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Review on Issues Faced by SCM in Automotive Sector for IT Implementation

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ABSTRACT: The automotive sector is reshaping faster than ever before. Technology advancements are redefining this sector for implementation of IT enabled system. To stay relevant in this fast-changing market, automakers must adopt IT system. In this review paper, discussion on IT implementation for SCM suppliers in automotive sector in and around Pune region is mentioned. SCM suppliers of tier 1, tier 2, tier 3, tier 4 are considered along with issues faced by them during implementation of IT softwares. SCM suppliers in automotive sector are rarely interested for this implementation.

Keywords*:* Supply chain management, suppliers, information technology, automotive industry, motor industry.

1.INTRODUCTION:

The SCM in automotive industry is most complexes in the world. Dealers also play an significant role in today's manufacturing world.. Suppliers consequently have a huge impact on costs in addition to quality, technology, speed, and responsiveness of buying companies. Reinforcing this point, Ragatz, Handfield et al.[1] noted that the "actual combination of suppliers into product value supply chains will be a key factor for some manufacturers in accomplishing the developments essential to continue modest". To enhance the agility of supply chain management information technology must be adopted by motorized industry. Therefore, for eventual growth of business in SCM for automotive industry can be restrained by using implementations of various information technology facilities. So in this paper all the methods and the way in which they can be accepted by automotive industry are explained in more detail.

1.1 Supply Chain Management:

A valuable description of supply chain management: "SCM is the mixing of key business
A valuable description of supply chain management: "SCM is the mixing of key business procedures from end user through innovative suppliers that offers products, facilities, and data that add value for customers and other investors" [4]. Operational information about the production procedure has to be shared among suppliers and manufacturer for supply chains to be actual. Characteristically the goal is to produce industrial process seamlessly across the supply chain in a way the competition can't simply match [2].

1.2 The automotive supply chain:

The automotive supply chain for manufacturing trucks, cars , electronic cars and other vehicles is one of the most intricate in the world. It's becoming more global too, second only to the electronics sector for the spread of suppliers, manufacturers and other third parties around the world. Globalization adds some inimitable complexity to the automotive supply chain, and demands practical solutions from vehicle manufacturers and brands.
Along with globalization changes in manufacturing processes, consumer demands and new, disruptive trends all impact on the vehicle supply chain network for raw materials, parts and finished automobiles.
In automotive supply chain, managers require minimum costs, optimized manufacturing and distribution, and asurity that parts and products get to the right organizations at the right time .In this research paper, we explore some of the

main challenges facing automobile manufacturers for implementation of Information Technology and it's various methods.

1.3 Information technology and the supply chain :

To overcome both time and distance limitations , Information technology is a significant organizer of supply chain. In addition to the use of information technology, various methods like EDI,RFID, sharing of data from traditional methods and control systems are also playing important role. Due to rapid development and involvement of Information and communication technology innovative use of these new technologies within supply chain management is vastly growing.

2. Problem Statement:

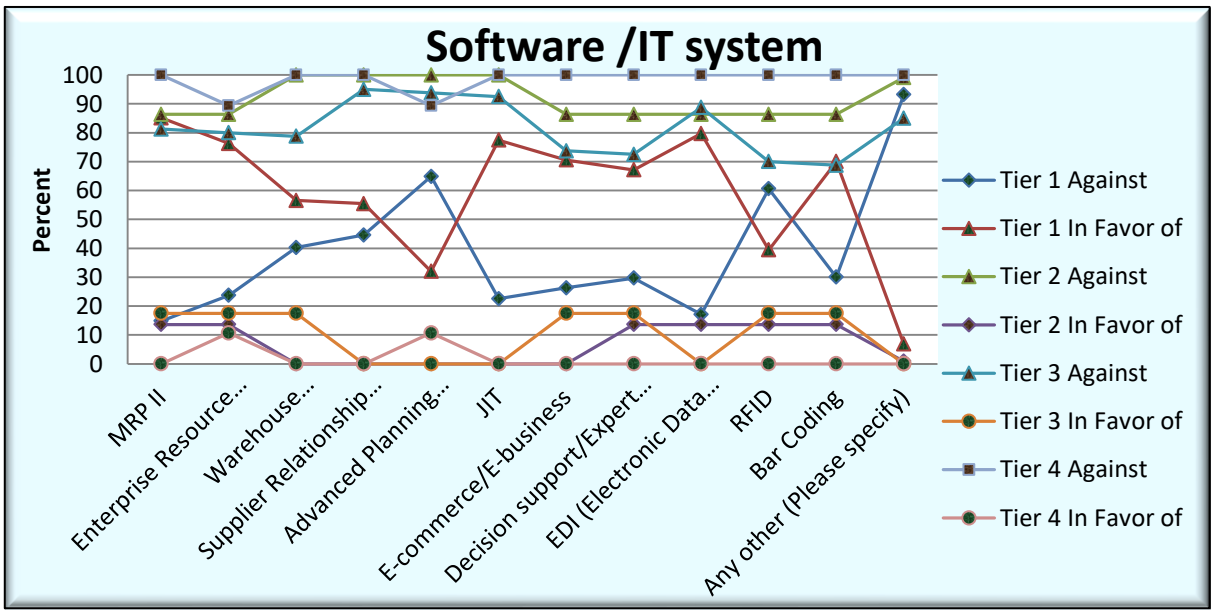
The use of information technology to integrate and enable the supply chain management, the writer came to the decision that this research subject is a split domain of hypothetical research. Although there has been a lot of writing about supply chain management, it is necessary to have combination with the automotive manufacturing but will not be considering dissimilar factors. Hence, the effective usage of information technology in supply chain management must be an interesting study. The substantial problem statement can be framed as follows: There is a lack of study and availability of focused knowledge about the pioneering use of information technology within supply chain actions in the automotive industry.

Objective:

To study the efficiency for implementing the IT enabled SCM for suppliers in automotive sector in and around Pune region.

Analysis:
Analysis plays a vital role to get insights from data for future improvements. So it is necessary to show results in graphical format , for easy understanding of huge amount of data. So the Questionnaire was designed for suppliers to collect data. To get this results, after data collection analysis has been done. Few of analyzed graphs can be represented as follows:

Q.1 Classify the following systems as standard software / customized software and any other type which may have resulted in considerable improvement in supply chain process?



Summary:

Tier1 'Against': The major response is for Advanced Planning System; then RFID; Supplier Relationship Management; then Warehouse Management System; then Bar Coding; then Decision support/Expert system; then E-commerce/E-business.

Tier2 'Against': The major response is for Warehouse Management System; then Supplier Relationship Management; then Advanced Planning System; then JIT; then MRP II; Enterprise Resource Planning; E-commerce/E-business; Decision support/Expert system; EDI (Electronic Data Interchange); RFID; Bar Coding.

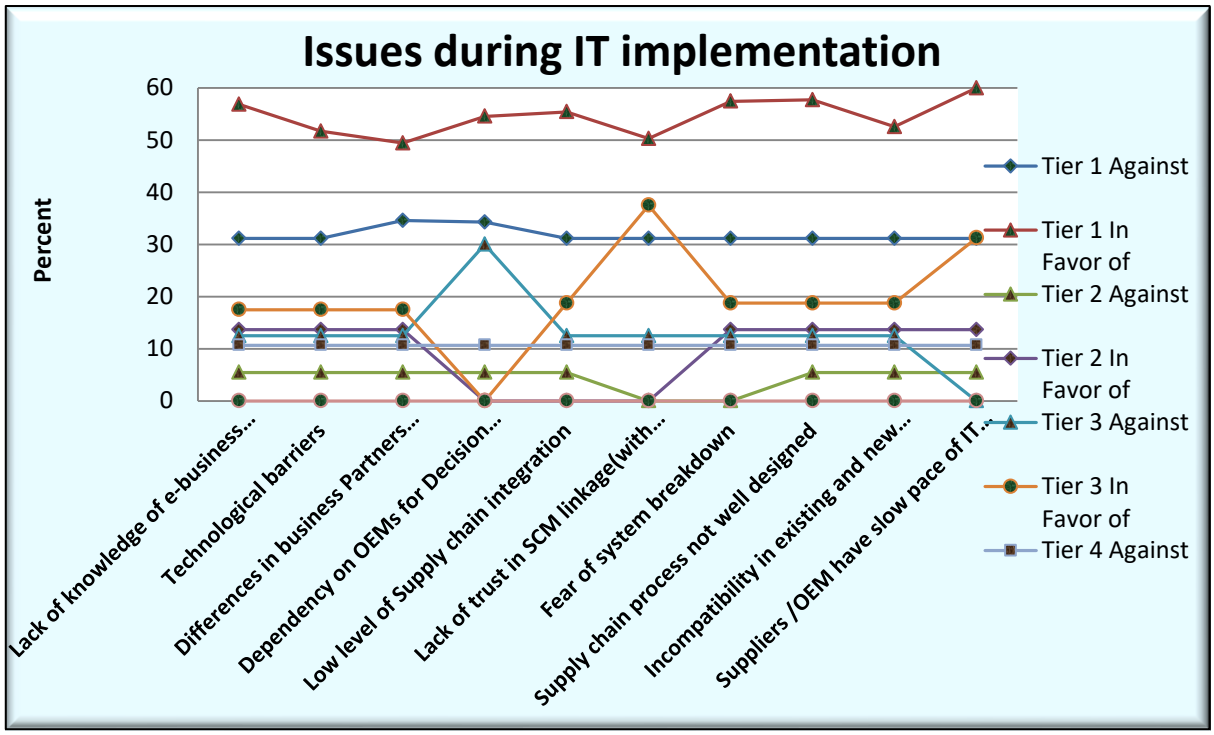
Tier3 'Against': The major response is for Supplier Relationship Management; then Advanced Planning System; then JIT; then EDI (Electronic Data Interchange); then MRP II; then Enterprise Resource Planning; then Warehouse Management System; then E-commerce/E-business; then Decision support/Expert system; then RFID; then Bar Coding.

Tier4 'Against': The major response is for MRP II; Warehouse Management System; Supplier Relationship Management; JIT; E-commerce/E-business; Decision support/Expert system; EDI (Electronic Data Interchange); RFID; Bar Coding; then Enterprise Resource Planning; Advanced Planning System.

The percentage of 'In Favor Of' respondents is negligible for Tier2, Tier3 & Tier4.

Tier1 'In Favor Of': The major response is for MRP II; then EDI (Electronic Data Interchange); then JIT; then Enterprise Resource Planning; then E-commerce/E-business; then Bar Coding; then Decision support/Expert system; then Warehouse Management System; then Supplier Relationship Management; then RFID; then Advanced Planning System.

Q2: Rate the extent of intensity to which the following issues related to technology and SCM efficiency are being faced by your company during IT implementation process?



Summary:

The percentage of 'Against' respondents is negligible for Tier2 & Tier4.

Tier1 'Against': The major response is Differences in business Partners Solutions; then Dependency on OEMs for Decision making; then Lack of knowledge of e-business benefits; Technological barriers; Low level of Supply chain integration; Lack of trust in SCM linkage(with OEM/with suppliers); Fear of system breakdown; Supply chain process not well designed; Incompatibility in existing and new systems; Suppliers /OEM have slow pace of IT adoption.

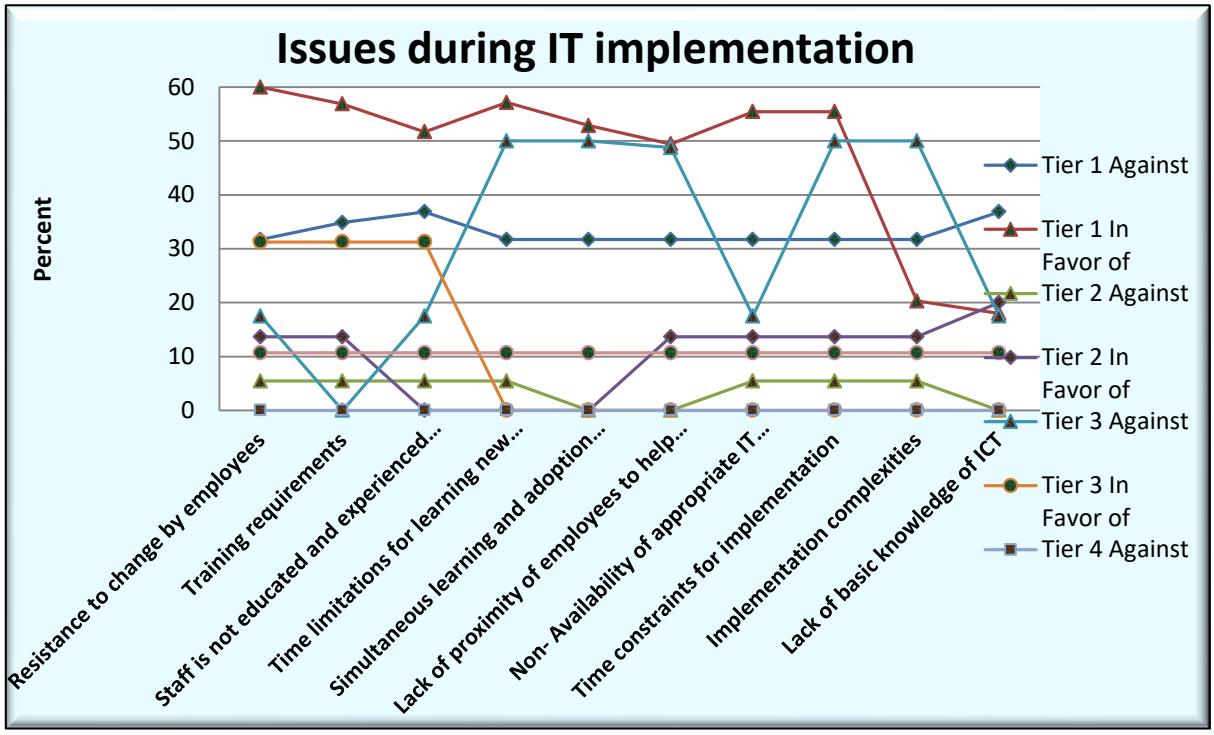
Tier3 'Against': The major response is Dependency on OEMs for Decision making.

The percentage of 'In Favor Of' respondents is negligible for Tier2 & Tier4.

Tier1 'In Favor Of': The major response is Suppliers /OEM have slow pace of IT adoption; then Supply chain process not well designed; then Fear of system breakdown; then Lack of knowledge of e-business benefits; then Low level of Supply chain integration; then Dependency on OEMs for Decision making; then Incompatibility in existing and new systems; then Technological barriers; then Lack of trust in SCM linkage(with OEM/with suppliers); then Differences in business Partners Solutions.

Tier3 'In Favor Of': The major response is Lack of trust in SCM linkage(with OEM/with suppliers); then Suppliers /OEM have slow pace of IT adoption.

Q.3. Rate the extent of intensity to which the following issues related to HR and management efficiency are being faced by your company during IT implementation process?



Summary:

The percentage of 'Against' respondents is negligible for Tier2 & Tier4.

Tier1 'Against': The major response is Staff is not educated and experienced to use e-business solutions; Lack of basic knowledge of ICT; then Training requirements; then Resistance to change by employees; Time limitations for learning new systems; Simultaneous learning and adoption /implementation of new systems; Lack of proximity of employees to help each other to learn and implement new system/ technology; Non- Availability of appropriate IT solutions; Time constraints for implementation; Implementation complexities.

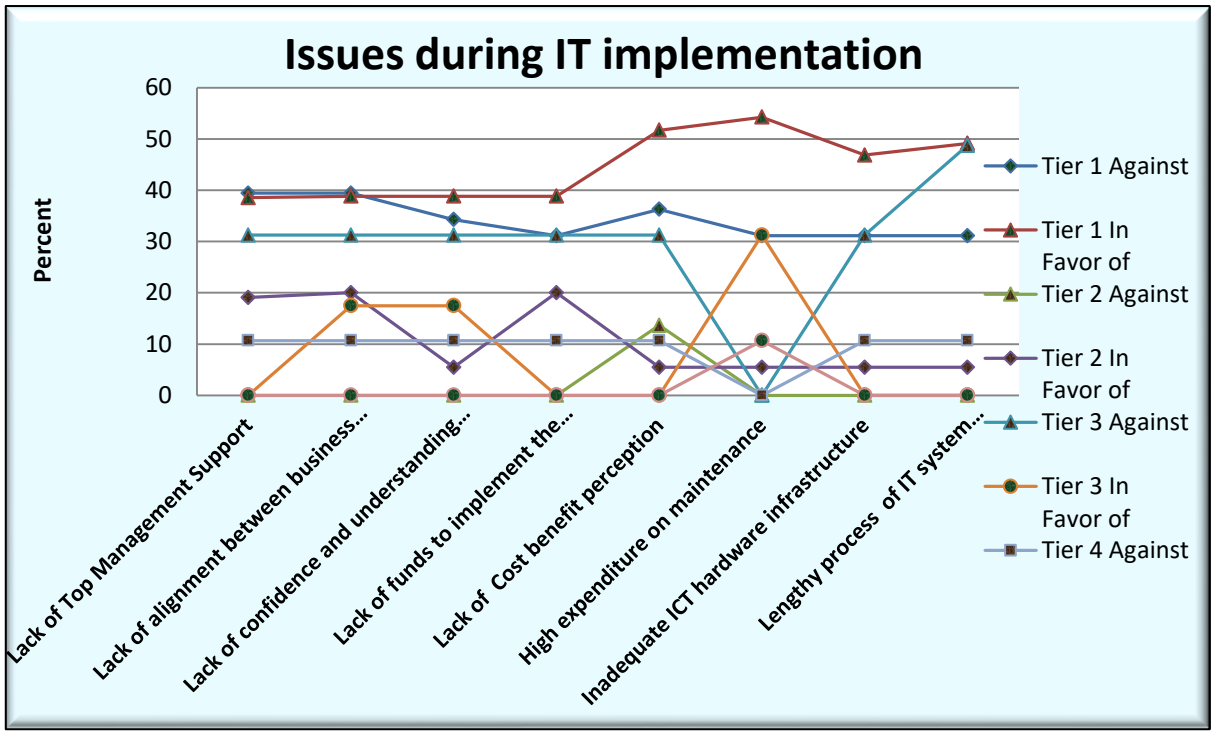
Tier3 ‘Against’: The major response is Time limitations for learning new systems; Simultaneous learning and adoption /implementation of new systems; Time constraints for implementation; Implementation complexities; then Lack of proximity of employees to help each other to learn and implement new system/ technology.

The percentage of ‘In Favor Of’ respondents is negligible for Tier2 & Tier4.

Tier1 ‘In Favor Of’: The major response is Resistance to change by employees; then Time limitations for learning new systems; then Training requirements; then Non- Availability of appropriate IT solutions; Time constraints for implementation; then Simultaneous learning and adoption /implementation of new systems; then Staff is not educated and experienced to use e-business solutions; then Lack of proximity of employees to help each other to learn and implement new system/ technology.

Tier3 ‘In Favor Of’: The major response is Resistance to change by employees; Training requirements; Staff is not educated and experienced to use e-business solutions.

Q4. Rate the extent to which the following issues related to operational and management are being faced by your company duringof intensity IT implementation process?



Summary:

The percentage of ‘Against’ respondents is negligible for Tier2 & Tier4.

Tier1 ‘Against’: The major response is Lack of Top Management Support; Lack of alignment between business goals and IT initiatives; then Lack of Cost benefit perception; then Lack of confidence and understanding at senior management level about IT systems; then Lack of funds to implement the required level of IT systems; High expenditure on maintenance; Inadequate ICT hardware infrastructure; Lengthy process of IT system implementation.

Tier3 ‘Against’: The major response is Lengthy process of IT system implementation; then Lack of Top Management Support; Lack of alignment between business goals and IT initiatives; Lack of confidence and understanding at senior management level about IT systems; Lack of funds to implement the required level of IT systems; Lack of Cost benefit perception; Inadequate ICT hardware infrastructure.

The percentage of 'In Favor Of' respondents is negligible for Tier2 & Tier4.

Tier1 'In Favor Of': The major response is High expenditure on maintenance; then Lack of Cost benefit perception; then Lengthy process of IT system implementation; then Inadequate ICT hardware infrastructure; then Lack of alignment between business goals and IT initiatives; Lack of confidence and understanding at senior management level about IT systems; Lack of funds to implement the required level of IT systems; then Lack of Top Management Support.

Tier3 'In Favor Of': The major response is High expenditure on maintenance.

Methodology:

The strategy for this research was dependent on data from various organizations. The researcher needed to collect the data and then analyze it to provide some insights for those organizations.

This research paper has used survey research methodology. A quantitative method has used that involved the collection of data from a number of organizations or other entities using tools such as questionnaires, telephonic interviews and published statistics. The data then analyzed using statistical techniques, and used to discover relationships that are common across the organizations. The barriers of adopting information technology in supply chain management has been examined in detail.

Sources of Data: The sources of data were primary and secondary.

a) Primary Data: Following methods will be used to collect primary data

- Questionnaire Method

This method is used to collect data from suppliers of tier 1 , tier 2, tier 3 to understand the level of awareness, requirements and expectations from IT Services of the selected organizations. For this, questionnaires were designed for suppliers of tier 1 , tier 2, tier 3.

Interviews

Structured interviews conducted for suppliers of various organizations to get the information about the requirements, expectations and experiences regarding their views about information technology in supply chain management along with automotive industry.

On field observations during visits to different tiers of various automotive industry were considered.

b) Secondary Data:

Secondary data will be collected through various books, magazines, articles published in newspapers, journals and websites to develop conceptual framework.

v) Techniques of Data Collection:

Techniques used for data collection were online survey method, conventional questionnaire survey method, interaction, interviews and on field observations. The data collected through surveys and interviews of suppliers was in structured format. However, interviews other than suppliers, information gathered through interactions and on field observations were in unstructured format.

The online survey method was conducted by using Google forms tool. However the responses through this platform were very slow during pilot study itself. Hence, Researcher adopted the conventional method of survey i.e. printing questionnaire, distributing and getting the responses to complete the survey in stipulated time and demand by few respondents.

3.8 Tools of Data Collection:

Design of questionnaire:

The main purpose of designing a questionnaire was to seek data and information about current scenario of IT usage in automotive industry. The questionnaires were designed for main stakeholders as suppliers of various tiers. It had been observed that there was no systematic approach for users and adoption of IT services. Therefore it was essential to explore and understands the current means, methods used for various automotive organizations for supply chain management.

Various types of questions were framed viz. demographic, close ended and open ended. The demographic questions were used to check its influence relating to current study. The close ended questions are of type- Yes/No, Rating, Ranking etc. The Likert scale was used to maintain the accuracy of the answers.

Concusion:
process seamlessly acr oss the supply chain in a way the competition can't simply match [2].

There is a good rise in graph of usage of EDI and the Internet in SCM. The key ingredient for success in managing a supply chain is fast, precise data from a wide range of information including inventory level, sales data and predicting, order status for tracking tracing, production distribution schedule, presentation metrics and purchasing procurement.

The initiative for adoption of various information technology services must be considered. The awareness for its adoption is not remarkable. To regulate inventory, transport system and production it is necessary to quickly respond to market changes. Suppliers must take this step for improvement of profit in business. They are still under pressure of losing of business if they implement IT services in business. The first tier suppliers are still taking a step ahead for adoption of IT services and cope with market changes.
ta that add value for customers and other investors" [4].

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