Chapter 7:

Recommendations & Summary

gain, limitation and scope for further works

7.1 Summary Gain-

This research completed in three sections. First level of research is to find out current level of automation in supply chain of chassis suspension system of national capital region. Second level of research is to find out the user, industrial professional views on importance of automation. According to their experience and based on their knowledge, what is the effect of automation of supply chain through software on supply chain visibility, inventory turnover, customer
satisfaction, resolution of conflict with in supply chain, role in reduction of inventory. Third level of study is recommending a success model based on input of above two level of research so that automotive industries may increase success rate of supply chain automation implementation.

Summary gain in first level of research are---

1. Out of total sample population 82% of respondent installed some kind of automation software whereas rest 18% do not installed any kind of software for their automation solution. Locally developed software which cost less to the company is contributing maximum to 38%. When we club branded software SAP and oracle it comes 6% more in comparisons of local software. It concludes that companies prefers less cost software and at the same time organization who in better position to bear financial cost of automation shows their reliability towards branded options.

Automation position in terms of investing in technology in suspension system manufacturing companies and their supplier in research found in good position, it means that subjected industries believes in change for betterment and willingness to adopt systematic approach through automation.

2. During historical analysis of automation of supply chain it is found that 71% installed automation software in last 10 years. It indicates that importance of automation concept in supply chain is going to be widely accepted by organizations, Out of total population only 20% approximately installed automation software 20 years back. It is also concluded that pace of supply chain automation is slowdown in last 3 years in comparisons of earlier years. It cannot conclude that organization lose faith in automation solution. Automation solution provider companies have to take measures to increase it. It is remaining small fraction which may has some specific issues.

3. Supply chain consists of three partner manufacturer, customer and supplier of manufacturer. So, complete automation is considered when all three partners are get information of material movement in real time. In this question, analysis is done of automation between manufacturer and customer. It is found that 52%, which is just slightly more than half population is not fully automation of supply chain with customer. It means who has implemented automation, half of them not able to take its all benefits. Only 45% has taking benefits of full automation with customer and able to share information related to dispatches in real time.

Customer and supplier of fully automated supply chain get information on material movement (dispatch and receipt) through automation software, immediately as material reach to its destination. The 3 percentage of respondents / companies are connected with their customer by old and slow means of communication. The automation solution provider companies have better
scope in this process. Automotive supply chain partners must work towards full automation with their customer. The customer is really appreciating this system during crisis/urgent need of material. As customer get information of dispatch in real time, he can better plan his production. In case of absence of information flow, customer makes his plan based on prediction. This prediction may fail due to false dispatch time information. In such situation, it is total loss of productivity time and resources.

Organization must take measures for full automation; budgets can be made on sharing basis with customer as Maruti charging rental amount to providing intranet facilities to their suppliers. In case organizations has automation software availability and not able to utilize it, they must work on reasons of partial automation practices. They can take help of success model as well to find out solution for converting partial automation into full automation.

4. In response of automation of receipt process at company gate, it is found that 58 % of total sample population makes entry in automation software at company gate itself. 42% of total sample population does not make entry in automation software at company gate. It does not mean that they do not have automation. It is just choice of check post to make entry of invoices. It can be concluded that majority of sample population doing inward control at gate itself. Companies making automation at gate of incoming process are more confident on accuracy of invoices, bearing correct purchase order number, skill of punching operator/security guard.(as explained by Mr. Singh Head of material department.).

Entry on gate makes automation system perfect, but at the same time rigid. Perfection means that entry made at first step to enter in company premises. So, it ensures that no material or bill/invoice moves in factory without entering and thus omit chances of invoice loss/delay in posting in system as gate person makes entry in system irrespective of material quality. It provide feeling of rigidity to employees in some case, where buyer would like to return the material (excess dispatch, without notice dispatch, wrong dispatch), gate person do not have authority to make it cancel in system. Manually a activity which can be performed in fraction of seconds, now through automation software get dispatch properly after entering material in system and then makes rejection invoice to send material back.

Both check post has its own merits and demerits; company has to select point of receipt. Entry at gate is more preferable than entry at store is prediction of this research.

5. Every organization would like to have control on its incoming and outgoing. In this research on automation of inward process we found that 80.50% follows practice of automation out of total sample population. 19.50% do not follow this practice. The response on how many organizations has installed automation software. 18% do not install automation software. It clearly indicated that when a company installed automation software, controlling of inwards
through automation is their must need. The 19.50% of total sample population do not follow practice of entering in automation. These organizations are who do not have automation system in their company. Therefore they are not following it as absence of facility.

The result indicates that 20% population has chance of more variation in reconciliation during year end in physical inventory count with respect to books quantity. Automation solution providers make effort to find out reasons of non-installation of their software and suggest better alternates to address their issues may be of installation cost as indicated by respondents as prime factor or they feel that automation software is not meant for them.

6. This research concludes that 63.8% of total sample population makes entry of material issue to production in automation software. It indicates that company is more concerned on automation of inward material (80% doing that) than issue process to production. This is also important input to automation solution providers. Automation solution provider should work towards to increase population from 63.8% to 100%. It is not just one time selling; next sale will be generated through existing customer experience. The absences of automation in releasing material from store to production lead to inaccuracy in data related to line rejection, report of material lying as work in process (WIP), and individual machine output data in real time. So it can be concluded that 37% of total sample population do not able extract information of production floor material movement in real time and not getting benefits to find out their operational inefficiencies.

This result also indicates that remaining 36.2% needs support in terms of cost as installation and maintenance cost is too much to bear for small & medium enterprises, customization or rigidity of software. Customization is also an expensive affair; therefore organization would like to follow standard procedure inbuilt in software. Automation software manufacturer must work to bridge gap between user expectation and inbuilt system procedures, otherwise it lead to just buying the software and not used in daily operational activity. At the same user should get feel of rigidity of automation system. One solution to this problem may be the introduction of automation software system in organization before going to launch of automation project.

7. MRP (Material resource planning) is run by 73% of total sample population. It means that automation software is not fully utilized by one fourth populations. The run of MRP is nothing to do with software complexity, rigidity and any practical issue. It is cyclic process once learns has to repeat every month with dynamics of customer demand as input. Running of MRP is only matter of focus. Some instances found during research MRP output is not ok. MRP is generating wrong schedule. Some instances found that user is not run MRP. This situation can be improved by organization top management focus. The management of organization must take feedback on reasons of not to run MRP. The user should frankly raise his concern for not to run MRP. Management should provide solution to user issues. Based on this research there are two reason
of such situation. First is skill of user need to run MRP. Second is inaccuracy of master related to part numbers, part lead time, minimum-maximum inventory level, re-order level?

8 The next process is of FG movement. This research indicates that only 58% of total sample population able to see finish good stock through automation software. The 42% of total sample population who do not able to see FG stock means have not inter-linked of supply chain with production and warehouse. This is an input for automation solution provider that they have to provide provision in software so that punching of production in automation software became easy and less time consuming activity. Production persons have to meet productivity target, punching in automation software is secondary for him. So, posting of data in automation system should be as easy as on/off of a machine. Other interesting facts found in this research are that percentage data on automation of inward material as yes/no equal to FG stock automation. It concludes that both aspects are equally important to organization.

The remaining 42% do not have access to FG stock lead to more chance of non-match book value with physical quantity, poor accountability of stock and no tractability of locations. Management of these organizations has to understand importance of keeping accountability of FG stock through automation and takes all necessary steps to implement; otherwise it is wastage of resources and capital investment.

9. The research on automation of material scheduling intimation process is next step. The data obtained that highest percentage is of, who provide schedule through e-mail. It means that their suppliers do not have automation software in their plant. Second reason may be that buyer is not confident on output of MRP. First they check it manually and then sent it their supplier. Only 13.8% of total sample population provide material schedule in line as MRP output. This data is encouraging input for organization who already gone to automation of supply chain. It clearly indicates that when 13.8% can implement this process fully, others can also do. It is just matter of resolving user problem as continual improvement project. The remaining 16.6% need help and push of customer to upgrade their technology. They can first achieve level of e-mail which is very common technology.

Utilization of automation technology is not done to cover all areas of supply chain to take all benefits. The user confidence on system output seems to be less that’s why not sending it directly to supplier. To implement this function completely all supply chain partners need to have automation software facilities.

10. Supply chain in automotive industry of suspension system, 8.30% of total sample population has fully automation. This indicates that even though percentage is small but all functions of supply chain modules has been implemented. This proves, automation can be successfully implemented.
The majority considered their supply chain automation under category of semi-automation. The percentage contribution to this is 69.4%. It means that one or two process of supply chain is not covered under automation. It is not feasible that any company choose partial process automation. So, it indicates that user are facing problem to implement it fully or finding it of no use. Automation solution provider can reduce cost of software by removing of nonfunctional features. Such factors to be identified by management or software manufacturer time to time to refine their standard procedure so that automotive companies feels need of minimum customization. Organization management and automation solution Provider Company should work jointly to make it fully automation.

The 8.30% of total population told that their supply chain automation is under category of little automation. Little automation seems that organization has only computer systems. Little automation will help any organization as they are doing entry of one or two process in their computers system. The 13.8% told that they have no automation in their supply chain. The total 92% has scope to make their supply chain fully automation.

Overall can be conclude that automation of supply chain start in suspension system supply chain since 20 years back, which took another 10-15 years to widely cover all supply chain partners. In last three years, adoption and implementation of automation software get slow down. Automation trend currently observed as down ward. So, automation solution provider must think about adding more features at lesser cost and to work towards making more suitability for automotive suspension industry. Half of the population still not connects with customers to provide real time information of dispatches whereas more than 80% has automation software. Scope of effective utilization has to focus by the management of organization. Automation technology adaptation is finding good but utilization and exploring benefits need to be improved.

The summary gain of second level of research is as below. The main objective of this section is to know about the benefits of supply chain automation as observed by users in industry. This section is also deals with how user measure automation of supply chain.

11. The harmonious relationship comes through better coordination. The performance of supply chain management can be improved when partners have better coordination. So, response on this factor analyzed. The 77% of total respondents agree that supply chain automation makes better coordination with in department. Only 18.24% are disagree (2.7 % completely and 15.4% up to some extent). The factor coordination cannot be measured quantitatively. This is an experience or feeling of persons working in automated environment. It is also to note that 18% do not have any automation software. It means they cannot experience coordination as impact of automation. We can say that all users agree with coordination improvement by implementation supply chain automation. It also indicates that organizations must go for automation of supply chain to takes benefits of automation.
Automation of supply chain helps to maintain harmonious relationship between employees, stack holder of channel of supply chain.

12. Inventory management and customer satisfaction are main parameter to measure performance of automotive industry supply chain. Therefore, impact of supply chain automation on inventory turnover is considered in this research. More than ¾ th of total sample population told that automation of supply chain makes improvement in inventory turn ratio. A small proportion (2.7%) of total sample population is not agreed with statement. 15 % are not fully agreed, which is logically true as there are other techniques also exists to control inventories. Automation provides easily data on nonmoving, excess items. It also means that they admit automation help to make better inventory control. It may be not up to their expectation. Overall we can conclude that automation of supply chain makes better inventory management and helps to maintain its optimum level.

13. Automotive industry works on concept of Just in Time (JIT) as car manufacturer (customer) need material only when they require it. They keeps inventory just to run assembly lines instead of keeping safety stock. So, timely delivery became important and this factor is also considered while calculating supplier performance rating. Analysis of data proves that 75% of total sample population are agree to extreme that automation of supply chain makes timely delivery to customer. The result seems correct as automation provides back ward planning based lead time of each process and customer get advance shipment notice in real time.

As automation helps to improve timely delivery to customer, components manufacturer must go for automation software.

14. The continual improvement or progress is possible only when its current state can be measured against some parameter. Good Organization defines this parameter to measure performance of department and organization as well. The result of this research on this aspect that majority of respondents (77%) agree that automation supply chain able to find out reports and data related to their departmental targets. Since 18.2% are somewhat disagree, it concludes that their system is not fully customized. All automation software has ability to generate data in form of report what so ever entered.

Organization must provide clear instruction on desired reports and format during implementation itself, later on minor changes are feasible. But later on major changes in formats became costly affair. Automation solution Providers Company must take care of this aspect, they should not left it completely on Customer Company and make their customer aware about consequences later on.
15. The excess and obsolete inventory in any organization, blocks its cash money. So organization needs a tool or process to control excess and obsolete inventory. So, response gathers on this aspect as well. The majority response indicates that automation of supply chain able to generate information about excess inventory. This is also evident from features of supply chain automation that ageing of any item can be drawn from automation software. The current inventory data can be compared with maximum stock limit. 15.6% of total sample population are somewhat disagree; it does make significant impact on conclusion as a small in comparison of strongly agree.

Automation software makes entry of invoices with all relevant details including data of entry and can display date of entry details at any moment. Obsolete items are result of design change or items expired with passage of time. So it is not possible that any automation software is not able to display list of obsolete. Similarly software has ability to display excess quantity against predefined maximum limit. It is concluded that respondents are not agree on automation ability to highlight excess, obsolete items may not able to extract report properly or in accuracy in master data.

16. Departments have their own interest to achieve their targets, but in some situation it may have conflict with other departments. For instance finance may want to hold supplier payments to manage their funds availability, material department want it to buy further material. In case on payment over dues, supplier will hold delivery of material. So, if inventory stock is visible to finance it can take decision to which component he can hold payment without interruption of production.

This research concludes that majority of respondents agree that automation of supply chain helps to reduce conflicts among the departments. This seems to be logically correct as automation increase visibility of material movement; hence production or finance can use this data for their planning as well during crisis. The respondents who are strongly disagree with it or disagree in some extents; the percentage contribution is very low. It is equivalent to percentage who does not install automation software. This factor cannot measure in quantity; it is just a feeling or experience of instances. It might be possible respondents who are not agree, do not have experience of that. The percentage proportion of respondents who are not agreeing is very small, hence can be concluded that automation increase visibility of material flow and data related to it, which is necessary to take decision during sudden hip & down (machine breakdown, labor shortage, material shortage, temporary hike in demand).

17. A systematic functioning of any department and organization help to create an environment of harmonious relationship. Automation of supply chain lead to systematic work is as claimed by automation solution providers. This research predicts that automation of supply chain help in reduction of conflicts (80% acceptance). As automation lead to access of data in real time to all
concerning persons and facts cannot be manipulated regarding data, date and time, it is naturally led to reduction in interest conflict between employees.

Conflict between employees cannot be measured and there may be various reasons for it. Conflict arise due to what so ever the reason, it definitely spoil team work which hamper organization performance in long term. Peoples will enjoy failure of each other which is ultimately failure of organization. Respondents were sharing their feeling on conflict and agree that automation helps to kills reasons that may lead to conflicts. This benefits is just like a byproduct of implementing supply chain automation.

18. Customer is concerned about end results related to delivery, quality and quantity of products. Customer is not concerned about the means by which these results can be achieved. These means are also not part of product costing. Current research shows that majority of people accept that supply chain automation is necessary to become competitive in comparison of other supplier. It means that companies having automated supply chain get more chance to get new business over the other supplier of same product. Customer expectation of real time information is also now became need. So organizations must take measures to be fully automated so that they can be more competitive as choice of customer. The automation solution provider has more scope to create new markets.

This seems to be logically true that automation provide systematic approach, integration of departments and flow of data /information. These factors are necessary to identify business losses and taking appropriate action to tackles it .Decisions in automated environment are quick due to speed of communication to overcome business problems. This clearly indicates that organization must go or automation.

19. Company investment in every rupee must turn into profit which is by product of customer satisfaction and growth of business in all aspects. Since automation require good amount of investment, so it must increase customer satisfaction level. The current research shows that majority accepts positive role in increase of customer satisfaction. By implementing automation customer gets information on invoicing in real time, he got advance shipment notice as material move from plant. He can get information on status during transit. Customer gives more weightage on reliability front to supplier with automated supply chain as his confidence about delivery and system get increased by automation. All these factors collectively enhance customer satisfaction as indicted by result of current research as well. This predict that automotive industries must go for automation. As automation makes positive effect on timely delivery so it is naturally increase customer satisfaction.

20. Adoption of automation in supply chain is one concern and its success to run smoothly is another major concern. Secondary data shows success rate of supply chain automation is as low
as up to 10% in India. The current research predicts that 69% people faces problem to sustain automation. They find difficulties to work in automated environment. It means that sustain the automation is also required extra effort; it is not just like purchase a product to get its benefits. The aspects suggested by respondents are automation high operation cost, automation project cost, lack of training and customization, accuracy level, employee interest, automation system rigidity, lack of full automation, software limitation,. The success model proposed based on factors data collect in research helpful to go for full automation and to take measurable actions which avoid failure of automation project. The automation software manufacturer turn to make it within acceptable price range, increase customization and overcome to s software limitation to handle real life issues of supply chain.

The customization of software can be done by taking feedback of end user and management vision on future of business. The project team and management must take care of trainings and full automation implementation. The automation of supply chain which covers to its full limit and provide satisfaction to customer is feasible as one third cases found in current research.

21. The user satisfaction with current automation solutions is predict in current research shows that majority (82%) feel further improvement in their software. The factors user wants to improve are customization, better interlinking of department, T-code standardization, version up gradation, and feature of opening multiple window, bar coding implementation, generation of departmental matrices and reports, increased scope of automation to whole group. So, all factors can be categorized that user wants customization, interlinking, transaction standardization, bar coding and full automation of organization.

User are admitting that supply chain automation is beneficial for them to increase customer satisfaction, reducing conflicts, help to maintain inventory turnover, highlighting obsolete/excess inventory, help to ensure timely delivery, improve coordination and able to generate reports. But mostly users are not fully satisfied with their automation system. They want improvement in front of customization, interlinking and upgrade version. Therefore it recommends that management must definitely involve during the implementation of automation project. Automation software development companies must considered each industry as a separate case for implementation.

22. The adoption of supply chain automation will came in to existence by management initiative and to sustain it major contribution is of user. The automation solution provider companies may take it just a business case. It rarely happen that software companies get involve after completion of project with their own to see benefits analysis of automation. Practical issue faced by user in automated supply chain. This research shows more than one third of total sample population do not faces any practical problem with automated software. It indicates that even though percentage of employees face practical problems is only 24%, but project work is not successful to address all
issue during and after implementation of automation. The problems faces by some respondents are related to software limitations to address all practical issue, lack in departmental interlinking, inability to adopt market fluctuation, system rigidity, Non-interface of automation software, material visibility at each stage. The automation solution providers must take feedback from their old customer to perform continual improvement. This also helps them to remove non logic functions and add new features of user need.

23. When there is any technology changes, human nature create resistance to change and concerning person starts to find out drawback of technology change. This study shows that 63% are feels that automation of supply chain does not create obstacles, means majority of peoples overcome to natural human nature resistance. The concerns of management are to sustain automated supply chain environment. The remaining 37% faces instances when automation stops to work smoothly. These instances may be of sudden breakdowns, network error and rigidity of system. The IT team must take care of their planned maintenance activities and suggests alternates to user to support smooth functioning.

It proves that basic configuration of automation software is accurate and logical sequence has been addressed properly. Incidents observed during survey belong to hardware failures and somewhat feeling of rigidity of system that may be created in system for better controls. In such situation authorization given to certain level in organization structure to allow amendment or by pass the system (to tackle unexceptional cases)

24. To present a success model, it is necessary to know the challenges faced by organizations in whole journey of supply chain automation. The operation cost of automation including initial cost is statistically proved to be most shouted on top rank. This cost must be come down to cover all tier level of automotive supply chain. The software manufacturer should work towards actions results in cost cutting of supply chain automation. The accuracy of master data is placed at second rank. It indicates that mostly companies are facing problems of inaccuracy during entering of data or the attributes assigns are wrong. The project team must establish check point and correction of errors during trial runs followed by taking care of accuracy at first level of entry. IT (Information technology department) or MIS Department (Management information system) service level is placed at third rank by respondents. This indicates that organizations may not have enough manpower to tackle problem or skill of employees is not up to desired level. Therefore, automation user has to wait for solutions. Sometimes instances are also observed that problems are related to main server. The main server is placed at different location than the site and IT department service is solely based on team of main server. For such instances, management has to take calls for better services from other locations. The accuracy level of supplier schedule is placed at fourth rank, this does not means that importance of this factor is less. When supplier schedule is wrong, either inventory level goes up or line will get stopped. The accuracy of supplier schedule is determined by accuracy of master data which is
placed as second in most challenging factors. The factors of complexity to understand software is placed at lowest rank in challenging factors. It means that mostly employees level of skills and education is at adequate level in automotive supply chain. They considered it as challenging factor of lowest focus in comparisons of others factors. The automation solution provider must design training session which can be compatible with education differences of users.

Based on this research factors are identified which are responsible for failure of projects, suggestion and scope of improvements also incorporated as input to design success model. The basic objective of model is to highlight the various stages of project.

1) What are the things to be taken care?
2) What are the ways to successfully implement the project?
3) How to proceeds and monitor progress of projects.
4) What factors to be considered in implementation planning?

Recommendation for success model can be categorized in three stages.

1) Automation Pre-implementation stage of supply chain
2) During automation implementation of supply chain
3) Automation post implementation stage of supply chain.

Automation Pre –implementation stage of supply chain----

Success model of pre-implementation stage--- First step is to form a team consists of IT experts internally or externally and user of concerning module as members. Things to be taken care here is that if IT experts are external, organization experience team is also to be involve in spite of their literacy on computers and software. Member selected must have good skills to maintain accuracy in master data as accuracy of master data is second biggest challenge after operating cost.

Then management has to lay down its objective and vision for automation at organization level. Management must define at this stage what level of automation required specifically for organization. Project team must be aware of organization existing practices and procedures. They must find out the points on which company existing practices differ from software inbuilt standard procedures. How to tackle differences (either by customization or by doing changes in existing practices), management has to take decision. This activity will not reach to its destination if try to resolve at the level of user and project implementation team, because some practices are part of organization policies and middle/lower management is not authorize and capable to make changes. Every customization happens with spending extra money. Therefore
too much customization is also not feasible as project cost will shoot up. It is recommended that organization must tally their practice with standard inbuilt procedures of software.

This step is necessary as automation is considered as IT project which is evident from earlier research and projects get fails due to absence of management support. Organization specific need to be identified in all processes as every company has its own strength and weakness, which reflects on their systems and way of working.

This activity also help to identified nonfunctional requirement of software, which may lead to cost saving. Based on these two inputs of management vision and organization specific need, system procedures and logic sequence is to be determined. This model approach covers all difficulties and concern raised by respondents of our study.

**Success model of during Implementation:**

During implementation of automation of supply chain organization must stress on issues as discussed here with- Prepare all procedures and practices as standard operating procedures documents. Inward procedure system window format must contain all details like part name, purchase order number, quantity, part description.

Team must take care that what so ever details entered here can be converted to reports later on. The data which is not captured by system as input cannot be provided as report. Master data to verified at three stages—

1) Accuracy of document—Attribute defines to each component must be correct.
2) Accuracy of posting--- Utilization of Skill to avoid clerical mistakes.
3) Accuracy of result---Comparison of output information based on master data with actual required data.

Data entered in system (master data) must be posted with accuracy checking accuracy of master data. This is based on concept of Garbage in –Garbage out.

It means care to be taken while entering the master data. Some minor correction can be carried out by running trial run of automation system. By trial run user will also came to know about practical difficulties.

This is best time to anticipate what benefits can be gains by automation of supply chain. Organization must instruct to automation project team to gets trial runs in all aspects –to access system procedures, supplier scheduling, inventory and storage management, dispatch procedures, function of ASN.
Pre Implementation Stage 1st

- IT Team
- User Team

Management Vision, Support & Involvement

Setting up Procedure & Logic Sequence

Organization Specific need

During Implementation Stage 2nd

- Check Master Data Accuracy
- Trail Run & Addressing Issue
- Feed Back on Practical issue
- Make System Easy to handle & understand
- Training of People & prepare Trainer
- Address Issue of Rigidity towards Change
Post Implementation Stage 3rd

Therefore at later stage user say customization is poor (8% as in our current studies). Project leader must take care that user takes interest and give his feedback on output along with project team trail run. Trail run provides testing of system perfection to attaining defined benefits. Organization must take necessary steps to resolve issues face during trial run. Whole cycle of supply chain is to be run so that all related issue come on surface because once system implemented it became very rigid to change due to huge cost involvement.

Training is only tools which increase adaptability of any new technology. People learn and build up confidence to get through with automation tools. Proper training to all employees to be provided by IT expert and organization has to make a set up that trainer may create with in organization to trained new employees. Providing training is also cost involved affairs if trainer hired from outside in later stage after implementation of project. Training is also necessary for easy understanding of employees about software and to make it user friendly. Human nature does not accept any changes easily and employees in organizations tend to follow same practice of manual procedures. The roots of these problems may be fear to adopt new technology, complexity to understand automation software. Management should take care of this rigidity to change through counselling, training and spread the benefits throughout the organization.
**Success model in post implementation**

Organization must analyze the output of automation system. The best way to judge the output is taking views & feedback of user and asks middle management to extract the report they want to measure performance of their department. These views are help to successfully sustain the automation of supply chain and must give full attention to resolve or implement suggestion. This activity will also determine effectiveness of training if suggestions are feedback related to automation software basic function.

Further organization must take care that information provides should also forwarded as feedback to project implementation team if any minor changes required. Management should keep track on problems faced by user and help to provide their solution. Automation of supply chain is a continual improvement process. Organization must regularly work on improvements to overcome user problems, get definitely success in automation of supply chain. This is also evident from our study that an organization has history of automation more than five year and still facing problem of customization (8% of respondents in current study). This indicates that organizations do not focus on user problems and continual improvements.

The use of success model will increase success rate of supply chain automation and provides framework that helps organization to plan activities related to project. This also highlights important factors must take care during whole journey of project start from pre implementation stage to post implementation stage. It anticipates problems expected to come as frame in model (based on current study) and also suggests actions/solution to be taken by project team and management.

**7.2 Limitation of project**

Although care has taken to conduct a vast study, some limitation exists as unavoidable. This study covers suspension system manufacturing companies situated in NCR-Delhi area and their supplier. The car manufacturer is also included as customer to all supply chain partners. This research has some limitation as below—

1) The first phase of this study focus to know status of automation in suspension supply chain. Since this study conducted on chassis suspension manufacturer and their supplier, therefore status of automation is limited to only one product of car manufacturers(suspension system –front and rear in passenger car only).

2) This research predicts result of survey conducted on 252 respondents who are located to a particular geography. Since results of research are pertaining to limited sample size and to a particular location, so results cannot be converted to a generalized statement.
3) Since India is vast in geography and has cultural variation across different states. The industrial policies also get changed across the states. So, result may have variation when conducted across the whole country or indifferent part of the country or in other part of world (the people knowledge and skills on computers get varied at different locations or industries).

4) The study finding based on primary data which is collected through different levels of respondents (which includes a dispatch clerk, executives and managers). A clerk may be expert on his job, but may not have overall picture of automation. The data collected through respondents may be biased in some cases.

5) This study includes factors which management of suspension system industry would like to improve. Some other components supplier of car manufacturer may require additional factors. So, the result of this research is applicable to only suspension system industries.

6) The warehouse automation is not included in study as in our case JIT (just in time concept followed in supply chain). Some others OEM may have concept of warehouse as facilities to their supplier. This study is limited to movement to material only instead of its storage in automated environment.

7.3 Scope of project-----

1) This research predicts, automation of supply chain has significant impact in increasing customer satisfaction, improve inventory turnover, able to identify obsolete and excess inventory, makes better coordination between departments, helps to reduce targets conflicts with in organization and proves itself to be necessary to beat market competition. These aspects can be further studied as future scope so that statement can be generalized.

2) This study focus on suspension system manufacturing plant and their sub supplier, major customer is also taken into account. Future research can be conducted on different products of automobile sectors to check whether nature of product makes any impact on results.

3) The India has extensive variation in culture and languages indifferent geographical areas. The research can be carried out in different geographical areas to make generalize opinion about the findings of current study.
4) The model proposed as output of current research which includes methods and measures to be taken care at different stages (pre and post) of automation project implementation. This recommended model can be used by automation team and IT experts, to testify its impact on success of automation project further as future scope of study.

5) The supply chain of after markets (dealer network) is not covered in current study. Automation of service center, automation of dealer’s functions to provide sub-assemblies and child parts to customer and automation of material distribution from car manufacturer to dealer can be considered as research of future.