Significance of Supplier Relationship Management towards Product Quality Development in Automobile Industries

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Abstract: This research paper is focused on the role of Supplier Relationship Management (SRM) in product quality development in automobile industries. SRM can be defined as a method of interaction between the company and the suppliers with the motive of achieving mutual benefits. The supplier may be having different business culture than the company. So, in this case SRM provides a common platform for interaction between the company and its suppliers resulting in efficient process related to material handling, procurement and goods management. This has direct positive impact on the product quality.

KeyWords: *Supplier Relationship Management; Product Quality Development; Procurement; Goods Management*.

I. Introduction

The growing market competitions are forcing the organizations/ O.E.Ms to enhance the product quality as well as to reduce the cost of the product. The firms are using different methods of product quality development to mark their position in the market. Supplier Relationship Management is one of the practices to achieve better quality products in more efficient way. Moreover, supplier's participation has somehow become important for the organizations to gain innovative technical advancements for product development (Song and Benedetto, 2008). Fig. 1 shows a relationship chain between suppliers, companies, customers, dealers, etc.

Fig.1: Relationship Chain

In this research paper our objective is to show the influence of supplier relationship management on the product development. A questionnaire will be evolved considering all the factors which would measure and evaluate the Suppliers for certification process and SRM there of.

II. Supplier Relationship Management

Supplier Relationship Management (SRM) can be defined as the process of communication between the company and the suppliers. Supplier Relationship Management is the way of defining the interaction between a company and its suppliers. As a company works hard to maintain a healthy relation with its customers, similarly, it is required for a company to strengthen relationship with its suppliers. SRM comprises of both, software and business practices. It is designing of functional procurement methods in policy based strategic way. It is also considered as the information flow component in Supply Chain Management (Tobias and Peter, 2009).

The importance of SRM in an organization is to provide a common platform for interaction between the organization and its suppliers whose business practices may differ from those used by the organization. SRM enhances the efficiency of process related to procurement, goods management and materials processing. The use of SRM by an organization can provide mutual benefits between the organization and its suppliers i.e. it will create a win-win scenario for the organization as well as the suppliers through the proper use of time, available resources and business support.

After identifying the potential suppliers for the organization, SRM can be used to interact with those crucial suppliers and manage the mutual relationship. This will result in better relationship leading to continuous betterment from the side of the supplier and will also have a positive influence on product development.

The research by Hartley et al., 1997a clearly states that the early involvement of the suppliers in product development phase will lead to reduction in development time, will also help in avoiding production problems from both sides, the suppliers and the customers and will eventually lead to enhanced product quality. This statement is proved in the case of Honda, America as the company initiates the process with their suppliers two to three years in advance of the launch of a new model (Fitzgerald, 1995). Most of the researchers have focused on the product development time by considering the supplier relationship management (Clark, 1989). The involvement of the suppliers at an early stage also helps in determining their manufacturing limits during the product designing process and this helps in avoiding

many problems which may be faced at a later stage. Moreover, the suppliers may also contribute in the product design giving rise to many possibilities of reducing cost and enhancing product quality (Hartley et al., 1997a).

According to Petersen et al., 2005 better relationship with the suppliers enables improved decision making capabilities among the project team during the product development phase which leads to development of better design concept and improved financial efficiency.

Considering the case of technology for better product, the place of suppliers cannot be neglected, especially in automobile sector. The suppliers hold a great share of technology in the market. So, the companies are trying to improve and develop their relations with the suppliers by using different programs and management tools to involve technology transfer between them for producing world class products (Sangeeta, 2013). In other words it can be said that the supplier's participation in product development could help in activities responsible for excessive expenditures and also enables just-in-time delivery mechanisms between the company and the supplier (Kulmala et al., 2002).

Good relationships lead to build a bond of trust between the organization and the suppliers. It has been also proved by different researches that advises by a trusted companion is valued more and are likely to be used (Moorman et al., 1992). In business trust is very much effective and also acts as low price medium for protecting particular investments of the organization (Hill, 1995). Moreover, trust has the capability to avoid any conflicts and misunderstandings between the organization and the supplier during product development phase (Anderson and Narus, 1990).

To build a proper supplier relationship, supplier development efforts must be made by the organization. Each effort by the organization towards supplier development has a particular effect on the particular dimension of the relationship which results in competitive advantage for the organization. The research also confirms the improvement of supplier relationship by the use of supplier development efforts made by the organizations (Li et al., 2006). But there are some organizations who target those suppliers which do not depend on the organization's efforts to participate in self training and product development (Chavhan et al., 2012).

III. LITERATURE REVIEW

Table 1

Author (Year)	Country	Focus
Thomas Y.Choi Karen Eboch (2000	USA	Relation among TQM Practices,Plant perfection and Customer Satisfaction
Carol Prahinski W.C.Benton (2004)	London USA	Supplier Evaluation :communication strategies to improve supplier Performance
Anthony Paul raj Augustine A .Lado Injazz J.Chen (2008)	USA	Antecedents and performance outcome in collaborative buyer-supplier relationship
Renu Agrawal, Roy Green,Paul J Brown,Krithina Randhwa,Hao Tan (2013)	Australia	Determining Quality Management Practises
Seen De B,Brian Fynes (2004)	Dublin Ireland	Effects of design quality on Quality Performance
Devendra Kumar Dewangar, Rajat Agrawal Vinay Sharma (2015)	India	Enablers of Competitiveness of Indian Manufacturing Sector
Janet L.Hartley Thomas Y Choi (1996)	USA	Exploration of suppliers Selection Practices across SC
Brian Fynes Chris, Voss Seen de Burce (2005)	Dublin Ireland	Impact of supply chain relationship , quality on quality performance
Samuel E.Boye KwasiAmoako-Gyampah (1998)	USA	Manufacturing planning & control practices and their internal correlation
G S Dangayach, S G Deshmukh (2000)	India	Manufacturing strategies experiences of selected Indian organizations
L M Corbett, C Campbell-hunt (2002)	NewZealand	Manufacturers response to business success in small and medium Enterprises
Srinivas Talluri Ram Narasimhan Wenming Chung (2010)	USA	Manufacturers cooperation in supplier development under risk
Tobias Teich Dimitry Ivanov (2009)	West Germany	Management Concept and tools of competence-cell based modularized agile supply chain
Ron Mc Lachlin (1997)	Canada	Management Initiatives and JIT manufacturing
Janet L . hartley B J Zinger Rajan R Kamath (1997)	USA	Managing Buyer Supplier Interface on time Performance in production development
Haritha Saranga (2004)	India	Indian Auto Component Industry
Veli-matti Virolainen (1998)	Finland	Survey of Procurement strategy Development in Industrial Loss
Omayma A Nada, Hoda A Elmaraghy (2006)	Canada	Quality Prediction in Manufacturing System Design
Sachin B Modi Vincent A Mabert (2006)	USA	Improving supplier Performance through Knowledge transfer
Kenneth J Peterson Robert B Handfield Gary L Ragatzi (2004)	USA	Supplier integration into New product development
Janet L hartley B J Zirgar (1996)	USA	Managing buyer-supplier interface for on time perfection in product

Catalina Gabriela Lixandru (2015)	India	Supply Quality Management for component introduction in the Automotive Industry
Rajendra Chavhan Dr S K Mahajan Joshi Sarang (2012)	India	Supplier Development
Deepika Joshi Bimal Nepal Ajaypal S rathore Dipti Sharma (2013)	India /USA	Supply chain competitiveness of Indian automobile component manufacturing industry
Kaveh Abdolmaleki Sahar Ahmadian (2015)	Iran	Relationship between customer and supplier and Involvement of new product development
Fiona Lettice Clare Wyatt Stephen Evans, (2009)	Uk	Buyer-Supplier Partnerships during product design and development in the global automotive sector
Marcos A M Primo Susan D Amundson (2001)	USA	An exploratory study of the effects of supplier relationships on new product development outcomes
Janet L hartley Rajan R Kamath (1996)	USA	Managing buyer supplier interface by on time perfection in production development
Wenli Li Paul K Humphreys Andy CL Yeing TC edwin Cheng (2006)	China UK	Supplier development efforts on buyer competitiveness advances
Sangetha Sharma (2013)	India	Vendor Up gradation .

A. Summary of Table 1

In Indian Context ,authors focused on Supplier Development ,Evaluation of supplier and certifications, Vendor Up-gradation, Supply chain competitiveness in the context of Automotive industries and Enablers of competitiveness of manufacturing sector . (Dewangan,Agrawal (2005), Dangayach,Deshmukh(2000), Haritha Saranga, Sangeeta sharma(2013), deepika joshi ,Dipti sharma (2013), Rajendra Chavhan,SK Mahajan, Joshi (2012).

USA authors highlighted :Supplier Selection process ,Buyer -supplier interface for on time performance ,TQM ,Customer satisfaction and plant performance ,Collaborative strategies of Buyer and supplier ,Supplier Knowledge enhancement ,Supplier Integration into New Product Development and Manufacturing Planning and Control practices. (Vincent A Mabert (2006),Petersen(2004),janet L Hartley(1996),Antony paulraj(2008)KarenEboch,S Boye(1998),S Talluri(2010),Zirger,Kamath (1997),

Authors from Germany ,Australia,Canada ,Uk ,China And New zealand ephasized on agile supply Chain ,Quality Management practices ,JIT Manufacturing , management initiatives ,buyer supplier partnership during Product design ,supplier Development efforts on Buyer Competitive advantage ,Manufacturer's response to business success ,impact of Supply chain relation on Quality performance for relationship management and competitiveness building. (Fettice,Wyatt(2009),Humphreys(2006),Virolainen(1998),O A Nada(2006), Tobias (2009), McLachlin(1997),Campbell-hunt(2002),Brian Fynes(2005),Roy Green (2013),W C Benton(2004).

Table 2

Author (Year)	Country	Finding
Thomas Y.Choi Karen Eboch (2000)	USA	TQM Practices have strong impact on Customer Satisfaction than they do on Plant performance. Implementation of TQM follows plant performance
Thomas Y.Choi Karen Eboch (2000)	USA	TQM Practices have strong impact on Customer Satisfaction than they do on Plant performance. Implementation of TQM follows plant performance
Anthony Paul raj Augustine A .Lado Injazz J.Chen (2008)	USA	Inter-organisational communication proposed as a relational competency enabling strategic advantage for supply chain partners.
Renu Agrawal, Roy Green,Paul J Brown,Krithina Randhwa,Hao Tan (2013)	Australia	Good management practices i.e. lean manufacturing, Kaizen,PMS,employee motivation have potential to enhance productivity of manufacturing firms.
Seen De B,Brian Fynes (2004)	Dublin Ireland	Significant impact of design Quality on conformance of Quality ,product cost ,time to market and external quality in use. Improves quality in market place and competitiveness.
Devendra Kumar Dewangar, Rajat Agrawal Vinay Sharma (2015)	India	11 major enablers of competitiveness obtained. Top management commitment, technological development capabilities ,continuous improvement,Long term strategy,new product development are vital few.
Janet L.Hartley Thomas Y Choi (1996)	USA	Increased level of out sourcing and heavy reliance on supply chain as a source of competitive advantage. Quality and delivery consistency,Technical capabilities,Flexibility,price and service are important criteria for supplier selection.
Brian Fynes Chris, Voss Seen de Burce (2005)	Dublin Ireland	Mutual trust and commitment central to a more enlightened supply chain and relationship. Early involvement in design and development impacts quality into the product leading to customer satisfaction and Product quality.
Samuel E.Boye KwasiAmoako-Gyampah	USA	Modern Practices like TQM ,JIT practitioners have lower unit manufacturing cost,higher

(1998)		quality and hence competitive.
G S Dangayach, S G Deshmukh (2000)	India	Top management must give its attention to enhance manufacturing strategies. Cost,Quality,delivery,flexibility,innovation,competitive price are common qualifers.
L M Corbett, C Campbell-hunt (2002)	NewZealand	Manufacturing Capabilities related to market requirements are imperative for business success. WCM or best practices approach are needed for the top management as the key areas to work on. Trained ,multi-skilled team plus dedicated management team passionate about technology and production can bring out success.
Srinivas Talluri Ram Narasimhan Wenming Chung (2010)	USA	Supplier Development is a long term resource consuming business activity which requires commitment from both manufacturing firms and supplier. Manufacturing firms to invest significant amount of resources in suppliers. Single manufacturer and multiple suppliers, Two manufacturers and multiple suppliers were analysed and novel method obtained.
Tobias Teich Dimitry Ivanov (2009)	West Germany	Customer oriented dynamical supply chain and agility are drivers
Ron Mc Lachlin (1997)	Canada	JIT flow,JIT quality and employee involvement are major initiatives. Training ,Team work, visible commitment indicative of success.
Janet L . hartley B J Zinger Rajan R Kamath (1997)	USA	Supplier with strong technical capabilities reduces supply related delays. Use of cross functional development team within suppliers organisation can accelerate product development.
Haritha Saranga (2004)	India	Working capital is important. High Cost capital and advance for Raw Material affect Lower tier smaller firms dealing with simple parts as they have to wait long for payment.
Veli-matti Virolainen (1998)	Finland	Competitive and collaborative strategy.
Omayma A Nada, Hoda A Elmaraghy (2006)	Canada	Prevention Of Errors will help in achieving higher Quality Level . USA Non value added activities need to be reduced with respect to time and money .Investing in opportunities for improvement adds to competitiveness.
Sachin B Modi Vincent A Mabert (2006)	USA	Organization implementing supplier Development Programme to maintain capable and high performance supplier base. Evaluation and Certification efforts are must prerequisite before operational knowledge transfer.
Kenneth J Peterson Robert B Handfield Gary L Ragatzi (2004)	USA	Supplier involvement at early stage is key coordinating process in supply chain design, product and process design..
Janet L hartley B J Zirgar (1996)	USA	Supplier with Strong Technical Capabilities reduce supply related delays . New product Introduction an important factor of competition .
Catalina Gabriela Lixandru (2015)	India	PPAP and APQP indentified to decrease the PPM rate .
Rajendra Chavhan Dr S K Mahajan Joshi Sarang (2012)	India	Auto Firms to be competitive should have high performing suppliers . Efforts should be on to upgrade the suppliers capability
Deeipika Joshi Bimal Nepal Ajaypal S rathore Dipti Sharma (2013)	India /USA	Interaction between performance drives and management action is complex. Workers' Skill ,Globalization and Govt Regulation contributes to overall competition
Kaveh Abdolmaleki Sahar Ahmadian (2015)	Iran	There lies an association between customer participation and supplier with new product performance.
Fiona Lettice Clare Wyatt Stephen Evans, (2009)	uk	vehicle manufacturer and supplier need to understand the high investment in resources and time . Supplier need to invest in new equipments, Process and Techniques to achieve level of improvement and alignment.
Marcos A M Primo Susan D Amundson (2001)	USA	Level of supplier involvement on the New product project is seen as contingent on the level of technical difficulty of the project .
Janet L hartley Rajan R Kamath (1996)	USA	Priority that Buyers top management places on the project and the technical change , it augurs well for the project on-time completion .
Wenli Li Paul K Humphreys Andy CL Yeing TC edwin Cheng (2006)	China UK	Joint action and Trust are two most critical elements to enhance operational effectiveness
Sangetha Sharma (2013)	India	Need to pronounce Vendor/Supplier as business partners jointly working towards common goal for sustainable competition .

B. Summary of Table 2-

Summary Findings of all authors:

Good management practices have potential to enhance the productivity of manufacturing firm.TQM practices have strong impact on customer satisfaction.

11 major enablers of competitive strategy outlined, increased level of outsourcing and reliance on supply chain is seen to be a source of competitive advantage .Mutual trust and commitment central to Supply chain relationship. Modern practices i.e. JIT ,Lean Manufacturing , SPC, Cellular Manufacturing, Kaizen yield major goals .Top management's visible commitment and Manufacturing capability of a firm are panacea .Customer oriented dynamic supply chain and agility drive the growth .Cross Functional Teams ,supplier with technical capabilities accelerate product development. PPAP, APQP, Defect prevention technique institutionalized for achieving big Quality

C. Discussion:

From the above literature review , it clearly emanated that supplier Relationship management and their development are indispensable in the present era in the context of automotive manufacturing industries .

But the fact remains , who are the suppliers with which buying firm should engage with and how to go about it remains a million dollar question .

In view of above it was decided to find out the key words spelt out in the literature and their relevance in the Indian automobile manufacturing industries .

Couldn't find in the research articles how to assess the suppliers and give them the self certified status though it has been enunciated by Sachin B Modi (2006) in the paper" Improving supplier performance through Knowledge Transfer ."

No mention in the literature on the empirical formulae or yardstick on the measurement of overall capability of a supplier.

Be that as it may ,there was a consensus on following parameters from both Indian and Foreign authors with regard to the Supplier development activities and maintenance of product Quality of the Buying firm .

All were equivocal on the following aspects .: Role of Top management and commitment ,TQM practices ,Equipment ,Process and Techniques ,Strong Technical capability ,Workers ' skill , Statistical Process Control ,

Design Quality and Early supplier involvement , Working capital and infrastructure ,Error prevention ,PPAP/APQP for PPM rate ,Enablers of competitiveness , Long term strategy , Supply Chain coordination , Continuous improvement , New Product development ,Service Quality etc .

An attempt will be made therefore to devise a checklist considering all above factors found in the literature and its relevance with the automotive industries in Indian context.

Various factors are responsible for supplier up-gradation which lead to production of better quality products. These factors will be fine tuned to construct a questionnaire with the parameters to be validated by the senior management from auto industries working in various functions .

The afore mentioned factors can be classified in two groups i.e. Manufacturing Capability Up-gradation and Quality Systems Improvements.

D. Manufacturing Capability Upgradation:

The manufacturing capabilities up-gradation comprise those efforts and methodologies which are practised by the organizations to enhance the quality of manufacturing at reduced cost. The key factors would constitute the following which were evident in the literature findings .

- *Up-gradation of Manufacturing Facility*

The organizations must invest regularly in upgrading manufacturing facilities to gain latest available facilities in the market. This can be achieved by new ventures with suppliers with high potentials. Such ventures will help in increasing the manufacturing capabilities of the organization (Song and Benedetto, 2008).

- *Process Control Equipments*

Smart work is always better as compared to hard work as it saves time and resources. Process control equipment is crucial factor which helps the organization to achieve the target of high quality products (Lockstrom et al., 2010). These results towards the stable and reliable product development process as the need of automobile industries.

- *Tools Dies and Fixtures Improvements*

The organizations must try to get trendy tools dies and fixtures by improving the conventional methods to get better quality products at reduced cost because smart work is better than hard work.

- *Inspection Facilities*

Inspection is one of the important step taken to ensure production of high quality products.We can say that upgrading inspection facilities can be advantageous for both company and suppliers. Moreover, this is also supported by the research by Millson et al., 1992 who say that including enhancement of inspection facilities at an early stage will reduce the total product development time. The research of Nijssen et al., 1995 says that if company and supplier work together on product inspection, the supplier may determine about the improvement required in the facilities and type of improvements needed.

- *Tool Room Facilities*

The objective of every organization is to produce high quality products at best reduced cost. This fact is also supported by the research of Porter, 1985; Brookes, 1998; Li et al., 2006. Moreover, the products with low priced high quality products also give a leading edge to the organizations in the competitive market (Hayes and Wheelwright, 1984). So, companies must try to achieve such tool room facilities which will enable them to manufacture cheap products but with high reliability and quality.

- *Strengthening Technical Infrastructure*

The technical infrastructure of an organization also affects its success in the market. So, it is mandatory for an

organization to have a strong technical infrastructure to be a leader in the competitive world. This can be easily achieved by technology transfer between the company and its suppliers (Sangeeta, 2013). It has also been said that with smooth relationship between the organization and the supplier , the technical abilities of suppliers can support the technological capabilities of the firm leading the firm to be a leader in the market (Clark, 1989).

- *Condition of Machines*

The condition of machines can contribute significantly to the cost of the product development and product quality. If low quality machines are used then there are chances of break down which will result into expenditures to repair. Poor functioning machines may also result in products with low finish quality.

Role of infrastructural issues can not be ignored .(GS Dangayach ,2000)

- *Shop Lay out House Keeping*

The proper shop layout and implementation of housekeeping may help in saving a lot of time which will ultimately reduce the overall time for product development. This can be done by using cranes, fork-lifts, pallets, trolleys, implementing 5S,Kaizen etc.(Paul J Brown ,K Randhwa ,2013)

Quality System Improvements

Along with upgrading the manufacturing capabilities of the organization, it is necessary to improve the quality systems of the organization by implementing different quality tools. In our Literature review ,we arrived at following factors for the consideration in our questionnaire .

- *Management of Quality*

To achieve best quality products the organization must use various quality management techniques. The extension of quality management mindset to the whole supply chain is beneficial for the organization. This can be done by explaining everyone the importance of zero defects, importance of quality, continuous improvement methods (KAIZEN), etc. (Lockstrom et al., 2010). Moreover, if a company uses certified tools, equipments and raw materials then there is less chance of any failure or wastage of capital. These facts point towards implementing quality management at every stage starting from recruitment of employees by Human Resource to the production line. A quality process will lead to quality products. So, we considered this as a factor in our survey.

- *Quality Planning and Change Control*

To achieve a target there should be a proper planning. In organizations implementation of quality management techniques must be pre-planned for various stages of production. The plan should be such that it does not require major or frequent changes as they may delay the product development process. To avoid these situations the Japanese firms are implementing approach of incremental innovation which helps in quick development and introduction of new products (Hartley et al., 1997b). This is also supported by the research of Gomory, 1989; Clark and Fujimoto, 1981; Sanderson, 1992; Funk, 1993. The other research also says that minor technical changes reduces uncertainties of market and technologies. This also reduces the complexity in the project during the production (Zirger and Hartley, 1994). The supplier can contribute more to the product development if a new design is being as compared to use of old design (Hartley et. al., 1997a). Considering such deep research on this factor we decided to include it in our survey.

- *Control of Purchased Material*

To get good quality products there should be control of purchased materials within an organization. There should be specific investments made for material handling in the organization. If necessary it can be achieved by new ventures, proper use of available materials and investing in function specific tools and equipments. If any organization fails in controlling purchased material, unnecessary ventures may lead to wastage of time as team members may take time to get adapted to new environment and standards of the venture (Stump and Heide,1996). Overuse or wasting of purchased materials may lead to extra expenditures which will increase the overall product cost. This factor was included in the survey considering the cost of the product.

- *Control During Processing*

This is one of the important factors for effective product development. It is necessary to make accurate decision during the product development process to reduce the overall time and cost. To achieve the quality product the organizations should have the ability to make better and faster decisions with improved team participation. The process must be goal oriented or else a lot of time will be wasted and nothing will be achieved. This can be made possible in various ways such that developing familiarities between technologies and standards used by the supplier and the organization. This would help in smooth functioning of the organization during product development (Monczka et al., 2000). These facts have been also supported by the research of Spina et al., 2002. Various quality tools such as 5S and Kaizen can also be used to ensure control in different processes followed during the product development phase.

- *Statistical Process Control*

The use of data in making the process of product development will turn out to be much more productive than taking random decisions. So, it's been advised that organizations must consider the data analytics by the experts and from suppliers to avoid the market risks. This can also be done by implementing different statistical tools. The involvement of suppliers in risk assessment will build a trust between the organization and the suppliers.SPC ,TQM and Cellular Manufacturing processes have competitive advantage .(S .Boye, 1998)

- *Control on Finished Product*

The control on finished product is mandatory for organizations profit and satisfactory customer relationship. A proper check must be there on the finished products dispatch according to demand. The sales and dispatch

should be pre-planned based on the orders received (Griffin and Page, 1996). There should be proper inspection of finished product to avoid any defective products to the customers. The suppliers with knowledge of design and specifications of product may support the organization in finished product inspection contributing to reduced overall time of product development phase.

- *Non-conforming Product Control and Corrective Actions*

This factor was considered in our survey keeping in after sales and inspection point of view. If the organizations get any complaint from customer then it should be attended with priority and a prompt response should be made as this would help in building a healthy customer relationship, and will also build a bond of customer loyalty with the organization. A proper team should be made to work on identifying the root cause of problem reported by the customer and timely implementation of corrective actions must be made. A department or group consisting of people from organization and suppliers should be made to do effective monitoring of the issues reported by the customers and to ensure satisfactorily response to the customers.
prevention of errors help in achieving higher Quality levels.(Nada,H A Elmaraghy,2006)

- *Control of Measuring and Test Equipments*

The control on measuring and test equipments can be made by their calibration on proper intervals. This will ensure quality products are being manufactured continuously. It will also help in avoiding any dispute on the global level and the product with calibrated designs will be accepted globally.

IV. CONCLUSION

Having identified the critical parameters for manufacturing capability and Quality system requirement a framework will be developed to evaluate and certify the supplier performance and focused relationship management with the desired ones. The said frame work or instrument will be administered to suppliers having expertise in various functions i.e. casting ,Forging ,Machining ,Sheet metal ,Proprietary and Rubber /plastic items. Suppliers must have been associated with OEMs for minimum 5 years and need to be chosen with different sizes and strength. Responses will be measured and validated through a proper structural Model to find out the significant parameters responsible for new product development and competitiveness building of automotive industry.

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