the product attributes which are perceived to be important to customers. In the late 1970s and early 1980s Kano and his colleagues laid the foundation for a new approach to modeling customer satisfaction. Kano challenged the conventional beliefs that improving each attribute of a company's product or service will lead to increased customer satisfaction. Kano believed that not all attributes of product or service performance are equal in the eyes of the customer, and that some attributes create higher levels of customer loyalty than others.

A service-quality framework that has been incorporated into customer-satisfaction surveys is the SERVQUAL or RATER (e.g., the revised Norwegian Customer Satisfaction Barometer) Johnson et.al. (2001) to indicate the gap between customer expectations and experience, SERVQUAL was originally measured on 10 aspects of service quality: reliability, responsiveness, competence, access, courtesy, communication, credibility, security, understanding the customer and tangibles. It measures the gap between customer expectations and experience.

By the early nineties the authors had refined the model to the useful acronym RATER:

- Reliability
- Assurance
- Tangibles

138
- Empathy, and
- Responsiveness

SERVQUAL has its detractors and is considered overly complex, subjective and statistically unreliable. The simplified RATER model however is a simple and useful model for qualitatively exploring and assessing customers' service experiences and has been used widely by service delivery organizations. It is an efficient model Johnson et.al.,(2001), have developed this model in helping an organization shape up their efforts in bridging the gap between perceived and expected service.

The Five Gaps that organizations should measure, manage and minimize as proposed by the model are:

• Gap 1: is the distance between what customers expect and what managers think they expect - Clearly survey research is a key way to narrow this gap.

• Gap 2: is between management perception and the actual specification of the customer experience - Managers need to make sure the organization is defining the level of service they believe is needed.

• Gap 3: is from the experience specification to the delivery of the experience - Managers need to audit the customer experience that their organization currently delivers in order to make sure it lives up to expectation.

• Gap 4: is the gap between the delivery of the customer experience and what is communicated to customers - All too often organizations exaggerate what will be provided to customers, or discuss the best case rather than the likely case, raising customer expectations and harming customer perceptions.

• Gap 5: is the gap between a customer’s perception of the experience and the customer's expectation of the service - Customers' expectations have been shaped by word of mouth, their personal needs and their own past experiences. Routine transactional surveys after delivering the customer experience are important for an organization to measure customer perceptions of service.

Nyeck, Morales, Ladhari, and Pons (2002) stated the SERVQUAL measuring tool “remains the most complete attempt to conceptualize and measure service quality”
(p. 101). The main benefit to the SERVQUAL measuring tool is the ability of researchers to examine numerous service industries such as healthcare, banking, financial services, and education (Nyeck, Morales, Ladhari, & Pons, 2002). The fact that SERVQUAL has critics does not render the measuring tool moot. Rather, the criticism received concerning SERVQUAL measuring tool may have more to do with how researchers use the tool. Nyeck, Morales, Ladhari, and Pons (2002) reviewed 40 articles that made use of the SERVQUAL measuring tool and discovered “that few researchers concern themselves with the validation of the measuring tool”

4.6 Study on Customer Satisfaction conducted by J.D. Power and Associates’ Asia

Another measure of customer satisfaction is proposed by J.D. Power and Associates. The research agency is known for its top-box approach and automotive industry rankings. J.D. Power and Associates' marketing research consists primarily of consumer surveys and is publicly known for the value of its product awards. The company bears the cost of developing and administering specific surveys with sample sizes of between several hundred and over 100,000. J.D. Power ratings are based on the survey responses of randomly selected and/or specifically targeted consumers. J.D. Power relies on consumer reporting for study results as well as in-house vehicle testing for opinion based reviews in Blogs.

Other surveys include the APEAL survey, reflecting consumer's attitudes towards a vehicle's attributes, dealership service surveys, and customer purchasing experience surveys. Similar versions of the Vehicle Dependability and Initial Quality Studies are performed internationally, and usually released with the country's name, followed by the same title, e.g. China Initial Quality Study.

To conclude, from the earlier studies on E-commerce literature it could be evidenced that no significant study is conducted on the Effectiveness nor the Impact of E-commerce on the Automobile Industry in India in general and specifically there are no comprehensive studies conducted in the State of Karnataka. There is insufficient evidence provided in the literary framework developed by many authors in this regard. Hence there is a need for constructing a comprehensive literature framework and a model building exercise needs to be done based on secondary and primary data covering the entire gamut of the Supply chain including Automobile Companies i.e.,
the Original Equipment Manufacturers (OEMs), Suppliers, Trading partners, which is more specifically the Business to Business E-Commerce (B2B) and Customers which is Business to Consumer E-Commerce (B2C) models to know the actual level of Satisfaction of Online customers in the 21st century.