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Information Technology Revolutionising Supplier Development Performance in Indian Automotive Sector

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Abstract- *The growth of automobile production in the ASEAN region has in tandem spurred the growth of an automotive supplier industry. In today's "hypercompetitive" business environment, most of global automobile OEMs have set up their manufacturing and sourcing operations in India to realize low cost advantage and skilled man power of India. Since the birth of 21st century, Indian automobile industry is not only going through a cut-throat completion and increasing sales volume but also has a challenge of supplying components at reduced cost and improved quality at par with global standards. Work-Culture of traditional businesses changed drastically by strong efforts of parent company on strategically, technological lean-manufacturing, training and development and usage of Information and communication technology for supplier development. Most of the auto OEMs being brand ambassadors having assembly lines, Green Supply Chain Management(GSCM) supported by Information and communication technology(ICT) is playing a vital role in meeting the procurement of auto components in most economical way . This study revolves around the change in the thought process by parent companies regarding supplier development from the last decade of twentieth century till first decade of twenty-first century where traditional manufacturing systems in Indian Automobile Industry were transforming to most modern system supported by Information and Communication Technology.ICT has still played a considerable role in QCD (Quality, Cost and Timely Delivery)and new concept of cloud computing is going to revolutionise the Indian Automobile Industry to be one of the most competitive supplier at global front in the coming future.*

Keywords- *ICT; GSCM; OEM; Supplier Development; Lean-manufacturing; Work Culture; QCD*

1. INTRODUCTION

Customer expectations of vehicle quality, reliability, safety, and utility at most competitive cost are at all-time high. To meet such continuously increasing of likings, supplier development practices becomes an important component to play a vital role for bringing improvement in buyer-supplier performance.

"Supplier development" can be understood as an activity that a buyer undertakes to improve a supplier's performance and/or capabilities to meet the buyer's supply needs. It can be an important "cornerstone" task in the deployment of a green supply chain system where Raw Material Cost varies from 50 to 70%. These activities comprises of assessing a supplier's operations, providing incentives to improve performance, fostering competition among suppliers and working directly with suppliers, either through training or likewise activity. In the present era suppliers treated as not business partners'.

ICT has emerged as strongest tool for provide maximum value to the customer in high competitiveness Organizations require agility in their supply chains to provide value added services as well as to manage disruption risks and ensure uninterrupted service to customers. Abdul et al. (2012) suggested that the utilization of supplier development practices is prevalent across several industries of developed economies for last four decades, especially in automobile sector where variety of component supplies is part of SCM.Humphreys (2003) concluded that mutual trust and good communication between a customer and a supplier are the keys to strengthen the relationship; keys to strengthen the relationship. Open communication and information sharing develop trust and motivate the supplier to high-class performance.

Long-term commitment is cornerstone in building trust as Toyota creates long-term commitment is that once suppliers have a contract for a part, it remains as long as the specific brand of automobile is in place, Kamath (1994). Today is an exciting time to be a part of the automobile industry, even though the demands on the business have never been greater. Customer expectations of vehicle quality, reliability, safety, and utility are at an all-time high. At the same time, worldwide overcapacity has put pressure on the industry to maintain, and even reduce, vehicle price over passage of time. Entry of Suzuki Motor as Maruti Udyog in Car segment and Hero Honda in two wheelers revolutionized the new supplier development process in India. Announcement of new policy on globalization of Indian automobile industry

by Government of India in Year-1991 further fueled this new growth pattern. More and more MNCs started operating automobile manufacture in India, generating a fresh demand of competent suppliers for meeting this challenge. Such an industry deals in a complex phenomena comprising of varied skill manufacturing activities. Despite of the fluctuating demand pattern in automobiles, auto components kept boosting further at domestic as well export front. India became one of the preferred countries for global supplies in auto-sector.

Furthermore, the auto O.E.Ms and Tier-1companies outsource maximum components so as to enable the concentric focus on their own core competencies for which they increasingly expect their suppliers to deliver innovative and quality products, timely deliveries at the most competitive cost. In case supplier fails to deliver the needs, then parent company is left with no alternatives except manufacturing the outsourced item in-house or changes the supplier or put efforts for improving the existing suppliers.

The author has studied various aspects of supplier development during her doctoral study research in 1999 pertaining to thesis submitted at Department of Business Management, Guru Jambheshwar University of Science and Technology, Hisar and present study is to check the difference in the approach by parent companies for developing its suppliers over a period ranging from the end of twentieth century till date in automobile industry in India. This can be understood as change in thought process of parent company for developing its vendors during pre-2000 to post-2000 in automobile industry in India which is one of the major contributors to Indian Economy.

2. LITURATURE REVIEW

Automotives use approx 40% of electronics and 14% information technology, the ratio which is set to increase in the near future. A sound practice of supply chain can be established and implemented by using Information technology applications for reduced development cycle times of products and suppliers.

Role of Information Technology in automobile sector has condensed supplier development and procurement into Supply Chain Management. The Council of Supply Chain Management Professionals (CSCMP, 2008) explains SCM as "the planning and management of all activities involved in sourcing and procurement, conversion, and all logistics management activities. Importantly, it also includes coordination and collaboration with channel partners, which can be suppliers, intermediaries, third party service providers, and customers". Results support the vendors-to-partners thesis that IT deployments in supply chains lead to closer buyer-supplier relationships (Bakos and Brynjyolfsson 1993)Information technology is an important facilitator of supply chain integration, due to its capability to surmount both time and distance constraints. Integration using information technology includes electronic data interchange (EDI), sharing data from traditional planning and control systems, but also the internet, Lambert, (2011).

There exists a scope of new suppliers for new markets. For meeting this multifarious challenge of technology transfers, collaborations and JV's took place which was capital intensive. Businesses started redefining where more stress was applied for strategic integration rather than production rationalization. This, alternatively, generated a huge scope of new vendor development for the economics of auto component manufacture.MNC's placed certain criteria for Vendor analysis, evaluation, selection and ranking is the process of finding the appropriate vendors who are able to provide the buyer with the right quality products and/or services at the right price, in the right quantities and at the right time, Mandal and Deshmukh (1994); Sarkis and Talluri (2002). Razmi et al (2009) established the essence of various types of discount schedules based on total quantity/incremental quantity may be offered by each vendor in each period simultaneously.

Muralidharan,et, et al (2002) hypothesized that in automobile industry, quality, cost and on-time delivery were considered as most important towards fostering the ongoing improvements. Some researchers have emphasized the consistency in control by project managers on project integration, scope, schedule, cost, quality, resources, communications, risks, and procurement. As a rule, if the manager fails to effectively manage any of these areas, the others will be negatively affected, Punia and Saharan, A. (2011). A growing body of literature suggests that a company will perform well if it collaborates with suppliers in new product development (NPD) and Suppliers Development Programme. Kadir et al. (2011) found that supplier development programs support the development of a supplier's capabilities usually with the assistance of a buyer.

Krause(1997) suggested that while concentrating upon the core competencies, buyer firm need substantial involvement in supplier development .Several firms engage themselves to facilitate their suppliers for the improvement of performance and capability through supplier development derives, Talluri et al.(2010).Collaboration between buyer and supplier is an emphasized topic in literature of SCM. This collaboration generates efficient and successful supply chain. Shokri et al (2010) emphasised that Supplier development is evolved parallel to customer development. Thus, long-term commitment of parent company to increase the capability of supplier, recognising its performance, strengthening buyer-supplier relations are some important components to make supplier development program meaningful. Krause and Ellram (1997),reported that feedback; evaluation; uplifting expectations for performance; along with training programs for supplier cluster, supplier award for recognition; temporary transfer of buyer's employees; and capital investment have been seen as a positive move in this direction.

Furthermore, Talluri et al (2010) analysed that quality improvement and cost reduction were manifested when

giants of automotive industry (General Motors, Ford, Chrysler, Nissan, Honda and Toyota) followed through supplier development programs to reinforce their suppliers. Amindoust et al (2010) emphasized six prime evaluating factors connected to supplier capability and performance i.e. technical capability, capacity, production facilities, price, quality and delivery which are burning issues of Indian automobile Industry. Such a value added responsibilities of suppliers has transformed them as an extension counter of the parent companies which is in line with the identification of suppliers has been concluded as one of the emerging best practices of buying Laugen et al. (2005). (Esmaeilli et al., 2009) inferred that the dominant supplier with high cost of setting up of production; it is the vendor who decides on the lot sizes is quite common in many large industries like automotive industry);
Technology acquisition for Tier-1 vendor development and its integration in the receiving firm often faces a number of problems such as a lack of sufficient leadership after acquisition, Punia and Kant (2013) or resistance to the acquisition from employees. Research has shown that small and medium sized vendor enterprises (SMEs) play an important role in the economic development of countries worldwide. Study of Sanders et al. (2011) indicate that buyer-to-supplier information sharing, buyer-to-supplier performance feedback and buyer investment in inter-organizational information technology are key enablers of buyer-to-supplier communication openness. Automotives use approx 40% of electronics and 14% information technology, the ratio which is set to increase in the near future.O.E.Ms and Tier-1 companies are aware of crucial role played by their suppliers to attain and maintain the competitive advantage, Krause (2000) and Ghijsen (2010). The literature on technology transfer supported by Information Technology does keep such developments aligned for beating the heat of competitiveness. Automotive industry has been stated as giant industry, 'industry of industries' which certainly is pioneer for supplier development practices. Application of Information Technology has added fuel for revolutionising it further.

3. RESEARCH METHODOLOGY

Fifty five companies from Indian Automobile Industry have been selected for study, out of which forty companies responded via post as well personal contact with employees at managerial levels, ten companies did not respond at all while rest five companies were reluctant to answer. The study was limited to NCR-Delhi region comprising of Faridabad and Gurgaon. Only three companies at rest of India were selected as this study was self sponsored.Table1, shows the details of various operating domains of automobile companies

Table-1: List of Companies Surveyed

S.no	Description of companies	No's	Type or domain
1	Old Companies studied in Year-1999	15	OEM,Auto component
2	Auto O.E.Ms	3	Two and Four wheeler
3	Auto component Manufacturing(Castings)	6	Ferrous and Non Ferrous
4	Auto Component Manufacturing(Forgings)	4	Ferrous and Non Ferrous
5	Auto Component Manufacturing(Sheet Metal)	5	Ferrous sheet Metal
6	Auto Component Manufacturing(Machining)	4	CNC and VMC
7	Auto Component Manufacturing (Tools &Dies)	3	Tool and Die making
	Total no. of companies	**40**	**Automotive Sector**

Tabular data has been compared with the similar observations made in 1999, to assess the change in the supplier development process compared to present (2013) scenario. Such comparison has been put in tabulated in percentage change (positive as well negative). Based on the comparison, results have been discussed to arrive at a meaningful conclusion. Contributors to this paper have been thanked and reviews of relevant literature has been acknowledged. Conclusions have been drawn based upon the analysis of primary data collected through questionnaire study.

4. ANALYSIS OF DATA

Various data collected during the survey have been summarized, analyzed and compared with the research thesis "Quality Management in Automobile Industry in India" (Sangeeta Sharma, 2002, Guru Jambheshwar University of Science and Technology-Hisar) to study the quantum of impact over this period. Table-2 corresponds to the views of supplier companies on various parameters considered by parent company for supplier development.

Table-2: Response of Companies On Parameters

S.no.	Parameters	Year-1999	Year-2013
1	Manufacturing Facility	10(67)	24(96)
2	Manufacturing Process and test	10(67)	24(96)
3	Financial Soundness	12(80)	18(72)
4	Accreditation to Quality Standard	5(33)	25(100)
5	Tech Qualification of Suppliers HR	5(33)	22(88)
6	List of Existing Customers	12(80)	22(88)
7	Credit Facility	15(100)	21(84)
8	Process Capability and control	7(47)	25(100)

9	Award Winning	Not Evident(0)	18(72)
10	Geographical Location	5(33)	18(72)
11	Use of SAP/Equivalent ICT	Not Evident(0)	18(72)
12	R&D Efforts and Innovation	Not Evident(0)	22(88)
13	Cost Reduction and value engineering	Not Evident(0)	24(96)
	TOTAL	81(42)	281(87)

(Bracketed data corresponds to the percentage of positive responses in respondent companies)

The primary data has been compared with the data collected in 1999.The variation has been calculated (positive variation stands for improvement/increase in corresponding parameter and negative variance stands for decrease in respective parameter) and arranged in Table-3 in terms of percent decrease or increase. Certain parameters which were not present or valid as on 1999 have been added now for discussion. Simple average has been taken at the end to assess the quantum of overall impact made on vendors by various vendor development derives.

5. RESULTS AND DISCUSSIONS

Table-3: Variation In Response To Parameters For Selection Of Suppliers

S.no.	Description of parameter	Year-1999	Year-2013	Variation (%)
1	Manufacturing Facility	67	96	+29
2	Manufacturing Process and test	67	96	+29
3	Financial Soundness	80	72	-8
4	Accreditation to Quality Standard	33	100	+77
5	Tech Qualification of Suppliers HR	33	88	+55
6	List of Existing Customers	80	88	+8
7	Credit Facility	100	84	-16
8	Process Capability and control	47	100	+53
9	Performance Award Winning	0	72	+72
10	Geographical Location	33	72	+39
11	Use of SAP/Equivalent ICT	0	72	+72
12	R&D Efforts and Innovation	0	88	+88
13	Cost Reduction and value engineering	0	96	+96
	TOTAL	42	87	**+45**

Firstly, Table -3 clearly indicates that, from 1999 to 2013, there is an increase on thrust by parent company for the suppliers on cost reduction and value engineering by 96%, R&D Efforts and innovations by 88%Use of Information Technology by 72%, performance award winning by 72% and accreditation to International Quality Standard by 77%.The parent companies have intensified its development derives and could achieve such a remarkable land mark.

Secondly, Table-3 also indicates that parent companies have played a great role in making the human resources of Supplier Company technically qualified and registered a positive shift by 55%, followed by increased manufacturing facilities, process and test by 29% as compared to Year-1999. The above positive shift clearly indicates that there is immense improvement on cost reduction, timely deliveries and enhanced quality components at competitive rates which has been reviewed by many researchers also.

Thirdly, out of surprise there is a negative shift in demand of parent companies on financial soundness of its supplier under development has fallen down by 8% and asking rate of credit facilities has reduced by 16%.There are trends that parent companies are extending financial assistances to supplier companies for technological up gradations, usages of Information technology and bill discounting against supplies. Parent companies are showing less interest in credit deliveries rather reduced cost supplies is a preferred feature here.

Lastly, Table-3 exhibits that there is an overall improvements by 45% in improving upon the various parameters for developing a supplier by parent companies in automobile industry in India. Consideration of some new slots for companies under supplier development like weightage in performance awards winning, establishment of Research and Development cell, efforts on value engineering and usage of Information and communication technology have been a great attraction of parent companies/OEMs.Supply chain management (SCM) is reshaping as Green Supply chain Management (GSCM), information technology has become one of the most effective tool for improving performance of suppliers. New concept of cloud computing is further penetrating at suppliers' end.

6. CONCLUSION

It has been examined and analyzed that parent companies have been putting their exhaustive efforts for supplier developments in the area of controlling cost and improving quality of automobiles. New concept of Green Supply Chain Management is a buzz word where suppliers are being developed as long term business partners. Despite of increase in raw material and conversion cost, the cost of automobile has not increased proportionally, rather it is under strict control. Over the period of one decade ,post year 2000, the parent companies have worked 45% extra

continuously and successfully on parameters responsible for cost cutting and quality enhancement. Various supplier development derives over this period could help the parent companies for pushing its suppliers towards quality improvement and cost reduction. The entry of Information and Communication Technology, TQM Practices, Quality Management system, low cost automations, GSCM, cloud computing and innovative way of working will further broaden the scope of new investigating this topic and many more researches are yet to be seen on this topic in a growing automobile industry.MNCs have played a great role in developing Indian Automobile Industry.

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