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CHAPTER -1

INTRODUCTION

1.1 Preamble

Electronic commerce is one of the most common business terms in use in the 21st Century. Electronic commerce is a worldwide phenomenon which has percolated into the organizational system and has redefined the way modern business organizations conduct their activities. In a broader sense, Electronic commerce refers to, not just buying and selling but also enhancing customer service, collaborating with business partners and conducting electronic transaction within an organization. E-Commerce, a prime driver of the global economy, is changing business processes worldwide, increasing logistical efficiencies and facilitating the buying, selling, and marketing of goods at an exponential rate. Similarly, E-Commerce has benefited millions of consumers through decreased prices, increased competition and faster order and delivery times.

Large and small companies across multiple industries depend on E-Commerce applications to survive and compete in local, national, and global economies. These companies use e-mail to communicate with customers and suppliers and the Internet to handle marketing and electronic transaction processing and settlement. They rely on myriad hardware and software solutions to manage large databases and carry out sophisticated analysis of complex business operations, support back office automation, assist document sharing, and facilitate communication with clients, customers and colleagues.

1.2 Concept of Electronic Commerce

Electronic Commerce is defined as “The use of electronic transmission mediums (telecommunications) to engage in the exchange, including buying and selling, of products and services requiring transportation, either physically or digitally, from location to location (Greenstein and Feinman, 2000). The Article 2 of UNCITRAL (United Nations Commission on International Trade Law) Model Law on Electronic Commerce defines Data Message as: ‘information generated, sent,
received or stored by electronic, optical or similar means including, but not limited to, electronic data interchange (EDI), electronic mail, telegram, telex or telecopy.

1.3 Significance of Electronic Commerce

While E-Commerce has advanced most rapidly in developed countries, companies in developing countries increasingly use E-Commerce to strengthen their core business practices and spin off new businesses. In Asia, for instance, the E-Commerce solutions market looks to grow at an annual rate of 24 percent. In short, E-Commerce will continue to transform business – and societies more broadly - on a global scale irrespective of geography, topography, gender, ethnicity, or nationality. This transformation is likely to intensify and companies in developing countries must become versatile in at least basic E-Commerce applications if they are to participate in the global economy.

Gerstner (2003) observes, “Electronic business is all about, time, cycle, speed, globalization, enhanced productivity, reaching new customers and sharing knowledge across institutions for competitive advantage.” Electronic commerce involves all sizes of transaction bases. Electronic commerce requires the digital transmission of transaction information. Electronic commerce application began in 1970’s with innovations like electronic transfer of funds. In the next stage Electronic Data Interchange [EDI] was introduced. Rajaraman (2001) observes, “Electronic Data Interchange is the exchange of business documents such as purchase order and invoice in standardized electronic form between organizations, which can be interpreted and used directly by application programs.” Procurement costs can be lowered by traditional EDI systems by consolidating purchases, developing relationships with key suppliers, negotiating volume discounts and greater integration of the manufacturing process.

Zwass (2003) observed in spring of 1993, electronic commerce acquired the vehicle of accessible web-internet compound through the confluence of a series of technological, organizational and societal developments. Internet electronic commerce offers additional benefits and potential for cost reductions over traditional EDI. Procurement costs can be lowered for all companies, regardless of size, due to the
increased ability to transact electronically with one another. Hazari (2000) observes the speedy journey of electronic commerce through the internet.

The three ‘C’s of First generation electronic commerce: Content, Community and Commerce have now evolved into seven ‘C’s of Second generation electronic commerce: Content, Community, Commerce, Communication, Connectivity, Collaboration and Customization. Electronic commerce has emerged from the convergence of several major information technologies and business practices. In today’s fast paced economy, technology can be used to leverage the e-market place to gain competitive advantage. The business to business electronic commerce known as B2B electronic commerce is the Third generation of the evolution of electronic commerce. Ram et al., (2009) observes: business to business (B2B) offers unique benefits such as human intervention, less overhead expenses, fewer inadvertent errors, more efficiency, more advertising exposure, new markets and new physical territories, equate to an intelligent method of mutual business. It is a win-win situation for both buyer and seller.

The business to consumer (B2C), also referred as e-tailing, can be defined as the online retail transactions between a company and individual shoppers (Turban et al., 2004). According to Chun and Kim (2005) consumers preferring online transactions rather than the traditional methods increase, as the internet provides more information with less transaction costs. Factors that motivate the customers regarding online shopping can be listed as, broader selections, competitive pricing and greater access to information (Chen and Macredie, 2005). The main factors that influence B2C in order to reduce transaction costs can be identified as: product digitizability, product complexity and sensitivity, product tangibility or industry structure characteristics such as market thinness or customer dispersion (Strebinger and Treiblmaier, 2006).

The U.S. Department of Commerce (1998) has enlisted various benefits to consumers vide Internet electronic commerce such as:

- Increased choice of vendors and products
- Convenience from shopping at home or office
- Greater amounts of information that can be accessed on demand
More competitive prices and increased price comparison capabilities and
Greater customization in the delivery of services.

In today’s world electronic commerce is not merely a technical issue to be delegated to the Information Technology department, but it is of strategic importance for survival of business. Electronic Commerce is forcing business houses to rethink their traditional business models due to the astounding growth rates of on-line revenues. Forrester Research has identified the on-line sales growth of six major industries in Western Europe as illustrated below:

**Diagram 1.1 Forecasted Industry Growth Rates of On-line revenues**

Forrester Research has identified the on-line sales growth of six major industries in Western Europe as € 120.9 Billion for 2013 and is expected to grow at a CAGR of 12% to € 233.9 Billion in the year 2018. The comparative figure for Asia-pacific region was $ 398 billion for the year 2013.

**The challenges for the measurement of E-Commerce**

While transaction cost economics provides an explanation of the economic benefits of B2B by focusing on the cost dimension, it fails to take into account how a
firm’s resources and capabilities can best be developed and deployed in the search for improved efficiency and effectiveness. Moreover, to fully understand B2B and B2C E-Commerce activity requires insights of not only the interdependence of production and exchange relations, but how appropriate business strategies and strategic alignment within and outside the organisation enhance firm efficiency and effectiveness. It is important to consider this interdependence because firms are both a collection of transactions and a bundle of resources, and it is strategy and the extent of alignment among the firm’s strategy, processes and infrastructure that influence how its resources interact with the transaction and how the firm chooses to govern these resources and transactions. To provide a more complete understanding of the relationship among production, exchange relations, and efficiency and effectiveness this study aims to learn the intricacies of the relationship between Automobile OEMs and Suppliers and Distributors while conducting online business over the electronic medium.

**Role of in Indian Automobile Industry:**

Srinivasan (2000) states: “The Automobile industry in India, being one of the key drivers of the economy is focused on envisioning its growth through the new economy”.

As per the reports of Society of Indian Automobile Manufacturers (SIAM) is an important and potential medium in the Automobile Industry in India. The potential benefits of in Indian Automobile industry are:

a. Customer-focused service and information exchange
b. Enhancing company image by improving competitive position
c. Enabling the company to be more responsive with servicing business and consumer needs.
d. 24 hours a day information to customers through enquiries through electronic mails
e. Enables the companies to create customer databases
f. Enhances on-line ordering transactions through the Web site.

E-Commerce applications aid the Automobile manufacturers in India by creating sophisticated electronic networks to meet the ever growing higher expectations of Customers. Automobiles today resemble “Computers on Wheels”
because of increasing number of digital systems. Hence, Automobile sector in India is poised to lead the E-Commerce revolution. The evolving Internet technologies, the slowdown in new car sales and fierce competition among automakers are forcing manufacturers to connect electronically with their trading partners and customers to stay competitive.

1.4 Statement of the Problem:

The above observations of the reports, as well, the earlier researches conducted in this area; strongly suffice the need for further comprehensive research in the domain of E-Commerce, in general and its effectiveness in the performance in the Automobile sector, in particular. The Indian Automobile sector tagged as the investors’ destination; and for small cars, “India is the centre of the Universe”, as suggested by the President and CEO of Ford Motor Company, (Mullaly, 2009). Since India has become a global hub for low-cost manufacturing and other relevant implications of E-Commerce on Automobile Sector, there is a need for a deep insight into the area of E-Commerce in general and performance of E-Commerce based Automobile companies in Karnataka in particular. No doubt E-Commerce is the order of the day and survival of an organization depends upon its capacity to adapt to the changing conditions and its ability to have the competitive-edge. In order to facilitate this aspect, the organizations may go for a paradigm shift of the entire organization. There arise problems such as viability of E-Commerce and its feasibility. The adoption of E-Commerce will have a greater impact. The magnitude of this impact should be gauged and measurement of this impact is of varied dimensions on operational efficiency, profitability, productivity, customer satisfaction, long term growth prospects etc. poses a greater challenge.

1.5 Relevance of the study

It is globally accepted in the business community, that the potential returns of conducting business transactions over the Internet is far greater than the investment on the Internet. The greater advantage of Internet to the business is that; in a virtual world, any number of branches can be opened which can be accessed by anyone, anywhere and at any time in the world.
The Internet electronic commerce system helps firms to optimize the ordering of inventories by electronically linking suppliers and purchases together and allowing them to share updated production forecasts and projected inventory levels in order to allow both parties collaboratively ‘fine-tune’ their production schedules and delivery schedules. Internet electronic commerce enables the reduction of the cycle time by allowing production teams to electronically share design specifications for initial approval and refinement process. This enables companies to reduce the overall fixed expenses to be allocated to each unit of production, thus positively affecting the ability to pass cost savings on the customer to achieve higher net earnings. Internet is a dynamic medium which is capable of leading-edge networking, revolutionary applications and rapid transfer of new network services to the broader internet community. Companies today have realized, the importance of online electronic commerce capabilities of electronic storefronts to back-end processes using Supply Chain Management (SCM) and Enterprise Resource Planning (ERP) software.

1.6 Need for the study:

Researches on E-Commerce adoption and its influence on organizational performance, businesses efficiency and effectiveness vis-à-vis the needs of ultimate consumer are strongly motivated by the technological influence on business decisions. A report on E-Commerce by website: mjunction Sourcing Insights Bureau (2006) has indicated that India is fourth largest in the world in terms of Internet population with 81 million Internet users, which means a greater potential for E-Commerce. However, in contrast to this, in the Automobile sector with huge investments, the Automobile penetration rate is 8 cars per 1,000 people vis-à-vis the Advanced countries’ average being 500 cars per 1,000 people, which is an alarming indicator. According to a report by Sweney (2009), of The Internet Advertising Bureau and Price Water House Coopers, United Kingdom has become the first major economy where advertisers spend more on Internet advertising than on T.V. advertising with a record £ 1.75 billion online spending in the first six months of 2009 which accounts for 23.5% of the overall advertising money spent in United Kingdom. In the Indian context, the reports indicate there is a greater potentiality for the car manufactures to target the Indian consumers, with innovative products and Internet intermediation, especially, the middle income groups, which is on a rising trend in terms of purchasing power. A comprehensive
study needs to be conducted covering all the broad spectrums of E-Commerce covering suppliers, OEMs, distributors and consumers and its implications on the effectiveness in the Automobile industry. A case in point is the state of Karnataka. Gopal Srinivasan, CEO of TVS Electronics, notes that while Bangalore has developed a flourishing IT industry, "Karnataka is relatively poor in the diffusion and application of IT." Hence, the present study.

1.7 Objectives of the study

The following are the enlisted objectives of the study:
1. To study the existing E-Commerce practices in the selected units.
2. To study the effectiveness of B2C E-Commerce in the selected units.
3. To study the effectiveness of B2B E-Commerce in the selected units.
4. To study the impact of E-Commerce Adoption on operational efficiency of the units.
5. To offer suggestions based on the findings of the study.

1.8 Hypotheses for the study

In the light of the aforesaid objectives of the study, the following hypotheses are formulated:

For B2C E-Commerce:

1. “The satisfaction levels of the online customers of the selected automobile manufacturing units are below industrial average”.

2. “There is a significant difference in the level of satisfaction of online consumers across various age groups and gender”

3. “There is a significant difference in the perception of respondents across various age groups”

4. “There is a significant difference in the level of website satisfaction of online respondents across various companies”

5. “There is a positive influence of features of the website on the level of website satisfaction of online respondents”
6. “The presence of customer orientation in the website has a positive impact on the level of website satisfaction of online respondents”

7. “The customer loyalty towards the Company enhances the level of website satisfaction of online respondents”.

For B2B E-Commerce:

8. “Tenure of supply significantly influences the E-Commerce adoption practices”

9. “Tenure of suppliers positively influences the online E-Commerce operational practices”

10. “Tenure of Supply does not significantly influence the e-operational effectiveness of the suppliers”

11. “Tenure of suppliers does not significantly influence the Cost benefits of the suppliers of the Automobile Manufacturing units”

12. “Tenure of suppliers does not significantly influence the operational benefits of the suppliers”

13. “Electronic Data Interchange (EDI) with the Original Equipment Manufacturer (OEM) does not positively influence the e-operational benefits of the suppliers”

14. “Electronic Data Interchange (EDI) with the Company does not have a positive impact on the e-operational effectiveness of the Suppliers”

1.9 Research Design

In the present internet age due to fast changing dynamics of the online world the opportunities are myriad and consumer preferences undergo a dramatic change. To increase the fiercely fought market share, automobile companies are increasing their online ad-spends and range of digital executions, particularly in the social media space. The time, the age and the domain we exist in, is not just dynamic but evolving at lightning speed. As India is a part of this global phenomenon, the present study is an incisive effort towards revealing the nuances of Web-based activities of
Automobile companies and its influence on online behaviour of today’s auto customers. It is interesting to note how remarkably their decision to purchase a high involvement product like a car, is driven by their attitude and perception of the online medium.

**Primary Source of Data:**

Based on the objectives and the hypotheses for the study, the sample was drawn, for B2B E-Commerce, from a population of around 14,000 employees of the suppliers of automobile Car manufacturers and for B2C E-Commerce the sample was drawn from 1.5 lakh online customers interested in car related information. Self selection and judgment sampling based method was applied based on the different levels in the hierarchy and ISO certification of the various supplier organizations. Primary data was collected from a structured questionnaire. Questionnaire was administered to various respondents such as Employees of suppliers for studying the B2B effectiveness of E-Commerce. The B2C related questionnaire was administered online to study the Business to Consumer relationship (B2C) with the three Original Equipment Manufacturers (OEMs), i.e, the Car manufacturing Companies in Karnataka and the online customers interested in car related information.

**Secondary Source of Data:**

The study relies on the secondary sources of information drawn from the publications of Automobile companies in Karnataka State, Web Sites of the Suppliers throughout India, Publications by leading Trade Associations, Research Organizations etc. The data inputs are being drawn from the annual reports of these organizations for a period ranging from 2000-01 through 2012-13, spanning 13 years.

Statistical tools like correlation, multiple-correlation, multiple- regression, one-sample t-test, ANOVA and other tools are used. SPSS 13 package for data analysis and interpretation is applied for the study.
1.9.1 Research methodology

Quantitative Study

To validate the hypotheses and the conceptual model in a quantitative study, an online questionnaire survey was undertaken to be the appropriate method. The nature of an online questionnaire is that it can only be reached by those who have Internet access. Because the requirement of online users of car related information is to have Internet access, the online questionnaire can filter out the irrelevant population (i.e. those who do not have the Internet access) from this study (Corbitt, Thanasankit & Yi, 2003). Furthermore, the online questionnaire also allows this research to expand the sampling frame into a global scale (Singh & Burgess, 2007; Singh & Byrne, 2005).

A survey and interviews were employed to gather information regarding Indian online consumers interested in cars. The consumer attitudes towards Internet-based B2C E-Commerce have dramatically changed upon its active introduction in 2000. Because of the specific time-focus of this initial reference position, the fact that data referring to the Internet and Internet usage are quick to age does not present a significant problem in this study. Following the standard approach, we measure consumer perceptions and related variables in terms of a Likert-type scale ranging from 1 to 5 with the following equivalences, ``1'': ``not important'' or ``strongly disagree''; ``2'': ``slightly important'' or ``slightly agree''; ``3'': ``neutral''; ``4'': ``important'' or ``agree''; and ``5'': ``very important'' or ``strongly agree''. Individuals without knowledge or experience of the Internet may harbour a latent willingness to e-shop on it, but it would be difficult to elicit such information through a survey. Given the exploratory nature of the study and consistently with our interpretation of ``Customer Satisfaction'', it was decided to leave out considerations of a latent nature. The sample was therefore, restricted to Internet users in Karnataka State. A questionnaire on consumer attitudes designed and pre-tested according to the standard approach was dispatched online to 600 such individuals, securing 377 meaningful responses (63.83%). Its contents were framed with regard to the fact that Internet logistics, communications, and other pertinent factors relating to technology and social domains tended to remain small and constant over the relevant duration. Assistance was supplied in case of difficulty, by return e-mail and Microsoft Excel and SPSS 13 package were employed in data analysis. To complement the survey,
interviews were conducted with executives of the Car Manufacturers. All these companies have been actively involved in developing and promoting B2C E-Commerce in India.

1.9.2 Sampling Frame for the Online Survey

Since this research aims to establish trust issues from the perceptions of online consumers, the sampling frame of this study is based on Internet users only. It has been identified that access to the Internet is an indicator for online shopping (Canadian Internet Project, 2005; Center for the Digital Future, 2007; Cheeseman Day, Janus & Davis, 2003; Dutton, Gennaro & Hargrave, 2005). Sampling frame for this research was guided by the following consumer characteristics:

• **Age**—several researchers identified that the following ages are the indicators depicting the majority of Internet users: 18–44 years old (Canadian Internet Project, 2005), 18–34 years old (Cheeseman Day, Janus & Davis, 2003), 18–29 years old (Dessewffy et al., 2003), 16–24 years old (Research Center for Social Development, 2005), 20–29 years old (NECTEC, 2006), and 12–24 years old (Lebo, 2004). Dutton, Gennaro, and Hargrave (2005) also found that younger people are likely to use the Internet more than older people are. Although this evidence shows a variety of results, it is clear that Internet users at the age of 20–24 are the majority population;

• **Education**—several researchers (Cheeseman Day, Janus & Davis, 2003; Dessewffy et al., 2003; Dutton, Gennaro & Hargrave, 2005; Findahl, 2003; Research Center for Social Development, 2005) discovered that the majority of Internet users have either bachelor or higher degree. This means that the higher the educational level, the more likely the people will become Internet users. Furthermore, Canadian Internet Project (2005) identified that an educational level is a good indicator leading the researcher to online shoppers;

• **Internet experience**—Lebo (2004) found that, the more the Internet experience, the more the Internet user will shop online. Canadian Internet Project (2005) and Findahl (2003) discovered that Internet users at an age of 18–24 years old both spend the highest time on the Internet and contains the largest portion of experienced Internet users. Another opinion on Internet users is Research Center for Social Development
(2005) which indicates that Internet users at an age of 25–34 years old spend the highest time over the Internet.

**Diagram 1.2 : Showing the online survey of users based on type of search of information**

1.9.3 Sample Size determination

**Sample size for the B2C Online Survey**

To justify a suitable sample size, for a finite population which is small but provides accurate data, the formula below was used:

\[
n = \frac{z^2 \times p(1-p)N}{e^2(N-1) + z^2 \times p(1-p)}
\]
Where, \( n \) = sample size required;

\[ z^2 = \text{the value of standard variate at a given confidence level (as per table showing areas under normal curve) and it is 1.96 for a 95\% confidence level;} \]

\[ p = \text{proportion of success in any of the trials} \]

\[ P-1 = \text{proportion of non success in any of the trials} \]

\[ e = \text{acceptable error} \]

\[ N = \text{size of population} \]

Hence, by adopting the above formula, with a population size of 1,50,000 which is 10\% of total active online users of internet (1.5 million) for automobile related information the sample size is being determined. This formula calculates a suitable sample size based on binomial distribution (Lind, Marchal & Wathen, 2005). Because the outcome of randomly choosing Internet users will be either online information seekers of cars or non-online information seekers of cars, the above formula is appropriate to explain that one half of Internet users are online shoppers while the other half of them are not. As a result, \( p = 0.5 \). Let \( z = 1.96 \) (95\% per cent of confidence level) and \( E = 0.04 \) (4 per cent of error margin). Therefore, \( n = 600 \). This means that the study needs at least 600 responses in order to allow research findings to be generalised for a larger population.

**Sample Size determination for the B2B Online Survey**

To derive a suitable sample size, for conducting survey on B2B, for a finite supplier population which is small but provides accurate data, the formula below was used:

\[
n = \frac{z^2 \times p(p-1)N}{e^2 (N-1) + z^2 \times p(p-1)}
\]

Where, \( n \) = sample size required;
\[ z^2 = \text{the value of standard variate at a given confidence level (as per table showing areas under normal curve) and it is 1.96 for a 95\% confidence level; } \]

\[ p = \text{proportion of success in any of the trials} \]

\[ p-1 = \text{proportion of non success in any of the trials} \]

\[ e = \text{acceptable error} \]

\[ N = \text{size of population} \]

Hence by adopting the above formula, with a population size of 14,080 employees (Source: www.alibaba.com, online b2b portal) of 93 Suppliers, Toyota suppliers(51), Volvo Suppliers(37) and Reva suppliers(5) geographically spread throughout the country who are supplying auto components to the three OEMs in Karnataka, the sample has been drawn. This formula calculates a suitable sample size based on binomial distribution (Lind, Marchal & Wathen, 2005). Because the outcome of randomly choosing the suppliers will be either online suppliers of car components or non-online suppliers of car components, the above formula is appropriate to explain that one half of suppliers are doing online transactions while the other half of them are not. As a result, \[ p = 0.5 \]. Let \[ z = 1.96 \] (95\% of confident level) and \[ E = 0.04 \] (4\% of error margin). Therefore, \[ n = 576 \]. This means that the study needs at least 576 responses in order to allow research findings to be generalized for a larger population.

### 1.9.4 Reliability and Validity:

Validity and reliability helps to measure the research and to add strength to the research findings. Validity is the most important requirement on a measurement instrument. Three sorts of validity need to consider three forms of validity (Yin, 2003): Construct validity, internal validity and external validity.

- **Construct validity**: it considers establishing correct operational measures for the concepts being studied.

- **Internal Validity**: it considers establishing a causal relationship, whereby certain conditions are shown to lead to other conditions, as distinguished from spurious relationships.
- External validity: it considers establishing the domain to which a study’s findings can be generalized.

To increase the validity of the construct, theories must be tested through replication of findings in similar surroundings which infers that a specified theory has to come with the same result. The data was collected by sending e-mail in advance containing the issues that was going to be discussed at the time of interview with the respondent groups. This in turn increased the validity of the questionnaire as well as the plausible responses to the questions. It is necessary to make the purpose of the study clear to the respondents before the interview. Reliability is the extent to which research results would be stable or consistent if the same techniques were used repeatedly. Also, the essence of reliability lies in minimizing the errors and biases in a research study.

Yin (2003) identifies two things which would increase the reliability: the use of a case study protocol and the development of a case study database. Further, regarding the reliability of observations, Yin (2003) states that: ‘to increase the reliability a common procedure is to have more than a single observer making an observation, whether it is of the formal or the causal variety. Hence, when resources permit, a case study investigation should use multiple observers. The reliability is influenced by the fact that peoples’ perceptions vary over a period of time that makes it difficult for another researcher to achieve the same result even if the same sample were to be used. A change of that type would affect the reliability negatively. Hence, making a personal judgment or interpretation cannot be avoided in such type of studies.

1.9.5 Response Rate of the Online Questionnaire on B2C E-Commerce:

Out of 600 invited online customers, of the three OEM’S, all the customers agreed to participate in the online survey, and this generated valid responses of 377, and the number of drop outs after commencing the survey was 223. The responding OEM’s were also contacted to disclose the number of online Internet users interested in cars, in order to increase the response rate for this study. The questionnaire was designed in such a way that only those internet users interested in Toyota, Volvo and Reva cars were only invited to participate in this research.
Of these, 377 people responded to the survey. Among these respondents, majority of them were either experienced who frequently used internet for gathering information about cars and respondents who were non-experienced online shoppers, who less frequently visited the internet.

**Response Rate Calculation for B2C E-Commerce:**

According to the opinions of Neuman (2003) and Saunders, Lewis, and Thornhill (2003), the response rate can be calculated with the following formula:

\[
\text{Total response rate} = \frac{\text{Total number of responses}}{\text{Total number in sample} - \text{ineligible sample}}
\]

In the above formula, the *total number of responses* is the number of responses from both experienced and less-experienced online users. The *total number in sample* is the number of invited Internet users. The *ineligible sample* is the number of non online users. Since the aim of the study is to conduct survey of online consumers, the ineligible sample = 0, which is out of the scope of this study.

Hence, according to the formula:

\[
\begin{array}{c}
\text{Total response rate} = \frac{377}{600 - 0} = 0.6383
\end{array}
\]

As per the response rate formula, the total response rate of this survey is 63.83 per cent. Due to adoption of the online survey technique, and limited time framework it was difficult to improve the response rate. Truly, only people who had interest in car buying and car related online information seekers, voluntarily supported this research and responded to the survey.

**1.9.6 Response Rate Calculation for B2B E-Commerce:**

\[
\text{Total response rate} = \frac{\text{total number of responses}}{\text{Total number in sample} - \text{ineligible sample}}
\]

In the above formula, the *total number of responses* is the number of responses from experienced online suppliers and less experienced online suppliers. The *total number in sample* is the number of invited suppliers of the three OEMs. The *ineligible
sample is the number of non online suppliers. Since the aim of the study is to conduct survey of only online suppliers, the ineligible sample = 0, which is out of the scope of this study.

Hence, according to the formula:

| Total response rate | = | \[
\frac{394}{576 - 0} \]
|  | = | 0.6840 |

As per the response rate formula the total response rate of this survey is 68.40 per cent. Due to adoption the online survey technique and limited time framework it was difficult to improve the response rate. After successive reminders, those suppliers who are only interested in the online survey responded to the survey.

Without an ability to control the sample size, it was inevitable to obtain the response rate which is adequate; for example, a large-scale online survey conducted by Han (2002) received a total response rate of 7 per cent from a sample size of 12,000 students of a University. Regardless of the total response rate of this research, this does not affect validity of the results because self selection sampling is a non-probabilistic sampling technique (Saunders, Lewis & Thornhill, 2003). Furthermore, the aim of this study is not simply to obtain accurate mean and variance of the variables but to verify the underlying relationships between variables (Aron, Aron & Coups, 2006). Therefore, the response rate has no impact on accuracy of the results in this study.

1.9.7 Drop out of respondents after starting, Missing Data and incomplete responses

Of 600 online shoppers, 377 of them provided valid responses, and 233 of them were either drop out cases or having invalid responses; that is, this invalid response had one or more missing answers. Even though the questionnaire was designed not to accept any submission until all questions were answered, this still happened due to poor internet speed or due to technical reasons. Since the response rate is 63.83 which is considered, these drop out cases could be safely removed out of this study (Tabachnick & Fidell, 2001). As a result, 377 cases were used for the quantitative analyses, and summarised as frequency statistics which would be discussed in the chapter for analysis and interpretation of data.
1.9.8 Questionnaire Design for B2C E-Commerce:

The questionnaire was designed to verify the B2C E-Commerce effectiveness of the three automobile companies. The questionnaire was divided into four important sections covering four important dimensions of B2C E-Commerce. There were 17 questions in total covering all the four dimensions of B2C E-Commerce. Questions were asked and the opinions were elicited online. Meaningful responses were only considered which accounted to 377 in total. The questionnaire design is stated below:

**Section A**: Consists of Demographic Profile of respondents covering Age, Gender, Educational qualification, and Employment and Online experience of consumers.

**Section B**: Consists of four dimension namely, online buyer attributes, features of the website, customer focus and customer loyalty.

The first dimension, **Online Buyer Attributes** which has four questions from 1 to 4:

<table>
<thead>
<tr>
<th>Construct</th>
<th>Construct items</th>
</tr>
</thead>
<tbody>
<tr>
<td>Online Buyer Attributes</td>
<td>1) Online buyer’s level of satisfaction with respect to Company website</td>
</tr>
<tr>
<td></td>
<td>2) Knowledge of website</td>
</tr>
<tr>
<td></td>
<td>3) Primary reason for visiting website</td>
</tr>
<tr>
<td></td>
<td>4) Frequency of visiting the website</td>
</tr>
</tbody>
</table>

The second dimension, **Features of the Website** consists of six questions from Question no. 5 -10:

<table>
<thead>
<tr>
<th>Construct</th>
<th>Construct items</th>
</tr>
</thead>
<tbody>
<tr>
<td>Features of the Website</td>
<td>5) Finding required information in the website</td>
</tr>
<tr>
<td></td>
<td>6) Ease of navigation through the website</td>
</tr>
<tr>
<td></td>
<td>7) Accuracy of information in the website</td>
</tr>
<tr>
<td></td>
<td>8) Quality of content in the website</td>
</tr>
<tr>
<td></td>
<td>9) Specificity of content in the website</td>
</tr>
<tr>
<td></td>
<td>10) Layout design of the website</td>
</tr>
</tbody>
</table>
The third dimension, **Customer focus** in the website consists of 3 questions from Question no. 11-13.

<table>
<thead>
<tr>
<th>Construct</th>
<th>Construct items</th>
</tr>
</thead>
<tbody>
<tr>
<td>“Customer Focus”</td>
<td>11) Comfortable business on the website</td>
</tr>
<tr>
<td></td>
<td>12) The level of customer support provided on the website</td>
</tr>
<tr>
<td></td>
<td>13) Meeting the specific needs of the customers</td>
</tr>
</tbody>
</table>

The fourth dimension, **Customer loyalty** towards the Company website consists of four questions from question no. 14 to 17.

<table>
<thead>
<tr>
<th>Construct</th>
<th>Construct items</th>
</tr>
</thead>
<tbody>
<tr>
<td>“Customer Loyalty”</td>
<td>14) Likelihood of revisiting the Co. website</td>
</tr>
<tr>
<td></td>
<td>15) Customer using the Co. website as primary source of information</td>
</tr>
<tr>
<td></td>
<td>16) Customer referring the Co. website to others</td>
</tr>
<tr>
<td></td>
<td>17) Comparison by the customer with other Co. websites</td>
</tr>
</tbody>
</table>

### 1.9.9 Reliability of the Questionnaire

Before the survey data was analysed, it was important to evaluate reliability of the questionnaire. If the instrument is not reliable, the results of analyses cannot be claimed to be accurate enough for validating the research model and the hypotheses.

**Table 1.1 : Reliability of the questionnaire**

<table>
<thead>
<tr>
<th>Factors</th>
<th>Questions</th>
<th>Cronbach’s α</th>
</tr>
</thead>
<tbody>
<tr>
<td>Online buyer attributes</td>
<td>1-4</td>
<td>.983</td>
</tr>
<tr>
<td>Features of the Website</td>
<td>5-10</td>
<td>.988</td>
</tr>
<tr>
<td>Customer focus</td>
<td>11-13</td>
<td>.979</td>
</tr>
<tr>
<td>Customer Loyalty</td>
<td>14-17</td>
<td>.987</td>
</tr>
<tr>
<td><strong>OVERALL</strong></td>
<td><strong>1-17</strong></td>
<td><strong>.996</strong></td>
</tr>
</tbody>
</table>

According to Nunnally (1978), when the value of Cronbach’s α is higher than 0.7, it means that the instrument is reliable. The above Table shows the factors (column one), the questions that belong to each factor (column two), and the
Cronbach’s $\alpha$ values (column three). The values of Cronbach’s $\alpha$ for all factors are above 0.7. Furthermore, the composite Cronbach’s $\alpha$ (0.996) also depicts a high value, meaning that all items of the questionnaire measure the same vital factor (i.e. Consumer Satisfaction). Therefore, the questionnaire is evidently reliable.

1.9.10 Demographic Statistics

In total, Internet users interested in online information about cars from various walks of life across the State generated 377 valid responses.

AGE PROFILE OF THE RESPONDENTS AND GENDER WISE CLASSIFICATION

Table 1.2: Frequency distribution of age of respondents

<table>
<thead>
<tr>
<th>Age group</th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>20-29</td>
<td>105</td>
<td>27.9</td>
<td>27.9</td>
<td>27.9</td>
</tr>
<tr>
<td>30-39</td>
<td>109</td>
<td>28.9</td>
<td>28.9</td>
<td>56.8</td>
</tr>
<tr>
<td>40-49</td>
<td>93</td>
<td>24.7</td>
<td>24.7</td>
<td>81.4</td>
</tr>
<tr>
<td>above 50</td>
<td>70</td>
<td>18.6</td>
<td>18.6</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>377</td>
<td>100.0</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

Source: Primary data

The above table depicts that in the 20-29 age group there are 105 respondents which represents 27.9% of the sample. In the 30-39 age groups there are 109 respondents which represent 28.9% of the sample. In the 40-49 age group there are 93 respondents which represents 24.7% of the sample and in the above 50 age group there are 70 respondents which represents 18.6% of the representative sample of 377.
Out of the total respondents of 377, the no. of Male respondents was 230 (61%) and the no. of Female respondents was 147(39%).

**Table 1.3 : Frequency of online visits : Respondents and Percentage**

<table>
<thead>
<tr>
<th>Usage</th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>“daily”</td>
<td>79</td>
<td>21.0</td>
<td>21.0</td>
<td>21.0</td>
</tr>
<tr>
<td>“weekly”</td>
<td>97</td>
<td>25.7</td>
<td>25.7</td>
<td>46.7</td>
</tr>
<tr>
<td>“monthly”</td>
<td>93</td>
<td>24.7</td>
<td>24.7</td>
<td>71.4</td>
</tr>
<tr>
<td>“quarterly”</td>
<td>63</td>
<td>16.7</td>
<td>16.7</td>
<td>88.1</td>
</tr>
<tr>
<td>“annually”</td>
<td>45</td>
<td>11.9</td>
<td>11.9</td>
<td>100.0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>377</strong></td>
<td><strong>100.0</strong></td>
<td><strong>100.0</strong></td>
<td></td>
</tr>
</tbody>
</table>

The total no. of valid responses was (377). Of these, 79 (21%) respondents used the internet for car based information on a daily basis, 97 (25.7%) of them visited the internet on weekly basis and 93 (24.7%) of them visited on a monthly basis, 63 (16.7%) of the subjects visited once in a quarter and 45 (11.9%) of them visited once in a year. The subjects were either experienced or non-experienced online shoppers and majority of the respondents were interested in online shopping.
1.9.11 Questionnaire for analyzing B2B E-Commerce

Questionnaire Design

The questionnaire was designed to verify the B2B effectiveness of the suppliers of the three Automobile companies. The questionnaire was divided into five important sections covering five important dimensions of B2B E-Commerce. There were 28 questions in total covering all the five dimensions of B2B E-Commerce. The questions were asked and the opinions were elicited online. Meaningful responses were only considered which accounted to 394 in total. The questionnaire design is stated below:

Part –A of the questionnaire consists Automobile supplier related information and Supplier Profile which includes the first construct Supplier Tenure.

Part –B of the questionnaire consists five important sections covering five important dimensions of B2B E-Commerce.

Adoption practices

<table>
<thead>
<tr>
<th>No.</th>
<th>Questions on Construct : E-Commerce Adoption practices</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>In Sending and receiving e-mails from the Company</td>
</tr>
<tr>
<td>2.</td>
<td>In the Usage of Digital Catalogue for your business</td>
</tr>
<tr>
<td>3.</td>
<td>For better Interconnectivity vide Video Conferencing with Co. executives</td>
</tr>
<tr>
<td>4.</td>
<td>For Usage of E-Seal</td>
</tr>
<tr>
<td>5.</td>
<td>For Conducting E-buying activities online(e-procurement)</td>
</tr>
<tr>
<td>6.</td>
<td>For Exchanging information through EDI with the Company</td>
</tr>
<tr>
<td>7.</td>
<td>For Exchanging information through EDI with the trading partners</td>
</tr>
</tbody>
</table>

Operational practices online

<table>
<thead>
<tr>
<th>No.</th>
<th>Questions on Construct : Operational practices online</th>
</tr>
</thead>
<tbody>
<tr>
<td>8.</td>
<td>For Receiving Order online</td>
</tr>
<tr>
<td>9.</td>
<td>For Order Confirmation</td>
</tr>
<tr>
<td>10.</td>
<td>For Plan of Delivery of your products</td>
</tr>
<tr>
<td>No.</td>
<td>Questions on Construct: Effectiveness dimensions of e-hub</td>
</tr>
<tr>
<td>-----</td>
<td>---------------------------------------------------------</td>
</tr>
<tr>
<td>11.</td>
<td>For Notification of Delivery of your products</td>
</tr>
<tr>
<td>12.</td>
<td>In Generating Invoice</td>
</tr>
<tr>
<td>13.</td>
<td>For Booking transport online</td>
</tr>
<tr>
<td>14.</td>
<td>For Customs/Toll declaration</td>
</tr>
<tr>
<td>15.</td>
<td>For Price List Generation</td>
</tr>
</tbody>
</table>

**Effectiveness dimensions of e-hub**

<table>
<thead>
<tr>
<th>No.</th>
<th>Questions on Construct: Effectiveness dimensions of e-hub</th>
</tr>
</thead>
<tbody>
<tr>
<td>16.</td>
<td>In enhancing the Process Efficiency</td>
</tr>
<tr>
<td>17.</td>
<td>For Better Information Flow while conducting online operations</td>
</tr>
<tr>
<td>18.</td>
<td>In reducing the Maverick spending on for I.T. related products</td>
</tr>
<tr>
<td>19.</td>
<td>In Streamlining the Process</td>
</tr>
<tr>
<td>20.</td>
<td>For Better Inventory Management</td>
</tr>
</tbody>
</table>

**Cost Reduction dimensions**

<table>
<thead>
<tr>
<th>No.</th>
<th>Questions on Construct: Cost Reduction dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>21.</td>
<td>In Lowering the Administration cost</td>
</tr>
<tr>
<td>22.</td>
<td>In reducing the overall Production cost</td>
</tr>
<tr>
<td>23.</td>
<td>In reducing the Selling and Distribution cost</td>
</tr>
</tbody>
</table>

**E-benefits dimensions**

<table>
<thead>
<tr>
<th>No.</th>
<th>Questions on Construct: e-benefits dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>24.</td>
<td>Reduction in the Lead time in e-procurement</td>
</tr>
<tr>
<td>25.</td>
<td>In Improving overall quality of operations</td>
</tr>
<tr>
<td>26.</td>
<td>In Improving Labour Productivity</td>
</tr>
<tr>
<td>27.</td>
<td>In improving the production of auto components</td>
</tr>
<tr>
<td>28.</td>
<td>In improving the overall competitiveness of the organization vis-à-vis other firms in the industry</td>
</tr>
</tbody>
</table>
1.9.12 Composite Reliability and validity of the B2B E-Commerce Model

There are 28 questions categorised into 5 important dimensions in the questionnaire to analyse the B2B E-Commerce effectiveness of the OEMs and the Suppliers. The overall composite reliability is tested to ascertain the authenticity of the constructs.

Table 1.4 : Composite Reliability of the Questionnaire

<table>
<thead>
<tr>
<th>Cronbach’s Alpha</th>
<th>N of Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.843</td>
<td>28</td>
</tr>
</tbody>
</table>

Source: Primary data

According to Nunnally (1978), when the value of Cronbach’s α is higher than 0.7, means that the instrument is reliable. As per above table 1.4, it reveals the factors considered for the study in the questionnaire are reliable. Furthermore, the composite reliability of the Questionnaire reveals a Cronbach’s α of (0.843), which also depicts a high composite reliability value, meaning that all 28 items of the questionnaire measure the same vital factor (i.e. Effectiveness of B2B ). Therefore, the questionnaire is evidently reliable.

1.10 Scope and Limitations of the study

This study provides an excellent insight into the website of auto marketers and will assist them to analyze and understand the current online initiatives vis-à-vis future online marketing strategies to enhance online customer satisfaction. It provides directions for auto marketers to influence the new breed of online Consumers’ and help them decide with online content as to which car to buy before they enter a dealer’s showroom. However, the present study includes a small but justifiable and suitable group of online customers who were targeted and the respondents in Karnataka (of three Automobile manufacturing companies) are selected using online self selection sampling technique. Future research could be made by selecting a larger sample group covering wider geographical area and different groups of consumers
based on age and income in order to broaden the scope and knowledge of the study on online consumer behaviour.

Even though supply chain collaborative process management starting from Supplier-Original Equipment Manufacturer-Dealer-Customer, requires building trust, setting jointly established business goals, and designing inter-firm processes to meet these goals, of course with a strong technological confluence. Although these goals are not easy to reach, companies could strive to develop well defined collaborative objectives, establish joint performance measures in practice. The limitation of this study could be attributed to the limited but justifiable Supplier survey sample concentrating only on Automobile companies (OEMs) in Karnataka and their network in India. One such observation is that this study could be extended to other industries which are linked to Automobile industry.

1.11 Thesis Design: The study is divided into the following Chapters:
   Chapter 1: Introduction
   Chapter 2: History of E-Commerce and the Role of E-Commerce in the Automobile Industry in India.
   Chapter 3: Role of B2B E-Commerce and B2C E-Commerce In Indian Automobile Industry and Profile of Automobile Manufacturing Companies In Karnataka
   Chapter 4: Review of literature
   Chapter 5: Analysis and Interpretation of data
   Chapter 6: Summary of findings, suggestions and conclusion

1.12 Conclusion

Effective Website management online and B2C web strategies are vitally important, as the online landscape evolves rapidly with the emergence of powerful consumer-to-consumer tools like blogs, discussion forums, social networking sites and virtual worlds. Automotive companies need to stay focused on evolving consumer attitudes online. As with the web, the issues are dynamic and it is still too early to determine their ultimate impact on the automotive industry. Manufacturer/dealer collaboration in the form of effective retail integration and integrated lead management
would become more important than ever to satisfy increasingly sophisticated and demanding consumers and to retain their online loyalty. Companies would need to establish and maintain a true two-way dialogue with individual consumers through personalised communication to enhance online customer satisfaction.

The impact of web-based technology has increased the velocity to all activities of business and opened different avenues for business organizations. Today’s organizations are under tremendous pressure to improve responsiveness and efficiency in terms of product development, customer orientation, smoother operations and better utilization of resources with transparency. With the emerging application of Internet and Communication Technologies (ICTs), the companies are forced to shift their focus and strategically align their operations from traditional way of doing business to a virtual business or e-business, e-procurement, and e-supply chain philosophy. Hence there is a need for a comprehensive research framework to study the effectiveness of the automobile sector encompassing the Online Customers and Suppliers geographically spread throughout the India who are supplying auto components to these three Original Equipment Manufacturers (OEMs) in Karnataka.

The research methodology was chosen to address the current issues in the E-Commerce literature. Specifically, the quantitative study was carried out to validate both the research model and the hypotheses, and the qualitative study was then conducted to confirm the findings of the quantitative study. The research methods of each study were also appropriately justified based on the nature of the topic. In the quantitative study, the pre-testing of online users who search for car related information was done to ensure the scaling technique to measure the perception was appropriate. This analysis was done because it can evaluate accuracy of the research model in explaining online E-Commerce issues. In the qualitative study, the focus group analysis was adopted because it allowed the researcher to draw out and capture consumer attitudes about the topic. In Chapter 5 and Chapter 6, the analyses and findings of the quantitative and qualitative studies are presented and discussed.